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Leadership and Organisational Outcomes in Healthcare

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Abstract:

This research examined to what extent and how leadership is related to organisational outcomes in healthcare. Based on the Job Demands-Resource model, a set of hypotheses was developed, which predicted that the effect of leadership on healthcare outcomes would be mediated by job design, employee engagement, work pressure, opportunity for involvement, and work-life balance. The research focused on the National Health Service (NHS) in England, and examined the relationships between senior leadership, first line supervisory leadership and outcomes. Three years of data (2008 – 2010) were gathered from four data sources: the NHS National Staff Survey, the NHS Inpatient Survey, the NHS Electronic Record, and the NHS Information Centre. The data were drawn from 390 healthcare organisations and over 285,000 staff annually for each of the three years. Parallel mediation regressions modelled both cross sectional and longitudinal designs. The findings revealed strong relationships between senior leadership and supervisor support respectively and job design, engagement, opportunity for involvement, and work-life balance, while senior leadership was also associated with work pressure. Except for job design, there were significant relationships between the mediating variables and the outcomes of patient satisfaction, employee job satisfaction, absenteeism, and turnover. Relative importance analysis showed that senior leadership accounted for significantly more variance in relationships with outcomes than supervisor support in the majority of models tested. Results are discussed in relation to theoretical and practical contributions. They suggest that leadership plays a significant role in organisational outcomes in healthcare and that previous research may have underestimated how influential senior leaders may be in relation to these outcomes. Moreover, the research suggests that leaders in healthcare may influence outcomes by the way they manage the work pressure, engagement, opportunity for involvement and work-life balance of those they lead.

Keywords: Senior leadership; supervisor support; patient satisfaction; absenteeism, turnover, job satisfaction

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1 Introduction

Leadership is one of the most studied and discussed areas of human behaviour. Humans are social beings and, as social beings, we seek to live as part of a group. Belonging to groups has helped us survive and adapt to our surroundings throughout history, and an important aspect of groups is their status hierarchy (Hogan & Kaiser, 2005). This hierarchy informs and regulates interactions between group members. Individual group members will have varying skills and capabilities that support the group. Some will be skilled at forming and sustaining relationships with others; some will be skilled at coordinating activities among group members; and some will be skilled at acquiring status. And combinations of these skills will be influential in determining which group members become group leaders (Hogan & Kaiser, 2005). Groups turn to leaders for support, direction, inspiration, as well as to make decisions during crises. When leadership is effective, it can inspire the group to attain goals it otherwise may not achieve (Bass, 1985).

The scientific study of leadership dates back over a century (Zaccaro, 2007), and has strong theoretical foundations supported by a vast amount of research. In work organisations, groups are critical to success and leadership therefore is valued highly. Leadership is understandably a major focus of research within the field of organisational psychology. Indeed, no other topic in organisational psychology has received as much attention, and moreover, leadership is one of the most studied topics in all of social science (Antonakis & Cianciolo, 2004).

However, a frequently cited problem for the study of leadership is the issue of definition: what is the nature of leadership, and what are its antecedents and consequences (Antonakis & Cianciolo, 2004)? Day and Antonakis (2012) contend that issues of definition and conceptualisation lead to an oxymoron where “more is written and less is known than any other topic in the behavioural sciences” (Bennis, 1959, pp. 259-260). Nevertheless, there is some emerging consistency in definitions (Day & Antonakis, 2012). The majority incorporate aspects of leadership being an *influencing process* (and its outcomes) between a leader and their follower(s), *leader characteristics* which affect their ability to influence that process, as well as *contextual factors* which affect that process (Day & Antonakis, 2012). Yukl (2015) provides a definition that encompasses most of the elements used in other definitions:

“Leadership is the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitation of individual and collective efforts to accomplish shared objectives.” (pg. 7.)

Leaders are important in work contexts and can impact organisations in many ways, including organisational effectiveness (Bass, 1985, 1990). One aim of organisational psychology is to understand how leadership influences organisational effectiveness, and under what circumstances. Prior research has shown the impact leadership has on organisational outcomes including financial performance (Barling, Weber, & Kelloway, 1996), employee engagement, motivation and productivity (Bakker & Demerouti, 2008), employee satisfaction (Janssen & Van Yperen, 2004), absenteeism rates (Szilagyi, 1980), innovation (Scott & Bruce, 1994), and organisational strategy (Hage & Dewar, 1973) amongst others. In addition, research has shown that the effect leadership has can vary depending on the organisational context (Lowe, Kroeck, & Sivasubramaniam, 1996).

Clearly, not all leaders will influence all outcomes across all contexts. Leaders will be tasked with managing different aspects of organisations, relative to the work context. Some organisations will value financial performance and shareholder returns while others will give precedence to customer service or corporate social responsibility. Assessing the effectiveness of a leader based on shareholders' returns is not reasonable if the leader works for an organisation that values corporate social responsibility highly, as one does not necessarily relate to the other (positively). Therefore the context in which leaders operate is critical to understanding their effectiveness.

Although there is good evidence to show that leaders influence organisational outcomes, there is less that demonstrates *how* they do this. Some theories describe the inspiration and vision leaders convey to those working under them, for example transformational leadership theory (Bass & Avolio, 1990; Bass, 1985); others depict how leaders form individual bonds with followers, inspiring trust, loyalty, and motivation, for instance leader-member-exchange theory (Dansereau, Graen, & Haga, 1975; Graen & Cashman, 1975); while others suggest how the vision of leadership at the strategic level influences strategy and culture throughout the organisation (Finkelstein, Hambrick, & Cannella, 2009).

Most theories focus on the way leaders influence organisational outcomes through their influence on employees, for example by inspiring employees to achieve and providing them with the means to do so (Bass, 1990). There is a wealth of research supporting this idea. One study showed that leaders who focused on relationships with employees inspired more motivation and commitment in those workers than leaders who simply focused on characteristics of the work task. The increase in motivation and commitment was shown to be associated with higher productivity levels and sales for the organisation (MacKenzie, Podsakoff, & Rich, 2001). Similar research has shown that leadership behaviours have an effect

on employee perceptions and organisational outcomes, and these are further moderated by the level of leader as well as the organisational context (Lowe et al., 1996).

There has been rather less theorising and research that takes account of leadership processes and outcomes in specific organisational contexts and this represents a theoretical gap. The topic of organisational context is important as leaders must operate in ways that are appropriate to that context if they are to achieve organisational success. In this thesis, I focus particularly on health care organisations since they make such a major contribution to the well-being of people in society. Statistics from OECD countries show that a large part of GDP is attributed to healthcare, accounting for between 5.1% and 16.4% of GDP in 2013 (OECD, 2015). Additionally, those who work in healthcare make up a large proportion of national workforces. In England, for example, 1 in 19 members of the workforce is employed in the publicly funded healthcare system (HSCIC Workforce and Facilities Team, 2014).

The World Health Organisation warns that healthcare organisations around the world are faced with dramatically increasing demands, and that leadership is critical if those demands are to be met. Moreover, they state that a workforce without effective leadership will be unfit to deliver adequate healthcare and associated outcomes (Campbell et al., 2013). These outcomes include patient satisfaction, quality of care, mortality rates, and financial performance as well as employee outcomes that may affect care quality and financial performance, such as staff satisfaction, well-being, absenteeism, and turnover.

The Care Quality Commission, an independent regulator of health and social care in England, assesses healthcare outcomes in relation to five key areas; safety, effectiveness, responsiveness, leadership, and patient experience (caring). They argue that leadership plays a key role in influencing employee behaviours which, in turn, will be the key influence on patient outcomes, and therefore pay particular attention to the leadership domain (and its associated outcomes). Thus, the impact leadership has on these organisational outcomes in healthcare settings is a critical question for societies around the world, and reflects the central question of this thesis:

‘To what extent and how does leadership effect organisational outcomes in healthcare?’

In order to answer this question, an appropriate theoretical perspective must be adopted to inform the research methodology. I propose to use the Job Demands-Resources model (JD-R) (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) to guide the research into whether leadership affects outcomes in healthcare and the means by which it does so. The healthcare context is characterised by high stress levels relative to the general working

population (Aasland, Olff, Falkum, Schweder, & Ursin, 1997; Shanafelt et al., 2012; Wall et al., 1997; Weinberg & Creed, 2000). Leaders can therefore play a critical role in increasing or reducing stress levels among their staff. Stress, in turn, is likely to impact upon organisational outcomes and particularly in a context where care and compassion are fundamental. The JD-R model provides a theoretical framework which can help us understand the effects of leadership in what is a relatively high stress working environment. In the JD-R model, job demands and resources in combination can lead to workplace stress or workplace engagement, partly dependent on how leaders manage job demands and resources. For example, a job demand may be a tight deadline imposed by a leader to achieve a work goal, requiring increased effort by an employee. This increased effort may lead to increased stress in the short-term and, if the pressure is sustained, chronic stress may ensue. However, job resources are proposed to alleviate these negative effects. This can be through leaders providing adequate recovery time in between deadlines, or by increasing their support to employees to meet those demands, such that the effort required is reduced (e.g. more staff dedicated to the work task). The JD-R model offers a powerful framework with which to model the influence of leadership on the healthcare work environment. Leaders may increase or decrease both job demands and resources, and the consequences of doing so can be measured by differences in organisational outcomes.

In addition, combining the JD-R model with leadership in a healthcare setting presents an opportunity to develop this theoretical framework. The JD-R model has been applied to both leadership as well as in healthcare organisations (Bakker & Demerouti, 2007), but the effects of leadership in healthcare as understood by the JD-R model is relatively unstudied. By combining the theories put forward in the leadership literature with the JD-R model, theoretical advances may be made. Given the stressful nature of health care environments and the importance of empathic responding to effective performance, understanding the factors that influence staff experience in this context may be particularly important theoretically. What leadership behaviours affect staff satisfaction (and absenteeism and turnover) is important to understand in any environment, but understanding such factors in an emotionally demanding environment may offer significant advances in knowledge, both in relation to leadership theory and the JD-R model.

The context for this research is the UK National Health Service (NHS). One of the largest employers in the world, the NHS provides a publicly funded system of healthcare to each of the four constituent countries of the United Kingdom. By far, the largest of these is NHS England which employs approximately 1.38 million staff, has a budget of £113.3 billion, and cares for approximately 53.9 million people (NHS Confederation, 2016). Leadership of NHS organisations is likely to play a key role in influencing health care outcomes but also outcomes such as employee engagement and satisfaction. As healthcare is a service-oriented

industry, the work experience of healthcare employees resulting from leader behaviours is likely to play a key role in influencing patient outcomes such as patient satisfaction. Indeed, some see patient experience as one of the most important aspects of healthcare, linked with a variety of clinical outcomes (Black & Jenkinson, 2009; Doyle, Lennox, & Bell, 2013). This thesis focuses on leadership in NHS health care organisations in England and examines critical outcomes for both patients and employees, specifically *patient satisfaction*, *employee job satisfaction*, *absenteeism*, and *turnover*.

The following section provides an outline of the structure of this thesis.

1.1 Thesis structure

Chapter 2 presents an overview of the relevant literature. The first half of the review outlines the main theories and research in the leadership literature, from early leadership theories of personality, up to current theories of ethical leadership, as well as theories of senior leadership. A more detailed review of leadership in the healthcare context is then provided, outlining gaps in the literature.

Chapter 3 discusses a variety of theoretical models before introducing the JD-R model as an appropriate theoretical model to underpin the research. This model is then used to address gaps in the literature and formulate hypotheses to systematically address the research objective.

Chapter 4 details the methodological approach to assessing the extent of leadership influence on healthcare outcomes. Philosophical considerations are discussed before describing the research context and data sets used to address the hypotheses. The research design is then described, detailing the creation of a measure of senior leadership, before outlining analytical procedures.

Chapters 5, 6 and 7 present the results of the analyses. Chapter 5 outlines the results of the analyses relating to senior leadership; chapter 6 presents the results for supervisor support; and chapter 7 presents the results of analyses focusing on the relative strength of relationships between senior leadership and supervisory support upon the outcomes.

Chapter 8 provides a discussion of the key findings, describing the theoretical and practical contributions this research makes. Study limitations and opportunities for future research are considered before final conclusions are presented.

The central question of this research is ‘*to what extent and how does leadership effect organisational outcomes in healthcare*’. The next chapter will review the relevant literature,

covering general leadership literature as well as the leadership literature specific to the healthcare context.

2 Literature Review

2.1 Introduction

The study of leadership is one of the most important areas of organisational behaviour. Academic research has been concerned with this topic since at least 1869 (Zaccaro, 2007), although interest dates back much further throughout human history (Hogan & Kaiser, 2005). It has critical effects on the performance of individuals, teams and organisations, and when performed well, it can positively influence individuals, groups and organisations (Hogan & Kaiser, 2005).

This literature review presents an overview of theories and research on leadership. The first half of the review focuses on the main leadership theories, from early trait approaches up to recent theories of ethical leadership, before moving onto senior management leadership. The second half discusses leadership in the context of healthcare, outlining the main theories used as well as reviewing the research in this area.

2.2 Trait theories

Early research into leadership conceptualised leadership as an outcome of *personality traits*. Originally, traits were used to describe enduring patterns of behaviour which manifested in leadership (Zaccaro, 2007). Trait theory was used to explain why some individuals were seen as effective leaders while others were not (Kirkpatrick & Locke, 1991), and was the dominant theory between 1930 and 1950 (House & Aditya, 1997). An influential review by Stogdill (1948) covered the early research into leadership theory, indicating that interpersonal skills, decisiveness, linguistic ability and administrative skills were important qualities found in leaders. More recently, a review by Derue, Nahrgang, Wellman, and Humphrey (2011) surmised important leadership traits being embodied by personality. Personality traits have a strong hereditary component, and arguments for this approach rely heavily on the nurture perspective of the ‘nature – nurture’ debate – leaders are born not made. The individual traits are used to predict leadership effectiveness, by comparing the traits of effective leaders with the traits of less effective leaders. Stogdill’s early review assessed a wide range of personality traits including (but not limited to) ambition, humour, intelligence and political affiliation. The conclusions drawn from this research were that hereditary factors were influential, though situational factors must not be discounted, and links found between traits and leadership were inconsistent. Despite this, later research refined Stogdill’s review to include stricter control measures, and meta analyses conclude that there is some trait consistency among leaders (e.g. House & Baetz, 1979). More recent reviews have identified conscientiousness and extraversion as being prominent traits in effective leaders, based on the five factor model of personality

(Bono & Judge, 2004; Judge, Bono, Ilies, & Gerhardt, 2002). Yukl (2015) identifies a number of consistent traits associated with leadership effectiveness: high energy levels, tolerance to stress, self-confidence, internal locus of control, emotional stability and maturity, high need for power, motivation to achieve, and low need for affiliation.

Research suggests that though traits may be important, their influence on leadership behaviour very much depends on the context within which that leadership behaviour occurs, and that there is no 'one size fits all' personality type for leadership (Zaccaro, 2007). Moreover, trait theories do not provide convincing arguments for the mechanisms by which personality traits are linked with leadership effectiveness, whereas focusing on the behaviours leaders display may be a more convincing theoretical approach.

2.3 Behavioural theories

The criticisms of the personality based, trait approach led to a shift in focus to a conceptualisation of leadership as behaviour. This conceptualisation suggested that leadership behaviour could be characterised by two elements: focusing on people or focusing on tasks. A series of studies from Ohio State University during the 1950s developed a 'taxonomy' of leadership behaviours as well as the tools to measure them (Fleishman, 1953; Halpin & Winer, 1957; Hemphill & Coons, 1957). These studies identified two categories of leadership behaviour: *consideration* and *initiating structure*. Consideration refers to leaders' behaviour which is characterised by trust and value in followers (e.g. consulting followers on decisions or listening to follower problems), while initiating structure is concerned with more managerial processes that facilitate tasks being adequately accomplished by followers (e.g. ensuring procedure is followed or criticising poor work). During the same period, a series of studies from Michigan University came to similar conclusions that leadership could be defined as task-oriented behaviour or as relations-oriented behaviour (e.g. Katz & Kahn, 1952; Likert, 1961). More recently, Judge, Piccolo, and Ilies (2004) confirmed the predictive utility of these two leadership behaviours (consideration and initiating structure) in relation to leadership outcomes in a meta-analysis.

These studies were influential at the time but have since been criticised. The cross-sectional nature of this research precluded conclusions about causality. It was not possible to know if leaders exhibited the behaviours observed because of the way their followers performed, or if followers performed effectively as a result of their leaders' behaviours. Moreover, the studies were criticised for relying largely on self-report questionnaires, and for the ambiguity of some questionnaire items (Judge, Piccolo, et al., 2004). A final, and perhaps most important criticism of the behavioural approach, is that it neglects contextual influences on

leadership effectiveness. Specific behaviours are likely to be more or less important relative to the work context. The next section therefore reviews contingency approaches to leadership.

2.4 Contingency theories

As noted in the review of trait research, Stogdill (1948) argued that situational factors are likely influence leadership effectiveness. Contingency theories of leadership address this, and focus on the situation rather than the individual. Situational characteristics can include the work task, characteristics of the followers the leader has influence over, or other environmental factors.

Fiedler (1964) developed the least preferred co-worker contingency model (LPC). This model provided an approach to assessing 'relational orientated' leadership and 'task orientated' leadership by asking leaders to assess their 'least preferred co-worker'. Leaders who were relationally oriented were argued to score their LPC higher, while task oriented leaders would be harsher when rating their LPC. The effectiveness of the leader was subsequently dependent on situational characteristics, based on the power and influence the leader held, the relationship leaders had with their followers, and the structure of the work (relatively complex or simple). Different combinations of these factors were said to result in different levels of 'favourability' of the work situation. For example, highly favourable situations are denoted as those where leadership is powerful, tasks are highly structured, and relationships with followers are positive. Leaders who score low on the LPC scale are said to be best suited to low favourability situations, while moderate favourability suits high LPC leaders. This theory has been criticised for not explaining the processes which link LPC scores and situations with performance (Peters, Hartke, & Pohlmann, 1985).

The path-goal theory (House, 1971) proposed that goals are created (for followers) by offering rewards to followers for completion of tasks, and by clarifying the way to achieve goals; in effect creating a clearly defined path for work goals to be accomplished. The theory is based on expectancy theory (Georgopoulos, Mahoney, & Jones, 1957) which proposes that individuals are motivated through expectation of rewards they value as well, as by the belief that those rewards are attainable. The path-goal theory categorises leaders into four types: directive, supportive, participative, and achievement-oriented, which interact with follower and task characteristics, to influence their effectiveness. For example, supportive leadership is said to be effective when follower motivation is low as a result of stressful or dangerous work, while directive leadership is effective when task structure is low. This theory does have some support, but evidence of consistency in research findings is not conclusive (Podsakoff, MacKenzie, Ahearne, & Bommer, 1995).

The situational leadership theory (Hersey & Blanchard, 1977) contended that follower maturity influenced leadership effectiveness. Follower maturity involves the degree to which followers are able and confident enough to complete tasks, and leadership is defined as being directive or supportive. Where followers exhibit low-maturity, a leader who is task oriented can provide support through actions such as explaining task roles, and monitoring progress. These actions can gradually shift to becoming more relations-oriented as the maturity of followers grows. The most mature employees require the least amount of task oriented, directive leadership since they are self-motivated, and thus require minimal motivation from their leaders. Support for this theory is weak (Graeff, 1997), but it does helpfully draw attention to the need for leaders to adapt their leadership behaviours to changing environments.

Leadership Substitutes Theory (Kerr & Jermier, 1978) proposed that some situational environments eliminated any need for task-oriented leadership (instrumental), while others made relations-oriented leadership (supportive) redundant. These situational characteristics are known as substitutes and neutralisers. Substitutes directly affect the work environment and eliminate the need for leader input, for example employees who have expert knowledge and perform tasks which intrinsically satisfying are unlikely to require supervision to complete their work. Neutralisers, on the other hand, prevent leaders taking action to improve performance, for example, a leader without the authority or experience to instruct or support followers.

Fiedler and Garcia's (1987) cognitive resource theory focuses on how a number of situational variables can interact to predict leader effectiveness. These include leader traits (intelligence), leader experience, leader behavioural styles, task knowledge among followers, and interpersonal stress. The theory proposes that combinations of these variables lead to variation in effectiveness, for example, interpersonal stress is said to moderate a leader intelligence-follower performance relationship. High stress situations demand cognitive resources, thereby reducing a leader's capacity to facilitate learning and problem solving, while low stress situations do not take up cognitive resources, leaving the leader free to exercise their intelligence in order to promote effective working practices. Moreover, where followers have more knowledge than leaders about a situation, participative decisions are described as more effective, whereas autocratic decisions are more appropriate when the leader has more knowledge and experience. A problem with this theory is that linkages between stress, intelligence and experiences are not explained, for example in relation to their effect on participative decisions or how these decisions influence group performance (Vecchio, 1990). In addition, the use of general intelligence as a trait is problematic, because specific cognitive abilities are likely to be relevant to specific situations. However, more recent studies have shown support for the idea that stress moderates the relationship between leader intelligence

and follower perceptions of leadership, although the relationship between intelligence and leadership was lower than previously indicated (Judge, Colbert, & Ilies, 2004).

Finally, the multiple linkage model (Yukl, 1981, 1989) draws from previous contingency theories, proposing that mediating and situational variables interact to influence leadership effectiveness. However, this theory drew from a much broader spectrum of variables, arguing that the theories which came before it were too specific and fixed. Situational variables (e.g. nature of work, external influence, follower ability) are said to moderate the leader's ability to influence mediating variables (e.g. work task organisation, teamwork, and resources). In order to increase effectiveness, situational variables and/or mediating variables can be changed. However, the theory does not explain how these variables will be changed and it does not lend itself to empirical testing due to its complex nature, therefore support for this theory is weak (Yukl, 2015). Nevertheless, this theory does highlight the value of considering mediating variables between leadership behaviours and outcomes.

A final, more general criticism of contingency theories is that they tend to treat leaders individually, while followers form a single group, for example, all having good task knowledge, or experience, which is often not the case. Dyadic theories offer one solution to this issue.

2.5 Leader-member exchange theory

Leader-member exchange (LMX) theory is the most influential dyadic theory and describes the relationship between a leader and individual followers, suggesting how that unique relationship influences organisational outcomes (Dansereau et al., 1975; Graen & Cashman, 1975). *Personal compatibility* is said to influence the leader-follower relationship (exchange), with leaders spending more time with those followers who they feel are trustworthy and competent. As time goes on these relationships grow and interdependence evolves between the leader and these trusted followers. Conversely, leaders spend less time with followers who do not fall into this group and these LMX relationships are said to be more formal.

These high-exchange relationships benefit both leaders and followers by allowing the leader to control rewards which followers desire, such as career advancement opportunities, delegating work tasks which are seen as interesting or enjoyable, or financial rewards. In return followers who receive such benefits are expected to provide benefits to the leader, for example, through hard work, loyalty, or taking on additional work tasks (Wilson, Sin, & Conlon, 2010). These high-exchange relationships mean that leaders must devote more time and energy to cultivating mutual trust and respect, and therefore authoritative or dictatorial leader behaviours risk breaking them.

Low-exchange relationships however, focus on followers meeting the formal requirements, for example, by meeting deadlines, following procedures or accepting (reasonable) instruction from the leader. In return these followers receive only the formal benefits associated with formal work tasks. Early definitions of the formulation of these exchange relationships separated followers to ‘in-groups’ and ‘out-groups’, although later versions of this theory included the potential for a partnership between leaders and members being made available (initially) to all employees (Graen & Uhl-Bien, 1995), and consequently allowing teams to consist solely of ‘in-group’ members.

Research into LMX theory generally provides support for the framework (Martinko, Harvey, & Douglas, 2007), with favourable leadership perceptions and favourable follower perceptions predicting high-exchange relationships. Personality has also been found to influence initial LMX formation, with agreeableness and extraversion predicting higher LMX relationships initially, but performance being a better predictor following initial interactions (Nahrgang, Morgeson, & Ilies, 2009). Furthermore, reviews into LMX have shown that attitudes and performance can be predicted by these leader-follower relationships (Ilies, Nahrgang, & Morgeson, 2007). Moreover, a number of studies indicate that leadership development programmes using the LMX model led to subsequent follower improvements in performance (Graen, Novak, & Sommerkamp, 1982).

2.6 Transformational leadership

Transformational leadership is currently one of the most dominant leadership theories (Piccolo & Colquitt, 2006). Transformational leadership theory was introduced by James McGregor Burns (1978) who contrasted it with transactional leadership, but Bass (1985, 1996), who is widely viewed as the founder of the main theories on which the majority of empirical work is based, saw transformational and transactional leadership as related. Relative to a range of other leadership behaviours, transformational leadership behaviours have been shown to have real and significant effects on individuals, groups and organisations (Judge & Piccolo, 2004; Lowe et al., 1996) with the result that transformational leadership theory has generated considerable research into leadership.

The idea of transformational leadership extends House's (1977) theory of ‘Charismatic Leadership’ to include intellectual stimulation and individualized consideration (Lowe et al., 1996). The initial construction of Bass's (1985) theory had three transformational behaviours and a later revision (Bass & Avolio, 1990) included a fourth to consist of: *Idealised influence* (sometimes called charisma) where the leader behaves in a way which instils respect, strong emotion and pride in followers, transmits a sense of mission, and identification with a leader who self-sacrifices to benefit followers, or shows courage and dedication. *Individualized*

consideration describes how a leader provides support and encouragement, treating followers individually and with respect by delegating projects to stimulate learning (for example). *Inspirational motivation* happens when a vision is successfully communicated in a way which engages the followers, and *intellectual stimulation* encourages followers to address problems with new ways of thinking, emphasising reasoned thought before action. The transactional behaviours are made up of *contingent reward*, which uses reward as incentive for appropriate action; *active management by exception*, which looks for mistakes in task performance to then implement rules to avoid this in future and; *passive management by exception* where contingent punishment or other corrective action is used to deal with obvious substandard performance.

Transformational leaders inspire trust, admiration, respect and loyalty in their followers and consequently followers are motivated to go beyond their job commitments. Bass (1985) suggests that this motivation comes from the leader facilitating follower awareness of important task outcomes, encouraging team outcomes over self-interests (or aligning the two), and fulfilling followers' 'higher order' needs such as their need for self-efficacy (Meijman & Mulder, 1998; Ryan & Deci, 2000). Transactional leadership, in contrast, is based much more on formal exchanges between leaders and employees where work processes are followed as a result of leader interventions (such as approving desired activities and disapproving variations from expected standards); as a consequence, discretionary effort is less likely in relation to transactional than transformational leader behaviour. According to Bass (1985), an effective leader will use a combination of both transformational and transactional leadership behaviours (in contrast to Burns, (1978) who saw the constructs as operating orthogonally). In order to measure levels of these constructs Bass (1985) developed the Multifactor Leadership Questionnaire (MLQ) which has since been in wide use (Lowe et al., 1996).

In a meta-analysis of transformational leadership research using the MLQ, Lowe et al. (1996) found that transformational leadership styles, particularly 'charisma', significantly predicted work unit effectiveness. Moderating variables of the relationship were the hierarchical level of leadership, the organisational setting, and also the type of outcome variable used to measure effectiveness. For example, correlations with follower ratings of the leader's effectiveness were generally higher than correlations with objective performance measures or ratings from superiors. Lowe et al. (1996) suggest that this may be due to follower ratings being a narrower measure of performance, and that common method bias results in inflated effect sizes. Nevertheless, they note that while the 'true' effect size may not be captured, there is a consistent relationship between transformational leadership and effectiveness regardless of outcome measure used. Judge & Piccolo (2004) performed another meta-analysis examining transformational, transactional, and laissez-faire leadership (an extension of the theory describing 'non' leadership or leaders who avoid making decisions or taking action). They

again found significant relationships between transformational leadership and measures of effectiveness including group and organisational performance, follower job motivation, and follower job satisfaction.

Kirkpatrick and Locke (1996) showed that under laboratory conditions, ‘visioning’ behaviour produced higher ratings of trust, charisma and intellectual stimulation in ‘followers’ who also set higher performance goals. However clarifying appropriate work procedures had stronger effects on some measures including follower job satisfaction and performance. Yukl (2015) summarises the large body of research on transformational leadership by noting that few studies investigate the underlying influence processes involved in the relationship between leader behaviours and various measures of performance, although theoretical propositions can be made. For instance, transformational behaviours are thought to increase self-efficacy (Sosik, Kahai, & Avolio, 1998), personal identification (Yukl, 2015), intrinsic motivation (Bono & Judge, 2004) or creativity (McColl-Kennedy & Anderson, 2002). It is noteworthy that in relation to the research question in this thesis, transformational leadership theory dominates the literature on leadership in healthcare (Wong, Cummings, & Ducharme, 2013; Wong & Cummings, 2007).

2.7 Ethical leadership

‘Ethical’ theories of leadership explore the extent to which leadership is driven by ethical beliefs, and describe associated behaviours, values and underlying motives (Trevino, Brown, & Hartman, 2003). Ethical theories attempt to explain leadership in relation to the integrity (or otherwise) of leaders and how this integrity influences leadership behaviour, although how integrity is conceptualised is the subject of debate (Trevino, Weaver, & Reynolds, 2006). Ethics can include honesty and similarity between values and actions – where those values are based on justifiable moral reasoning (Becker, 1998).

An influential ethical leadership theory is *servant leadership* (Farling, Stone, & Winston, 1999; Graham, 1991; Greenleaf, 1977; Smith, Montagno, & Kuzmenko, 2004), which described a leader *servicing* their followers, nurturing, empowering, and defending them as a result of careful attention and understanding. The use of empowerment is championed over dominance, and the relationship between the leader and follower is characterised by trust through honesty, as well as displaying behaviour which matches the (moral) values espoused. The relationship between moral values and action must be sustained, even when this undermines organisational performance. Servant leaders are thought to inspire similar qualities in their followers, seeking to delegate work that is meaningful and inspiring, and championing corporate social responsibility (Greenleaf, 1977). Benefits of servant leadership are proposed to be increased employee trust, loyalty, satisfaction, perceptions of procedural justice, as well as

willingness to accept and perform requests from the leader. Research on servant leadership is limited, although relationships with organisational citizenship behaviour, commitment, and self-efficacy have been found (Liden, Wayne, Zhao, & Henderson, 2008; Neubert, Kacmar, Carlson, Chonko, & Roberts, 2008; Walumbwa, Hartnell, & Oke, 2010). However, ethical dilemmas may arise for servant leaders in situations of organisational instability. Economic pressure may force organisations to make cuts, forcing the leader to choose between employee well-being and organisational objectives (Schneider & George, 2011).

Another influential theory of ethical leadership is *authentic leadership* (Avolio, Gardner, Walumbwa, Luthans, & May, 2004; Gardner, Avolio, Luthans, May, & Walumbwa, 2005; Ilies, Morgeson, & Nahrgang, 2005), which arose from the positive psychology movement (Seligman, 2002). Authentic leadership theory combines previous theories of leadership effectiveness with ethical leadership theory, although descriptions of authentic leadership vary (Ilies et al., 2005; Luthans & Avolio, 2003; Shamir & Eilam, 2005). Authentic leadership is characterised by consistency in values and actions, high self-awareness, positive self-regulation and behaviour, and positive psychological capital (e.g. hope, optimism, trust). Avolio, Gardner, et al. (2004) speculate that the interest in authentic leadership stems from a belief that ‘authentic leaders’ play a greater role in society than simply organisational achievement. The positive core values of authentic leaders are proposed to motivate their behaviour and encourage follower development, in much the same way as that proposed by servant leadership (Avolio & Gardner, 2005). However, authentic leadership differs from servant leadership in that it includes elements of self-regulation behaviour, drawn explicitly from the positive psychology literature (Avolio & Gardner, 2005). Issues for authentic leadership include problems of definition; lack of clarity about how certain leadership-follower processes operate; inadequate specification of how contextual variables influence leader-follower-outcome relationships; and too little explanation of the potential antecedents of authentic leadership (Gardner, Cogliser, Davis, & Dickens, 2011).

Thus far we have treated leadership as an undifferentiated entity though some more recent theoretical discussions have distinguished between different hierarchical levels of leadership. Indeed, a major gap in the literature on leadership is the fact that leadership is treated in this undifferentiated way, though clearly follower behaviours and perceptions are likely to be different depending on the status of leaders in the organisation, for example, whether they are senior leaders or first line supervisors. Consequently, the next section will focus on an area of leadership that is less well-researched and theorised: senior level leadership.

2.8 Senior leadership

Senior management leadership has been shown to be important, particularly to organisational outcomes (Finkelstein et al., 2009), yet the vast majority of the theory and research literatures neglects this aspect of leadership (Carter & Greer, 2013). Senior leaders sit at the apex of their organisations and are faced with complex demands pertaining to the running of an organisation (Carter & Greer, 2013). Finkelstein et al. (2009) propose a variety of domains which fall under the remit of top executives. These include both *internal and external activities*, as the leaders identify useful information from external sources (e.g. political landscape, and current affairs) and incorporate this information into their organisations to mitigate against, or benefit from, changes in the external environment. In addition, they are charged with *strategy formulation, implementation, and context creation*. Strategy formulation involves making strategic decisions which can, for example, gain competitive advantage for the organisation, increase organisational productivity or organisational effectiveness, or reduce costs (Ansoff, 1965; Porter, 1980). The implementation of strategy involves allocating resources, setting procedures and policy, and creating an organisation which is driven by a strategic vision (Galbraith & Kazanjian, 1986; Quinn, 1980). Context creation relates to those senior leadership practices which develop organisational culture and climate, involving reward, measurement and staffing procedures, which are then enacted throughout the organisation by first line managers and leaders. The final dimension, *substance and symbols*, describe the symbolic nature characterising everything done by top executives. Although specific work tasks are often used to describe the work executives perform, Finkelstein et al. (2009) argue that many actions are symbolic, such as appearing as the face of the organisation in advertising campaigns, or holding ceremonies to express gratitude for exceptional achievements. Moreover, they propose that every action carries some symbolic context, as observers constantly try to attach meaning to actions which convey underlying intentions or values of the executive.

Senior leadership therefore has huge potential to influence organisational functioning. Despite this, there is a paucity of research on senior leadership and particularly in healthcare organisations (Carter & Greer, 2013). For example research into the symbolic actions of executives is practically non-existent (Finkelstein et al., 2009). Of the existing literature, the majority of senior management theories focus on strategic leadership, and stem from the upper echelons theory (Carpenter, Geletkanycz, & Sanders, 2004; Donald & Phyllis, 1986; Hambrick & Mason, 1984; Hambrick, 2007). However, strategic leadership as a concept is relatively recent compared to other leadership theories (Cannella & Monroe, 1997), having emerged predominantly in the 1980s. It is a topic that, in part, may have been a response to increased globalisation, international competition, and technological and social change (Carpenter, Sanders, & Gregersen, 2001; Kim & Mauborgne, 1991). Moreover, previous reviews have

criticised what little research into senior leadership does exist (Boal & Hooijberg, 2000; House & Aditya, 1997).

Although there are relatively few empirical studies on senior leadership, some progress has been made (Carter & Greer, 2013). The impact of strategic leadership on organisational level performance can be seen from a number of studies. Smith, Carson, and Alexander (1984) looked at a sample of Methodist ministers in charge of their church, and showed that those ministers who had previous managerial experience were also more effective in their current roles, compared with other ministers. Pfeffer and Davis-Blake (1986) found similar results in a study of professional sports team coaches. However, these studies both yielded relatively small effect sizes of leadership influence. Finkelstein et al. (2009) suggest that the effect top executives can have on their organisations depends on the amount of discretion they are afforded. The organisational direction and structure may be completely dependent on the senior leadership team, completely outside their control, or may be a product of a number of influences. This idea has found some support from research assessing situational variables and their relationship with senior leadership and organisational performance. For example, one study showed that higher strategic conformity of the senior management team was associated with higher organisational performance in an uncertain, rapidly changing environment, but not in more stable environments (Geletkanycz & Hambrick, 1997). Other studies have shown that the level of heterogeneity (or homogeneity) in senior management teams relates to organisational performance over time, with heterogeneous teams performing better longitudinally, while homogeneous teams perform better in the short-term (Murray, 1989) (although research findings are inconsistent (Finkelstein et al., 2009)). Other characteristics of senior leaders have been found to influence organisations, including that senior leadership team values influenced subsequent organisational innovation (Hage & Dewar, 1973); that CEO transformational characteristics related to senior leadership team goal congruence, and subsequent organisational performance (Colbert, Kristof-Brown, Bradley, & Barrick, 2008); and that internal or external recruitment of senior leaders affects the degree of organisational change during that leader's initial tenure (Helmich & Brown, 1972).

Overall however, research on senior leaders is inconsistent, and much more research is needed in this area, in relation to a variety of variables. For example, the relationship of leader values and organisational outcomes (Miles, 2007), leadership style and organisational performance (Carter & Greer, 2013), or understanding senior leadership influence across a range of work environments (Finkelstein et al., 2009). The research question in this thesis relates to the context of healthcare, with an intention to examine the influence of both senior and other leadership, and therefore provides an opportunity to begin to address some of the gaps in the literature. We now turn to a review of the leadership in healthcare literature.

2.9 Leadership in healthcare¹

Denis, Lamothe, and Langley (2001) suggest that studying leadership and strategic change in a healthcare setting provides ripe ground for advancing knowledge. They argue that health care must work toward divergent objectives including individual patient care, cost control and population health, and work is performed by an equally diverse workforce incorporating policy makers, managers, clinical professionals, administrators and community groups, and as such, leadership and strategic change processes will have real and measurable impact.

This review will summarise the literature on leadership in healthcare which, it is agreed by reviewers, is limited (Hartley, Martin, & Benington, 2008; Kim & Newby-Bennett, 2012; West et al., 2015), and what research does exist often suffers from a lack of methodological rigour (West et al., 2015). However, despite this, there are some important findings.

Where theory has underpinned healthcare research, it has generally been transformational leadership theory (Wong et al., 2013; Wong & Cummings, 2007). In two systematic reviews of the relationship between leadership and patient outcomes, Wong, Cummings, and Ducharme (2013) and Wong and Cummings (2007) showed that only 20 studies achieved appropriate methodological design, careful sampling and measurement, and statistical procedures. Of these studies, fewer than half were based on explicit theories of leadership. These studies were mainly based on transformational leadership (Bass, 1995), although one was based on leader-member-exchange (LMX) (Katrinli, Atabay, Gunay, & Guneri, 2008), one on servant leadership (Nagel & Anderono, 2012), and one on authentic leadership (Wong & Giallonardo, 2013).

Gilmartin and D'Aunno (2007) reviewed the healthcare literature between 1989 and 2005, finding a preoccupation with transformational leadership and its relationship with a range of organisational factors including turnover intentions, organisational climate, staff satisfaction, and team performance. Other research has identified links between transformational leadership and work-life balance (Munir, Nielsen, Garde, Albertsen, & Carneiro, 2012), patient (and staff) satisfaction (Wong et al., 2013), error reporting (Turunen, Partanen, Kvist, Miettinen, & Vehviläinen-Julkunen, 2013), patient safety (McFadden, Henagan, & Gowen, 2009), staff well-being (Apekey, McSorley, Tilling, & Siriwardena, 2011), and nursing outcomes (Cummings et al., 2008).

¹ This section draws from a systematic literature review performed by West et al. (2015) into leadership in healthcare, of which I co-authored.

Authentic leadership theory has informed a small number of studies. One study examining authentic leadership in healthcare found relationships with employee engagement, employee trust in leader, as well as the level of care employees believed was provided (Wong, Laschinger, & Cummings, 2010). A follow up study found similar positive relationships between authentic leadership in healthcare and work-life balance, trust, and patient outcomes (Wong & Laschinger, 2013). In addition, authentic leaders were said to improve performance by increasing nurse empowerment (Wong & Laschinger, 2013).

The work on leadership in healthcare also takes a narrow focus on the type of leader assessed. Much of the focus has been on nurse leaders and nurse managers (Gilmartin & D'Aunno, 2007) with findings suggesting their positive leadership is associated with satisfaction among nurses as well as low turnover rates. Nurse managers who were seen as being more involved with staff, engaging emotionally, and facilitating effective work practices through encouraging participative decision making (for example) were also linked with lower rates of stress among staff, as well as better team effectiveness, individual efficacy, and employees who felt empowered. This relationship was thought to operate through the promotion of flexible working practices, collaboration, and encouraging personal values to match organisational values, subsequently improving performance (Gilmartin & D'Aunno, 2007).

Other research into nurse leaders has also shown similar relationships. For example, staff satisfaction and the quality of care patients experience is predicted by nurses' perceptions of nurse leaders (Van Bogaert et al., 2013); and medication administration errors were linked with poor nursing leadership (Van Bogaert et al., 2014). Wong et al. (2013) suggest that medication errors as well as mortality rates are linked with leadership. Poor leadership also predicted burnout, leading to increased turnover, while good leadership (characterised as transformational) was associated with higher staff satisfaction as well as lower turnover intentions (AbuAlRub & Alghamdi, 2012). Similar relationships between transformational nurse leaders and staff retention were also found by Weberg (2010), who argues that burnout and attrition among nurses is a significant issue in healthcare.

Much of the research in healthcare has been correlational, presenting relationships between leadership and various indicators of leadership, with little description of the processes by which leadership is thought to operate. Some studies have employed a theoretical basis to shape predictions. For example, Katrinli et al. (2008) suggested a link between leadership and organisational performance and identification, through opportunity for participative decision making based on LMX theory. Support was found based on the quality of the leader – follower relationship, and the authors argued that staff empowerment may be a key factor in healthcare,

an argument supported by Wong et al.'s (2013) review. The research into job involvement by Katrinli et al. (2008) explained the influence of job involvement as a result of internal and external motivational factors relating to LMX.

Another important predictor of healthcare outcomes, related to leadership, is staff engagement (West & Dawson, 2012), and a review by Dickinson, Ham, Snelling, and Spurgeon (2013) found that variation in engagement across a number of organisations predicted organisational performance. Qualitative research has also identified engagement amongst medical staff as an important predictor of trust performance (Dickinson & Ham, 2008).

The influence leaders have on the effectiveness of teams has been frequently noted (Dickinson et al., 2013; Haward et al., 2003; Øvretveit et al., 2002). The clarity of team objectives, levels of participation, commitment to quality of care, and support for innovation were all linked with clarity of leadership (in healthcare) in a large study of healthcare staff (West et al., 2003). In addition, where team leadership is shared, objectives are also shared, which has been shown to lead to team effectiveness (D'Innocenzo, Mathieu, & Kukenberger, 2014; Wang, Waldman, & Zhang, 2014).

2.9.1 Senior management leadership in healthcare

In the healthcare literature, there is little research into senior leadership. The majority of research on leadership in healthcare is of nurse managers. However, some research has looked at governing boards and their strategic operations. Veronesi, Kirkpatrick, and Vallasca (2012) found that boards containing a higher percentage of clinicians tended to have better organisational outcomes, including patient satisfaction and mortality. Goodall (2011) warned against inferring causality regarding the influence of clinical leadership at board level, suggesting that it may be that higher performing hospitals are more likely to pick clinicians as board members, rather than clinicians improving hospital performance. The governing board's practices are likely to influence the organisational structure and Jiang, Lockee, Bass, and Fraser (2009) found a specific focus on quality at the board level was linked with hospital performance outcomes. Focusing on the chief executive officer (CEO), both Goodall (2011) and McFadden et al. (2009) showed a link between CEO style and experience, and hospital performance. In one of the larger studies which measured senior management leadership, Shipton, Armstrong, West, and Dawson (2008) looked at 86 hospital trusts in the UK NHS, examining the relationship between leadership and staff satisfaction, external assessments of quality of care, and turnover intention, finding that leadership was an important predictor of each outcome. In addition, they showed that the influence leadership had on the climate for quality of care mediated those relationships. Moreover, they found that employee ratings of top management were linked to external ratings of clinical governance, and both top management ratings as well

as supervisor ratings were linked with staff satisfaction. Importantly, ratings of supervisors had a stronger relationship with satisfaction than senior leadership ratings, however, these results were correlational and did not test relationships over time.

The research reviewed here describes links between leadership in healthcare and various healthcare outcomes, providing a base from which to work from, both practically and to a lesser degree – theoretically. However, as noted at the start of this section, caution must be used before generalising this research more widely in healthcare, as much of this body of research suffers from serious methodological weaknesses (Brady Germain & Cummings, 2010; Cummings et al., 2008; Gilmartin & D'Aunno, 2007; Wong et al., 2013). These problems include small sample sizes; a lack of theoretically driven hypotheses underpinning the research; the absence of important control variables - meaning observed relationships may be due to unmeasured factors; a lack of longitudinal research; inadequate survey measures (neglecting validity and reliability); and an over-reliance on self-report data creating further measurement issues. In addition the majority of research focuses on the individual level and very few studies look at the group or organisational level. The research in this thesis aims to address all these methodological weaknesses and thereby, provide a substantial contribution to research in this area.

2.9.2 Culture and climate

One area where leaders have been shown to have a significant influence is on organisational culture and climate, and research into organisational culture in healthcare suggests some important relationships. Whilst some of this research does not specifically mention leadership, general literature cites leadership as the most important influence on culture and climate, which subsequently influences organisational outcomes (e.g. Parry & Proctor-Thomson, 2002).

Before addressing culture and climate in healthcare, a distinction between the two concepts is first useful. Organisational climate and organisational culture are often used interchangeably, and conceptual understanding and definitions overlap (Patterson et al., 2005). With that said, organisational climate has been described as the events that are experienced by employees (Schneider, 2000) and concerned with behaviour. For example, the climate for innovation would describe the patterns of behaviour which promote (or inhibit) innovative working practices. On the other hand, culture represents the reasoning for organisational climate. Culture represents employees' shared norms and values which direct interaction between employees, management, and clients (Svyantek & Bott, 2004). Climate, concerning employee perceptions of organisational processes and informing subsequent behaviour, can be

thought of as the visible manifestation of culture (Schein, 1985; Schneider, 1990). With that distinction made, the topic of culture and climate in healthcare can be addressed.

2.9.2.1 Organisational Culture

The competing values framework (Quinn & Rohrbaugh, 1983) is widely used to examine organisational culture in healthcare (West, Topakas, & Dawson, 2014) which proposes four different culture 'types'. A 'clan culture', characterised by togetherness, participation, positive morale, and tradition, was shown to be related to patient satisfaction across 125 hospitals in the USA, while a culture based on hierarchy (characterised by bureaucracy and regulation) was predictive of low patient satisfaction (Meterko, Mohr, & Young, 2004). The advantage of clan cultures was argued to be due to an emphasis on team work, as well as an avoidance of rigid regulations, so enabling innovations that could improve patient experience. Indeed, Parry and Proctor-Thomson (2002) found that transformational leadership had an indirect effect on organisational culture and climate for innovation in the public sector.

Other research into culture in healthcare has led to similar conclusions. Gerowitz, Lemieux-Charles, Heginbotham, and Johnson (1996) looked at top management team culture across 265 UK, USA and Canadian hospitals, finding that organisational performance was contingent on (and consistent with) the culture adopted by the top management team. In other words, the focus of the top management team may have directed the focus of the organisational culture, which in turn produced performance results in line with that focus. Finkelstein, Hambrick, and Cannella (2009) warn against making causal connections however, noting that top management teams may be just as likely to be influenced by organisational culture and strategy, as to influence culture and strategy themselves. Finkelstein et al. (2009) also note that the values held by senior management leadership are likely to influence their strategic decisions and permeate the organisational culture.

Davies, Mannion, Jacobs, Powell, and Marshall (2007) showed that the values of leaders and managers across 189 UK hospitals were correlated with organisational culture and subsequent organisational performance. Collective cultures focused on team work had fewer patient complaints and higher staff engagement, while cultures which focused on control, output, and goal oriented leadership suffered from lower staff engagement and a higher number of patient complaints. It is possible this was due to the high demands this type of goal oriented culture placed on staff. In addition, organisational size was related to culture, with a general, negative trend between size and culture in terms of positive outcomes. Indeed, Hartmann et al. (2009) note that the culture championed by an organisation's leaders can lead to beneficial practices. When leaders encourage innovation, participation, and openness to experience as part of an entrepreneurial culture, this gives staff a valuable resource to address patient needs as and

when they arise. Conversely, rigid, hierarchical rules and regulations may suppress this support for innovation and subsequently reduce organisational learning as well as patient safety. This may be a result of a reluctance to seek new ways of problem solving out of fear of the consequences of negative outcomes.

The research into culture in healthcare does not reveal any single solution, or 'best' culture for healthcare performance. Different cultures had different outcomes across a range of settings. One relatively consistent finding was that dominant hierarchical cultures characterised by target driven goal setting, as well as rigid rules and regulations, were frequently associated with poorer organisational performance, which is worryingly evident in many healthcare organisations (West et al., 2014).

2.9.2.2 Organisational Climate

Culture may be considered to be driven by senior management leadership, given the influence of top management in the research described. Climate, however, may be more dependent on immediate supervisors in healthcare settings as research suggests (McAlearney et al., 2011). For example, the human resources (HR) practices of hospitals have been shown to predict mortality rates in 52 acute hospitals in the UK (West, Guthrie, Dawson, Borrill, & Carter, 2006). HR practices related to this finding included team working, participation in decision making, and training, demonstrating a link between leadership, climate, and outcomes in healthcare. In another large study (Aiken et al., 2011), approximately 100,000 nurses in 1,406 hospitals in nine countries were assessed revealing links between organisational culture and quality of care, although the self-report nature of this study means that this finding would be more robust if objective data were also used. Nevertheless, nurses reported that nurse managers and leaders were influential in creating work environments which encouraged (or discouraged) a high quality of patient care.

It is important to address the influence of senior management leadership on climate as well, although less is known about this area in the healthcare context. In one study using semi-structured interviewing techniques, as well as diary studies, McKee et al. (2010) analysed eight UK healthcare organisations finding relationships between senior management leadership values and organisational perceptions of safety, staff well-being, perceptions of management, and support for innovation and involvement. Those organisations which were found to have higher performance outcomes also had a higher level of staff engagement, more involvement in decision making and a perception of shared leadership, as opposed to an emphasis on hierarchical structure. This qualitative study offers a strong basis from which to assert that senior management leadership is influential in shaping organisational climate and culture, in addition to first line supervisors and immediate managers.

2.10 Conclusions on gaps and how this research will address them

This review has presented an overview of the literature into leadership, as well as a description of research on leadership in healthcare. However, much of this research has focused on mid-level and low-level leadership. A large gap in the literature exists because there is so little research (particularly in healthcare contexts) on the relationship between senior-level leadership and organisational outcomes (Carter & Greer, 2013; Finkelstein et al., 2009). Furthermore, much of the research that has been performed with mid and low-level managers lack academic rigour, although higher quality studies do suggest that leadership is important for organisational outcomes in healthcare setting (Cummings et al., 2008; Wong et al., 2013). Inadequacies, as noted above, include studies with an atheoretical orientation; very small samples; predominantly cross-sectional research; measures of unknown psychometric rigour; a reliance on self-report data including outcome variables; and most research focused on the individual rather than organisational level of analysis (with some notable exceptions). The research described in this thesis aims to avoid these problems by using theory to guide the hypotheses and research methods; a large sample of health care respondents across many organisations; measures with good psychometric properties; and the use of both self-report and 'hard' outcome data. Moreover this research seeks to address another gap by providing a systematic analysis of the effect of senior leadership, as well as front-line supervisors on organisational outcomes. In addition, it will outline the processes by which these relationships operate by assessing the impact different levels of leadership have on employee factors, and understanding if the relationship between leadership and organisational outcomes can be described as a result of the relationship between leadership and mediating variables that directly affect employees' work experience.

Drawing from the literature presented here, and for the basis of this review, a working definition of senior leadership as opposed to the general definition of leadership is useful. Finkelstein et al. (2009) suggest that senior leadership is different from leadership more generally because senior leadership denotes substantial organisational decision-making responsibilities in addition to the more traditional interpersonal and transactional relationships associated with leadership. They note that the traditional interpersonal relationship perspective of leadership is not made irrelevant by the significant organisational decision making responsibilities associated with senior leadership, but that some executives may operate without as frequent a need to perform such relational roles as their more junior counterparts.

Senior leaders are those who are more concerned with significant strategic organisational decision making as opposed to the less onerous decision making and relationship management associated with leading smaller units. The salient aspects of senior leadership

highlighted by Finkelstein et al. (2009) include attention to internal and external activities; strategy formulation, implementation, and context creation; and (creating) substance and symbols. Therefore the working definition which will be used in this thesis is:

Senior leaders are those who lead their organisations via a combination of organisational decision-making based on internal and external factors, managing interpersonal relations, as well as developing and implementing organisational culture.

The next chapter presents the theoretical model which will underpin the research methodology.

3 Theoretical model

3.1 Introducing the Job Demand Resource Model (JD-R)

In this chapter, the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007; Demerouti, Bakker, De Jonge, Janssen, & Schaufeli, 2001) will be presented as a theoretical framework to study the area of leadership in healthcare. The JD-R model is particularly suited to work environments which are linked with psychological strain as well as work pressure (Van der Doef & Maes, 1999). The healthcare setting is characterised by both high psychological strain and work pressure, and consequently the JD-R model is appropriate for a healthcare setting. Furthermore engagement has been found to be an important indicator of work outcomes in healthcare environments (West & Dawson, 2012). The JD-R theory captures the dynamics of stress and engagement (amongst other variables) and uses these components to make predictions about outcomes (Demerouti, Bakker, De Jonge, et al., 2001). Additionally, high stress environments are associated with burnout, and burnout is often associated with poor healthcare performance (Demerouti, Bakker, Nachreiner, & Schaufeli, 2000). Specifically relevant to healthcare is the JD-R model's explanation of how engagement can mitigate the negative effects of high stress environments, particularly in healthcare (Schaufeli, Salanova, Bakker, & González-romá, 2002; West & Dawson, 2012).

The JD-R model was derived from previous work on the effects of job characteristics on employee well-being (e.g. Johnson & Hall, 1988; Karasek, 1979; Siegrist, 1996). Bakker and Demerouti (2007) argue that much of the work on how job characteristics influence employee well-being has been based either on the demand-control model (Karasek, 1979) or the effort reward imbalance model (Siegrist, 1996). They argue that these models lack predictive value as they limit the set of variables considered, and consequently do not represent as wide a range of job roles. Furthermore, these models focus on negative outcomes whereas Bakker and Demerouti (2007) argue for the inclusion of both positive and negative well-being predictors. The demand-control and effort reward imbalance models have been influential however and I therefore consider these before moving on to describe the JD-R model and justifying why it is selected as an appropriate framework to examine the research questions in this thesis.

3.1.1 Job Demand-Control model

The Job Demand-Control (JDC) model argues that there are two main job components which are fundamental in influencing health at work (Van der Doef & Maes, 1999). These components are termed job demands and job control (Karasek, 1979). Job demands are defined as components of work load or work pressure, such as time pressure or role conflict (Schnall, Landsbergis, & Baker, 1994). Job control can be described as the ability of an individual to

control their own work decisions or tasks. Job control has often been termed ‘decision latitude’, which incorporates the two components of skill discretion and decision authority (Van der Doef & Maes, 1999). These components refer to the ability of a person to accomplish their work tasks and the control they have over decisions which affect their working practices.

This model proposes that that job strain (or job stress) is caused by experiencing high job demands, in combination with low control over the job. Having more control or decision latitude over one’s work process is proposed to reduce this strain, while increasing learning, whereas high psychological demands are proposed to increase learning as well as stress (Van der Doef & Maes, 1999). This relationship is represented in Figure 3-1, where high demand-low control represents the ‘strain’ hypothesis while the high demand-high control represents the ‘learning’ hypothesis. The strain hypothesis argues that high demands with low control will lead to negative psychological outcomes (strain) and produce highly stressful environments. The learning hypothesis proposes that high demand coupled with high control will create an ‘active job’ environment that encourages learning, motivation and skill development. Opposite to the active job environment is the ‘passive job’ environment which is characterised by low demand, low control. This conceptualisation would apply to healthcare, as the outcome of psychological strain is associated with burnout which is both common and salient in healthcare environments (Demerouti et al., 2000).

However, support for the JD-C model is limited according to a review by Van der Doef and Maes (1999), who argue that the evidence for job control in limiting the effects of high job demands is inconsistent. In addition, this model has been criticised for not encompassing a wide enough range of variables which may influence job strain. Johnson and Hall (1988) argue that social support, for example, is an important factor which may act as a buffer against the negative impact of job strain. Accordingly, they proposed the Job-Demand-Control-Support model.

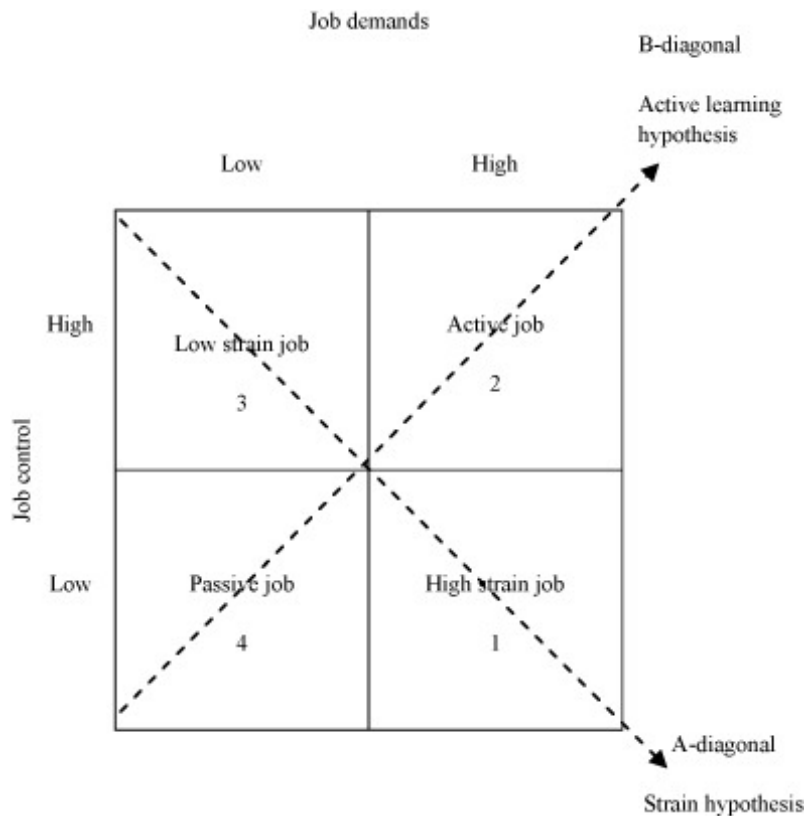


Figure 3-1: Job-Demand-Control model (adapted from Karasek, 1979)

3.1.2 Job Demand Control Support Model (JDSCS)

The job demand control support model (JDSCS) (Johnson & Hall, 1988) makes similar predictions to the JD-C model but introduces the element of social support as a buffer against the negative effects of psychological strain. In this model, the iso-strain hypothesis and buffer hypothesis replace the strain hypothesis and learning hypothesis seen in Figure 3-1. The iso-strain hypothesis predicts that where high demand, low control, as well as low support (isolation) co-exist, less favourable work environments are created which lead to burnout (iso-strain), while the buffer hypothesis predicts that social support will moderate the negative effects of this high strain (Johnson & Hall, 1988).

Van der Doef and Maes (1999) performed a detailed review of the evidence supporting both the JD-C and JDSCS theories. They argue that the strain (or iso-strain) hypothesis addresses a different question to the control (or buffer) hypothesis. Strain hypotheses are concerned with examining whether high strain situations lead to the most negative employee outcomes, whereas the control or buffer hypotheses argue for an interactive effect of demands and control. However, they note that this necessarily means the control hypothesis is a derivation of the strain hypothesis. More simply stated, the difference between the strain and control hypotheses

are whether the effects of demands and decision latitude are due to a combination of each variable, or a result of only one (Schnall et al., 1994). The review by Van der Doef and Maes (1999) highlights that this has implications for practical recommendations. By following the control hypothesis, one may conclude that an increase in job control is a sufficient recommendation, regardless of the level of demand, whereas in the strain hypothesis the negative effects of high demand remains regardless of the level of control (Van der Doef & Maes, 1999). The evidence presented in their review supports the strain/iso-strain hypothesis, in particular for the high demand – low control situation predicting psychological strain and illness (e.g. Karasek, 1979; Schnall et al., 1994), but support for the control/support hypothesis was less consistent (de Jonge & Kompier, 1997; Van der Doef & Maes, 1999). Bakker and Demerouti (2007) argue that this indicates the role of job control may only partly moderate the negative impact of high demands. They suggest that both models neglect some alternative causes of strain across a range of occupations, for example, individual differences.

3.1.3 Effort-Reward Imbalance Model (ERI)

Another model which may address the concerns raised in the JD-C(S) model is the effort-reward imbalance model (ERI) (Siegrist, 1996). This builds on the JDC(S) model, shifting the focus from control to reward, termed the ‘reciprocity of exchange’ where high cost – low gain environments at work create stress. The effort made at work is described as a component of a socially organised process of reward. By exerting effort, potential benefits to emotional and motivational self-regulation are achieved, contingent on social reward or exchange, termed ‘reciprocity’. These rewards are categorised into three types; money, esteem, and status control. A lack of financial reward or social approval from colleagues and supervisors for high effort is likely to lead to demotivation and stress. Status control can be described as career opportunities and Siegrist (1996) argues that individuals’ occupations often provide a self-regulatory function, supporting one’s sense of self-esteem or efficacy in society. When one’s occupation is under threat, emotional distress is said to occur. This can take many forms including a demanding but unstable job, or performing to a high standard with little or no prospects of career advancement. This model adds a personality characteristic to the JDC(S) model, which focus solely on job characteristics (Siegrist et al., 2004). People who are described as overcommitted to their work with a high need for approval are thought to be more vulnerable to the negative effects of high cost – low gain environments. This added psychological component is said to moderate the effect of any effort – reward imbalance (Siegrist et al., 2004), and has received some empirical support (de Jonge, Bosma, Peter, & Siegrist, 2000).

However, Bakker & Demerouti (2007) argue that these models are overly simplistic in their approach. They argue that many demands and resources influence employee well-being which go beyond psychological and physical job demands, rewards and lack of autonomy. They list emotional demands, supervisor support and performance feedback as some possibilities. Furthermore, they suggest that the static nature of these models also raises concerns. The JDC(S) models focus on autonomy and social support while the ERI model centres on money, esteem and status control. Bakker and Demerouti (2007) point out that different work situations are likely to elicit different combinations of variables influencing well-being. Autonomy will not always be the prevalent factor in all work situations which influences well-being, for example. Likewise, salary, esteem or status control neglect other important influences which may be more (or less) important, depending on the working environment. Similarly, the amount of work pressure or intrinsic or extrinsic effort are not always the most important factors to people at work; emotional demands, for example, are relevant to some roles such as teachers, doctors and nurses (Bakker & Demerouti, 2007; Bakker, Schaufeli, Sixma, Bosveld, & Van Dierendonck, 2000), while an air traffic controller will be exposed to mental demands of processing information (Demerouti, Bakker, De Jonge, et al., 2001).

The inflexibility of these models reduces their relevance to a wide range of occupations and thus, their predictive ability. In order to address these issues the Job Demands-Resources Model was developed (Demerouti, Bakker, De Jonge, et al., 2001)

3.2 Job Demands-Resources Model (JD-R)

Demerouti, Bakker, Nachreiner, and Schaufeli (2001) first introduced the Job Demands-Resources (JD-R) model to look at burnout and engagement as a function of the demand-control theory. Building on the JDC(S) model, the JD-R model conceptualises an individual's well-being as a consequence of their individual job characteristics and proposes that this impacts upon outcomes, such as performance (Bakker & Demerouti, 2007). However, the model incorporates the assumption that different occupations will have specific characteristics associated with job stress. These characteristics fall into two general categories; job demands and job resources. In addition each characteristic is proposed to be differentially related to certain outcomes. Job demands are said to be related to exhaustion and burnout while job resources (lack of) are related to (dis)engagement (Demerouti, Bakker, Nachreiner, et al., 2001) (Figure 3-2).



Figure 3-2: Job Demand Resource Model (Bakker & Demerouti, 2007).

Job demands can be at the organisational, social, psychological or physical level and can require sustained psychological (both emotional and cognitive) and physical effort, with associated psychological or physiological costs (Bakker & Demerouti, 2007). For example, emotionally demanding work with vulnerable clients, role ambiguity, high workload and work pressure, or harsh physical conditions are among the range of possible demands (Bakker & Demerouti, 2007; Lee & Ashforth, 1996). Demands are said to elicit a performance-protection strategy in people in response to environmental threats to performance such as heat, workload or time pressure (Hockey, 1993). This protection strategy is argued to activate the sympathetic nervous system (autonomic and endocrine) and/or increase subjective effort as a way of compensating for the extra demand. The increase in activation or effort is then proposed to produce physiological costs for the individual, associated with the amount of extra activation or effort required. The effect this has on task performance is seen through compensatory costs (the amount of activation or effort required), strategy adjustments such as focusing attention on particular tasks or redefining tasks, and through subsequent actions resulting from fatigue (including risky decisions or subjective fatigue) termed fatigue after effects. If this pattern continues for an extended length of time, employees' mental and physical resources are drained, which can lead to exhaustion, burnout and related health problems (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, et al., 2001).

The proposed relationship between job resources and disengagement (Demerouti, Bakker, Nachreiner, et al., 2001) was based on the idea of health-promoting factors (called

resources), which are able to mitigate the negative effects of high workload. Job resources are concerned with physical, social, psychological or organisational job factors which are either/or:

- Functional in achieving work goals.
- Reduce job demands and the associated physiological and psychological costs.
- Stimulate personal growth, learning, and development (Bakker & Demerouti, 2007: pg. 312.)

Examples of resources are (but not limited to) job control, participative decision making, opportunity for promotion, task variety, and support from colleagues or family (Demerouti, Bakker, Nachreiner, et al., 2001). Moreover, they can be at the organisational level (e.g. job security), the individual level (supervisor support), how the work is organised (e.g. job design, opportunity for involvement in one's role), or the task level (e.g. feedback regarding one's work). When these resources are not available, high environmental stressors linked with job demands can reduce motivation as a result of an inability to achieve work goals. This reduction in motivation is thought to be self-protecting, guarding the individual from suffering any further negative impact (e.g. frustration) of not achieving these goals.

Bakker and Demerouti expanded the model in 2007 by adding a positive motivational aspect, rather than the negative focus on the relationship between a lack of resources and disengagement. Resources are not only important in reducing the harmful effects of excessive job demands therefore, but are also important independently, for example by increasing work motivation or by facilitating the achievement of work goals. Bakker and Demerouti (2007) argue this stems from the conservation of resources (COR) theory (Hobfoll, 2001), associating motivation with accumulation and maintenance of resources. Consequently, resources are desired not only as a means to reduce job demands, but in their own right, or as a method of obtaining or protecting other desirable resources.

Resources are therefore proposed to be able to increase intrinsic motivation by encouraging growth, learning and development, as well as being able to cultivate extrinsic motivation through facilitating work goals. Intrinsic motivation is thought to stem from basic human needs including the need for relatedness, competence and autonomy (see Ryan & Deci, 2000). The need for competence for example, may be met through effective feedback, increasing one's knowledge about the role and facilitating learning and competence. Similarly, the need for relatedness or belonging may be satisfied by a supportive social work environment, while involvement in decisions about one's job is likely to meet the need for autonomy. The positive benefits of suitable resources may lead to high work engagement and task performance (Bakker & Demerouti, 2007, 2008).

Extrinsic motivation is also thought to be fostered by job resources. It is proposed that where job resources are plentiful, a work environment is created which encourages enthusiasm for one's tasks. This is based on Meijman and Mulder's (1998) effort-recovery model which proposes that where control over task demands is possible, effort will be expended in order to complete the task. It is when effort is expended but the recovery process is constrained somehow, that associated psychological and physiological costs occur. In the absence of any obstruction to this recovery, willingness to dedicate effort to the task is observed (Meijman & Mulder, 1998).

The JD-R model argues that adequate job resources will increase the likelihood that work tasks will be completed. This could be through support from co-workers or supervisors for example, which may increase the ability to complete the task and achieve work goals. The JD-R argues, therefore, that (through internal and external motivational processes) job demands will lead to engagement, while a lack of resources will lead to cynicism. This relationship is depicted in Figure 3-2.

While the model proposes the effects of job demands and job resources on burnout and disengagement separately, it also argues that an interaction between the two factors will have an effect on strain and engagement. Job resources are said to be able to buffer the negative effects of job demands on strain across a broad spectrum of work environments with their associated demands and resources, which addresses the simplistic and static problems of the JDC(S) models (which argue autonomy or social support as the prevalent factors in buffering the demand – strain relationship). The JD-R model can be applied to a wide range of work environments therefore, as it does not propose certain variables will be most important for buffering the effects of job demands on employee well-being across all work situations. Rather, it is flexible in its approach, seeing the work environment as determining the types of demands which are most salient, as well as the most effective resources to act as a buffer. For example, role clarity, supervisor support, autonomy over decisions affecting work, a reduction in work pressure, or useful feedback can all act as effective buffers against the harmful effects of job demands.

Finally, the JD-R model proposes that the effects of job resources are most salient when job demands are high. The conservation of resources theory (Hobfoll, 2001), which partly informs the JD-R model, suggests that people will be motivated to acquire and protect resources which are highly valued, and threats to or loss of these resources will result in stress. Resources are said to be used by people to prevent the loss of other resources. In addition, where a large number of resources are available, this is said to facilitate individuals actively risking resources in order to acquire further resources (resource gain), as the loss of resources is less problematic.

Conversely, where resources are low and unlikely to meet the job demands, loss is experienced, which leads to a 'loss spiral' (Hobfoll & Shirom, 2001). The effect of resource loss is said to elicit a stronger response than conditions of resource gain (Hobfoll, 2002), implying that where demands are high, the effects of (plentiful) job resources will produce the strongest motivational influence (Bakker & Demerouti, 2007).

Evidence for the JD-R model is extensive and covers a range of occupations. Schaufeli and Taris (2014) note that it is currently regarded as one of the leading models of work stress alongside the JDC(S) and ERI models. They argue that the flexibility of the JD-R model is the key advantage over the other models and it is this that makes it more desirable. Bakker, van Veldhoven, and Xanthopoulou (2010) looked at over 12,000 employees across 148 different organisational settings. They found support for the hypothesis that positive work attitudes are strongest in high resource – high demand environments, suggesting that this creates conditions which foster growth, learning and development, and subsequently increases task enjoyment as well as employee motivation. In addition, this wide ranging study supports the idea that the theory is applicable to a large range of occupational contexts.

Other research has supported this in contexts including call-centre employees (Bakker, Demerouti, & Schaufeli, 2003), healthcare workers (Schaufeli & Bakker, 2004), and industrial workers (Bakker, Demerouti, de Boer, & Schaufeli, 2003). Additionally, the theory has found support across different countries with different cultures and in different work contexts. For example, support for the theory has been found in Chinese family owned business workers (Hu & Schaufeli, 2011), Finnish teachers (Hakanen, Bakker, & Schaufeli, 2006), and Australian volunteers (Lewig, Xanthopoulou, Bakker, Dollard, & Metzger, 2007).

The model has also been shown to apply to a range of occupational outcomes, as a result of the demand – resource relationship influencing engagement and burnout (and subsequently their effect on occupational outcomes). These include accurate predictions about organisational commitment (Hakanen et al., 2006), work safety (Nahrgang, Morgeson, & Hofmann, 2011), but perhaps most relevant to this research, absenteeism (Schaufeli, Bakker, & Van Rhenen, 2009) and turnover intentions (Bakker, Demerouti, de Boer, et al., 2003; Bakker, Demerouti, & Schaufeli, 2003).

Some gaps still remain in the model however. For example, Hu, Schaufeli, and Taris (2011) looked at the interactions between demand and resources, finding mixed support. Resources were found to have a buffering effect on job demands among healthcare professionals in only one of two samples. Crawford, LePine, and Rich (2010) note that the type of job demand may influence the effect resources have on preventing burnout or promoting engagement. Demands that are seen as a hindrance are likely to decrease motivation regardless

of resources, while demands that are viewed as challenges are likely to increase engagement. The detailed nature of these possible relationships is unclear. Individual differences for example are said to be able to influence engagement, which Crawford et al. (2010) argue is not captured by the JD-R. Moreover, and perhaps most important to this research, they argue that leadership (specifically transformational leadership) is an important predictor of engagement, which has not received appropriate attention in the literature. Rather, they suggest that leadership has been limited in its operationalisation to supervisor support, feedback, and coaching. They recommend further research to determine the relationship between leadership (amongst other antecedents) and engagement.

In addition, the research has been predominantly cross sectional with relatively few studies examining the longitudinal effects. The motivational aspect of the model was supported in a three year study looking at Finnish dentists. Over time, job resources were found to predict engagement which was associated with organisational commitment, while job demands predicted burnout which was associated with depression (Hakanen, Schaufeli, & Ahola, 2008). Another longitudinal study by Schaufeli et al. (2009) found similar evidence supporting the resource – engagement pathway as well as the demand – burnout pathway over a 1 year period in Dutch managers. In addition, this study found the model was able to accurately predict absenteeism over time. However, the longitudinal effects of job resources as a buffer against job demands was not found in a one year follow up study conducted with University staff in Australia (Boyd et al., 2011).

The JD-R model seems particularly appropriate in offering a theoretical grounding for the research described in this thesis, focusing as it does on how leadership affects outcomes in healthcare environments. Healthcare workers have been identified as being particularly vulnerable to stress (Firth-Cozens, 2003) and burnout (Bakker et al., 2000; Garman, Corrigan, & Morris, 2002); and engagement in healthcare has been linked with positive outcomes (West & Dawson, 2012). In addition, the United Kingdom healthcare environment (as well as others internationally) is made up of a large number of different occupational roles and organisational contexts, such as ambulance service, administrative commissioning departments as well as hospitals and general practitioner practices. The flexible nature of the JD-R model makes it ideal to capture the varying resources, demands and relationships of these different organisational and occupational contexts. Indeed, Haynes, Wall, Bolden, Stride, and Rick, (1999) argue that studying the effects of demands and resources in the context of is theoretically important as those working in this context are exposed to the full range of work factors outlined as influences on strain (whilst other contexts may only have limited exposure).

Nurses, for example, have inherent role ambiguity according to Hemingway and Smith (1999), as demands placed on them can be conflicting, coming from both administrative and medical staff. These opposing demands can lead to role conflict which may result in unsafe performance (Nahrgang et al., 2011). Additionally, the applicability of the theory to predict a range of outcomes is important as this research will make predictions about the effect of job demands and job resources (through the engagement – burnout pathways) on job satisfaction, patient satisfaction, absenteeism and rates of employment stability.

The current research also aims to address some of the gaps identified in the literature in relation to the JD-R theory. By introducing the concept of leadership, and separating senior leadership from supervisor support, identified as a gap in the literature by Crawford et al. (2010), this research can provide some insight into the influence of these different leadership factors on engagement, burnout and associated outcomes.

Moreover, by including longitudinal analysis, this research contributes by adding to the slender body of longitudinal work on the theory which exists, and provides information on the relationship between leadership, resources and demands, and their effects on burnout and engagement over time. Finally, by performing this research in the NHS, important practical, as well as theoretical lessons may be learned.

3.3 Current research context and question

Having described the theoretical background informing this research, I will now go on to illustrate the organisational context of the research, highlighting research questions and presenting the key variables and outcomes which will be used to shape the hypotheses.

The central question of this thesis is how and to what extent leaders influence organisational outcomes in the NHS. As discussed in the literature review, leadership is an important predictor of a range of outcomes across organisations. In addition, the specific hierarchical level of leadership has also been found to differentially affect organisational outcomes, although research into the organisational effects of senior level leadership is sparse (Avolio, Zhu, Koh, & Bhatia, 2004). Much of the research into leader influence on employee behaviour has been focused on supervisors, and the effects of senior leadership behaviour is less well understood (Jansen, George, Bosch, & Volberda, 2008).

There is considerable evidence to suggest that leaders can influence organisational processes. For example, Susskind, Kacmar, and Borchgrevink (2003) showed how supervisor support positively influenced employee customer orientation, while Liao and Chuang (2007) demonstrated the relationship between transformational leadership behaviours and employee performance in a similar setting. However these studies do not describe relationships between

senior level leadership and employee behaviour, and research at this level of leadership is needed (Liao & Subramony, 2008). There is a significant gap in our understanding of the relative importance of senior and front line leadership upon organisational processes and outcomes. If the general leadership literature has such a gap in relation to knowledge of whether, and how senior leadership behaviours affect employee behaviour, and how that translates into organisational outcomes, then the healthcare literature has a veritable chasm. In a recent review, West et al. (2015) argued that there are relatively few robust studies which take a quantifiable approach to assessing the influence of leadership on healthcare outcomes. The majority of the literature included in the review looked at leadership at the supervisory level, revealing an almost complete neglect of studies of senior leadership. This represents a large theoretical gap, since the level and mechanisms of leadership influence on organisational outcomes are central to our theorising. In addition to this, the JD-R theoretical model presented above lacks a description of how senior leadership influences demands and resources (or is a demand or resource itself), presenting further argument for its inclusion in this research (Crawford et al., 2010). Supervisor support has been included as part of the JD-R model as an influence on organisational outcomes in a number of studies, but the effect of senior leadership is less researched and theorised (Avolio, Zhu, et al., 2004). An assessment of the literature clearly points to a need to assess the influence of senior leadership on employee behaviour as well as on organisational outcomes. I now move on to describe the outcome variables that will be used in this research.

3.3.1 Outcome measures

Understanding the influence of leadership on outcomes in healthcare requires the use of relevant organisational outcomes. As healthcare is a service-oriented industry, the behaviour and well-being of healthcare employees is vital to the effective functioning of healthcare organisations. The Care Quality Commission, which is an independent regulator of health and social care in England, publishes annual ratings assessing the effectiveness of NHS organisations. The assessments they consider most important in healthcare are organised around five key areas; safety, effectiveness, responsiveness, leadership, and patient experience (caring). Because of the centrality of employee experience and performance to each of these outcomes, the Care Quality Commission focuses its attention particularly on the leadership of organisations – the ‘Well Led’ domain. This reflects a belief that leadership is likely to play a key role in influencing employee behaviours which, in turn, will be the key influence on patient outcomes. This research therefore focuses on employee job satisfaction, absenteeism, employee turnover and on patient experience, since these are key elements in the service delivery chain in healthcare. We briefly consider each of these outcomes below.

Job satisfaction

A key function of leadership is to create a work environment which engenders motivation among employees. When leaders are supportive, enabling and positive, employees are likely to have higher levels of job satisfaction as well as performing effectively (Harter, Schmidt, & Hayes, 2002). As job satisfaction is an important predictor of employee well-being and organisational performance, this is the first outcome that will be included in the research.

Absenteeism

This research study also includes absenteeism in healthcare organisations as it is a common outcome measure used to assess organisational performance and staff well-being in the literature (Mowday, Porter, & Steers, 2013). Absenteeism is linked with efficiency and quality in the NHS (West & Dawson, 2012) and the costs of absenteeism are estimated at £10.3 million on average each year for each NHS organisation, costing the sector £1.75 billion annually (Boorman, 2009). Absenteeism is argued to be a barometer of the well-being of the workforce. Indeed, it has been linked with employee engagement in a study by West and Dawson (2012), who showed that high employee engagement at work was associated with lower rates of absenteeism. They showed that one standard deviation increase in engagement (as measured in their study) amounted to a saving of £150,000 for an acute trust as a result of lower absenteeism. Reducing absenteeism is an important focus for leaders in healthcare, and this should be achievable by improving employee well-being.

Employee turnover

Related to absenteeism (Mowday et al., 2013) is employee turnover, which is often taken to be another indicator of the experience of employees in relation to well-being. It is also an important measure of organisational performance since replacing staff is costly, not only in terms of recruitment processes but also in terms of lost organisational knowledge and experience. Employee turnover is a ubiquitous area of research and theorising in organisational psychology; it is a critical issue for both leadership and organisations, due to the huge cost implications of high turnover (e.g., in relation to recruitment and training) (Allen, Bryant, & Vardaman, 2010; Geurts, Schaufeli, & Rutte, 1999; Hancock, Allen, Bosco, McDaniel, & Pierce, 2011; Mowday et al., 2013). The importance of absenteeism and turnover, theoretically, are clear, because they are both tightly linked with employee well-being and the financial outcomes of the organisation.

Patient satisfaction

Previous studies have shown that in service industries, employee well-being and engagement are associated with better employee performance, which are, in turn, linked with better customer experience (e.g. Salanova, Agut, & Peiró, 2005). Patient experience can be seen as a consequence of employee well-being and performance. Thus, improvements in employee well-being should be associated with improvements in patient experience, a fundamental aspect of healthcare. In fact, it can be argued that patient experience is the most important aspect of healthcare, as this is inherently linked with clinical outcomes (Black & Jenkinson, 2009; Doyle et al., 2013). Doyle et al. (2013) summarised 55 studies of patient experience, which showed a consistent relationship between patient experience, clinical safety and effectiveness outcomes across a range of healthcare settings. Moreover, they found patient experience was associated with both self-reported and objectively measured health outcomes, adherence to treatment and medication programs, and utilisation of healthcare resources including preventative care measures. Based on their research they concluded that patient experience should be treated as a central pillar of quality in healthcare. Patients who rate their experience more positively, are likely to make their decisions based on a range of criteria including the medical outcome of their treatment, as well as psychological aspects. Therefore, reported patient satisfaction will be included as a key outcome measure.

These four outcomes have been identified as key to assessing the influence of leadership on employee behaviour and how that subsequently influences organisational performance. The process by which leadership influences these outcomes is also critical and it is to these questions I now turn.

3.3.2 Derivation of hypotheses

The research question addressed in this thesis is to what extent and how does leadership affect outcomes in healthcare. The research explores the extent to which senior leadership and supervisor support affect healthcare outcomes. It also explores the mediating mechanisms by which each level of leadership might affect these outcomes. Generally, senior leadership and supervisor support are situated at different hierarchical levels in organisations (Avolio, Zhu, et al., 2004). They are likely to influence employee behaviour and subsequent organisational performance differentially. However, this does not mean that they will be influential in isolation from one another, rather they are likely to interact to influence the motivation and effectiveness of the workforce. Indeed, senior leaders influence organisational practices which in turn facilitate or constrain managers' efforts within the work context (Becker & Huselid, 1998).

In relation to the question of how leadership² affects healthcare outcomes (the mediating mechanisms), this research examines five variables, suggested by the JD-R model, which are fundamental to employee behaviour through their impact on employee well-being and on organisational performance. These variables are:

- job design
- engagement
- work pressure
- opportunity for involvement
- work-life balance

These variables are well established in theoretical models and well-researched. They have been highlighted in previous research as being key to influencing and understanding employee motivation, performance and well-being. The arguments for their inclusion will be described in detail shortly. This research will argue that both senior leadership and supervisor support influence these key variables, and that it is through their influence on these variables that leadership affects the organisational outcomes described above. These variables are therefore hypothesised to act as mediators between leadership and outcomes.

However, the process by which leadership influences these mediators may be different for senior leadership and supervisor support, although, I propose that the influences these mediators have on the outcome variables should be very similar, regardless of whether the source of influence is senior leadership or supervisor support. In other words, it is suggested that both senior leaders and supervisors are likely to influence for good or ill work life balance, but the means by which they achieve these influences are different. Senior leaders may set organisational level policies, but supervisors are likely to decide on the implementation of these at local levels and act accordingly. Thus senior leaders may determine the broad parameters of organisational policies in relation to work life balance, but supervisors will dictate the way in which these are practically implemented in relation to (for example) front line staff.

The hypotheses relating to senior leadership will be presented first, followed by the hypotheses relating to supervisor support. Hypotheses will be presented systematically in relation to each outcome variable in order to maintain a structured approach.

² For clarification, leadership refers to the general concept of leadership, whereas senior leadership or supervisor support refer to the level of leadership.

3.3.3 Senior leadership

3.3.3.1 Job satisfaction

Senior leadership is hypothesised to have a positive influence on employee job satisfaction. Senior leaders have the potential to influence the whole organisation from their position at the top of organisational hierarchy, giving them considerable organisational power (Finkelstein & Hambrick, 1996). The power they hold is thought to be able to influence their organisation in a number of ways. For example, their influence is said to affect organisational culture, which can lead to performance outcomes (Tsui, Zhang, Wang, Xin, & Wu, 2006). Organisational culture is also likely to influence job satisfaction (Lok & Crawford, 2004), highlighting one way in which senior leadership will affect employee well-being. Strategically, they may inspire an engaging vision among their colleagues, which can facilitate any organisational reform they seek (Alimo-Metcalfe & Alban-Metcalfe, 2001). This inspiring vision can be a motivational tool increasing engagement and associated job satisfaction. In addition, senior leaders who exhibit transformational leadership characteristics are thought to be directly influential on common work stressors, including workload and interpersonal relations (Bass & Avolio, 1994). These examples align with the JD-R model where leadership behaviours can be theorised as a buffer against job demands and thereby alleviate work stress, or a resource that positively influences motivation, the effects of which should be seen in employee satisfaction. And clearly satisfaction is an important employee outcome as it has connections with work performance and overall organisational performance (Harter et al., 2002).

In addition to the broad relationship proposed between senior leadership and job satisfaction, the mechanisms by which this relationship occurs are important. Senior leadership is likely to have an influence on *job design*, as predicted by the Job Characteristics Model (Hackman & Oldham, 1976, 1980). This model proposes five core job characteristics (variety, identity, significance, autonomy, and feedback). Job design describes the nature of the work, how this work is structured and what tasks are required by employees in order to complete this work. An increase in the structure and clarity of job design should be associated with job satisfaction by satisfying need fulfilment (including need for autonomy). Job design might provide high autonomy in a role, for example allowing individuals to schedule their work, select the appropriate resources or tools they require (Buttigieg & West, 2013) as well as clearly communicating the roles employees are expected to perform. Theoretically, this is consistent with the JD-R model as a resource, and clearly links with the concept of need for autonomy. Also, similarity between what is experienced at work and what is expected should reduce potential stress from ambiguity and lead to confidence in one's role with associated increases in

satisfaction. Therefore good job design should be associated with high satisfaction. Senior leadership is likely to have a large effect on job design, as senior leaders are responsible for making decisions that affect the design of jobs throughout an organisation. By promoting good job design across the organisation, senior leaders will, I propose, have a significant influence on employee job satisfaction.

Job engagement is the next variable through which senior leadership is hypothesised to influence job satisfaction. Senior leadership may influence levels of employee engagement by articulating a compelling strategic narrative, shaping the leadership culture, empowering employees to manage their work proactively, and building trust and a sense of fairness within their organisations. This is likely to be achieved in a number of ways. For example, a key task of senior leadership is to guide the organisation in the direction they believe is most beneficial. This involves communicating their vision of what the organisation seeks to achieve, and how this can be accomplished. Transformational or charismatic leadership characteristics are linked with inspiring this vision among employees (Bass & Avolio, 1994). They can do this by creating an organisational culture which fosters belief in their vision, as well as implementing the appropriate organisational structure which provides the necessary resources employees require to achieve work goals. This is likely to facilitate employees aligning their own beliefs with that of the organisation, setting personal and professional goals to match, which will in turn increase engagement (Lok & Crawford, 2004). The vision communicated from senior leadership, as well as the implementation of the organisational structure to support it, acts as a resource in the JD-R model. Employees who understand and believe in the direction the vision describes are likely to have more trust in their leadership which will lead to higher engagement (Babcock-Roberson & Strickland, 2010; Gardner et al., 2005). In addition, employees who feel senior leaders empower them to take decisions about their working practices, should further increase trust in leadership as well as satisfy their need for self-efficacy. This increase in organisational commitment, the alignment of personal and professional values and work goals, and the appropriate organisational structure to provide the resources to achieve these work goals, should increase employee engagement. In turn, an increase in employee engagement is predicted to increase job satisfaction.

Indeed, the link between engagement and satisfaction is well documented (e.g. Harter et al., 2002). One reason that engagement is linked with satisfaction is through the activation of personal resources (Bakker & Demerouti, 2008). Personal resources are positive self-evaluations which reflect employees' resilience and ability to control their environment successfully (Hobfoll, Johnson, Ennis, & Jackson, 2003). An increase in personal resources is associated with increases in satisfaction, goal setting, motivation, and career ambition (Judge, Van Vianen, & De Pater, 2004). Theory suggests this is due to an increase in an individual's

self-regard and goal concordance. Goal concordance reflects the degree to which goals reflect an individual's personal goals and values, and is thought to increase goal-directed effort which increases the likelihood of goal attainment. Achieving these goals will lead to an increase in well-being, and consequently satisfaction (Vasalampi, Salmela-Aro, & Nurmi, 2009). Therefore, it is expected that senior leadership will increase employee engagement, which in turn will increase reported satisfaction.

Job engagement is theorised here as a mediating rather than an outcome variable such as job satisfaction. This is because engagement is conceived to include vigour, advocacy and absorption (Bakker, Schaufeli, Leiter, & Taris, 2008) which involves action components that are likely to influence outcomes such as job satisfaction, absenteeism, turnover and patient satisfaction. Thus, the vigour or energy one brings to work will likely affect patient satisfaction; advocacy of the organisation is likely to affect likelihood of leaving the organisation because, talking positively about the organisation will reduce the chances the individual will leave, and positive absorption in the job is likely to be associated with lower absenteeism, all other things being equal. Engagement is also operationalised in the NHS as including making changes in the workplace, another strong action component, which is likely to affect outcomes such as job and patient satisfaction. Engagement is therefore treated here conceptually and theoretically as a mediator rather than an outcome variable. We now go on to consider the third of the mediators, work pressure.

From the theoretical perspective of the JD-R model, a key task of senior leadership is to create an appropriate organisational environment which increases the amount of resources available, but also minimises harmful effects of job demands, so as to reduce the effects of burnout (Demerouti, Bakker, Nachreiner, et al., 2001; Hambrick, 2007). The level of *work pressure* an employee experiences is directly related to job satisfaction (Demerouti, Bakker, & Bulters, 2004; James & Tetrick, 1986). Senior leadership decisions affect the way in which organisational goals are distributed, as well as the ability of employees to select resources or create their own goals based on what they feel is achievable. The influence of senior leadership on organisational structure and processes, I propose, will (partly) shape organisational complexity as well as task challenges (Hambrick, Finkelstein, & Mooney, 2005). Some of these decisions will stem from performance pressure placed on senior leadership by key stakeholders, combined with the available resources they are able to distribute through the organisation. This in turn can impact the pressure senior leadership places on managers to deliver results, which they can then report to these stakeholders (Hambrick et al., 2005). This increase in pressure is generally distributed through the organisation as a whole, thereby increasing work pressure experienced. Alternatively, senior leaders may place high demands on their organisation through their own motivation to see their organisation succeed. Those who have strong

aspirations for organisational success may increase the demands they place on their organisation as a whole, independent of contextual demands (Hambrick et al., 2005).

The effects of these demands are predicted to be associated with organisational outcomes including job satisfaction. Where high demands are placed on the workforce, a number of effects are probable. The JD-R model proposes that where control over these demands is possible, effort will be expended in order to complete the task. It is when effort is expended but the recovery process is constrained somehow, that associated psychological and physiological costs occur. In the absence of any obstruction to this recovery, willingness to dedicate effort to the task is observed (Meijman & Mulder, 1998). The JD-R model argues that adequate job resources will increase the likelihood that work tasks will be completed, which will satisfy the need for self-efficacy, resulting in an increase in job satisfaction. This could be through support from co-workers or supervisors for example, which may increase the ability to complete the task and achieve work goals. The JD-R argues that (through internal and external motivational processes) work pressure combined with adequate resources (including recovery time) will lead to engagement, while a lack of resources will lead to cynicism. Therefore, where work pressure is reported as being high, this indicates a lack of resources to meet work demands and is associated with a reduction in job satisfaction. Senior leadership which reduces the amount of work pressure experienced should therefore indirectly increase job satisfaction. We now turn to the fourth mediator in this research.

A concept related to work pressure is the amount of opportunity employees have to influence (or make) decisions which affect their own working practices – *opportunity for involvement*. Senior leadership is expected to influence the amount of opportunity for involvement in work decisions available throughout the organisation. By communicating the organisational vision and informing the workforce about matters which concern them, as well as giving them the freedom to contribute to, or make decisions which are relevant to their work, then both individual and organisational benefits will occur (Shadur & Kienzle, 1999). Leaders who have a good understanding of their organisation (as well as of the environment where their organisation is situated) are likely to be able to effectively deploy management strategies which delegate power to employees (Shadur & Kienzle, 1999). In this case, perceptions that leaders are supportive of empowering staff should be associated with perceived opportunity for involvement. Opportunity for involvement is viewed as a resource in the JD-R model and may also act as a buffer against job demands. Where demand is high, perceived opportunity for involvement, will allow employees to make decisions which enable them to manage the demand in order to reduce strain. In addition, by giving employees the autonomy to manage their own workload, goal attainment will be more likely, which will satisfy employee needs for self-efficacy and autonomy, thereby increasing well-being and job satisfaction (Lawler, 1986). The

prediction here, then, is that senior leadership will positively influence opportunity for involvement and, in turn, this will be linked with an increase in job satisfaction.

The final variable included in this research is *work-life balance*. Senior leadership is likely to have significant influence on employee work-life balance. Work-life balance is associated with work pressure, where a highly demanding job with long hours prevents a good balance between work and home life. Senior leaders are able to facilitate flexible working through organisational policies that promote good work-life balance (Maxwell, 2005). Cascio (2000) proposes that work-life balance stems from working conditions driven by the employer. These are arrangements and practices which are introduced by senior management (or by supervisors who have been given the freedom to implement these practices by senior management) which promote a healthy balance between work and home life (McCarthy, Darcy, & Grady, 2010). These can include job sharing, flexi-time, working from home, childcare, or work-life support initiatives where training programs for example, can teach employees to manage stress or time effectively (McCarthy et al., 2010). The implementation of these arrangements and practices is often voluntary (McCarthy et al., 2010) and consequently their inclusion into the organisational structure will be primarily driven from senior leadership. This research predicts then, that more positive ratings of senior leadership will be associated with better ratings of work-life balance.

The effect that work-life balance has on employee well-being is well documented (Parasuraman, Purohit, Godshalk, & Beutell, 1996). Work interference with home life is associated with a decrease in both overall satisfaction as well as job satisfaction (O'Driscoll, Ilgen, & Hildreth, 1992). The amount of time available to devote to home life as well as work life is seen as a resource in the JD-R framework. However, when this resource is limited and the time needed for job demands interferes with home-life demands, this is associated with negative affective reactions (reduced satisfaction and commitment) associated with increased psychological strain (O'Driscoll et al., 1992). Therefore, where the balance between work and home-life demands is healthy, then job satisfaction should increase.

Based on these arguments the following hypotheses follow:

1. Hypothesis 1
 - a) Senior leadership will have a positive indirect effect on job satisfaction through job design. Senior leadership will be positively associated with job design and job design will be positively associated with job satisfaction.
 - b) Senior leadership will have a positive indirect effect on job satisfaction through engagement. Senior leadership will be positively associated with

engagement and engagement will be positively associated with job satisfaction.

- c) Senior leadership will have a positive indirect effect on job satisfaction through work pressure. Senior leadership will be negatively associated with work pressure and work pressure will be negatively associated with job satisfaction.
- d) Senior leadership will have a positive indirect effect on job satisfaction through opportunity for involvement. Senior leadership will be positively associated with opportunity for involvement and opportunity for involvement will be positively associated with job satisfaction.
- e) Senior leadership will have a positive indirect effect on job satisfaction through work-life balance. Senior leadership will be positively associated with work-life balance and work-life balance will be positively associated with job satisfaction.

3.3.3.2 Patient satisfaction

Next I turn to patient satisfaction as a key outcome variable. The relationship between senior leadership and the proposed mediating variables are exactly the same as argued above. For example, the way senior leadership influences work pressure will be the same if we are theorising about the relationship between work pressure and job satisfaction or work pressure and patient satisfaction. It is the relationship between the proposed mediating variables and the outcome variables where there will be differences (although many of the arguments will be similar). For example, work pressure is likely to affect job satisfaction by different means to the way work pressure affects patient satisfaction. For this reason, the proposed link between senior leadership and the mediating variables will not be repeated here, or in any of the following outcomes, because they have been articulated in detail above. Rather, the remaining sections dealing with outcomes will focus on the relationships between the mediators and outcomes, enabling the hypotheses in relation to each of these outcomes to be derived.

The first mediating variable I discuss is job design and how job design mediates the relationship between senior leadership and patient satisfaction. It is predicted that job design will have a positive relationship with patient satisfaction. Carayon et al. (2006) suggest that errors and inefficiencies in patient care are a result of inadequate systems management rather than the consequence of individual error. They suggest that the way jobs are designed explicitly links with employee outcomes. In healthcare, job design can impact employee health, safety, stress, burnout, satisfaction and organisational outcomes (Carayon et al., 2006). Based on ergonomics and engineering research, the work system model (Carayon & Smith, 2000)

proposes that a *person* executes *tasks* using a range of *tools and technology*. This execution is set within a *physical environment* which is dictated by *organisational conditions*. Each of these components interacts with, and influences one another, resulting in outcomes, including performance (organisational and employee), health and safety and well-being. The structure of this *work system* model in healthcare will affect the *process* by which healthcare is provided to the patient and subsequently, patient *outcomes*, therefore shaping what the patient experiences. Carayon et al. (2006) emphasize the link between employee outcomes and patient outcomes as a result of the work system design. Any changes to this system will result in either positive or negative changes to the experience of patient care through the effects on employee behaviour and well-being (depending on its design and implementation) (Carayon et al., 2006). Based on this, reported job design should be linked with patient satisfaction. Where job design (and its implementation) is rated better, patient satisfaction should also be higher.

The link between engagement and patient satisfaction should follow a similar argument to that of job satisfaction. Following from the argument proposing a link between engagement and job satisfaction, a key element of job satisfaction will be the ability to perform one's role adequately. For example, a previous study found that healthcare professionals who are more satisfied with their jobs are more likely to form meaningful relationship with their patients (Rathert & May, 2007). Where appropriate resources and tools are available for staff to be able to meet their job demands this should increase both extrinsic and intrinsic motivation by presenting adequate opportunity to meet work goals and therefore, satisfy certain basic needs such as the need for competence (Ryan & Deci, 2000). Where individual growth, learning and development is possible through a high level of resources, alongside appropriate work demands from which to learn, this will increase intrinsic motivation (to learn) facilitated by extrinsic motivation (to meet work goals). Therefore, this increase in engagement should lead to an increase in performance which will be precisely what the patient experiences. Better performance outcomes as a result of highly motivated employees will lead to better ratings of reported patient satisfaction.

Alternatively, burnout is seen as the antithesis to engagement (Schaufeli et al., 2002). Where an abundance of resources leads to increases in motivation, a lack of resources leads to strain due to increased effort without the supporting resources. If this strain is consistently experienced, burnout can occur. Previous studies have shown that staff burnout significantly relates to patient satisfaction in healthcare settings (Garman et al., 2002; Vahey, Aiken, Sloane, Clarke, & Vargas, 2004). Therefore, high engagement should lead to an increase in patient satisfaction while low engagement should be associated with a decrease in patient satisfaction.

Work pressure is also expected to influence patient satisfaction. In order to complete work tasks effort must be expended, according to the JD-R model. Consequently, time is required to recover from effort expended (viewed as a resource). The JD-R model also proposes that where employees have autonomy over those work demands, this will be associated with a subjective experience of self-efficacy. However, when resources are too low to meet job demands and adequately recover from the effort expended, associated psychological and physiological costs occur (Meijman & Mulder, 1998). In this case the subjective experience will be of high pressure accompanied by a feeling of reduced capability to meet workload. In healthcare this workload is constituted by the clinical processes required to provide patient care. Where employees feel they are unable to meet the demands of patient care through lack of resources (be they emotional or physical) this will result in strain which is associated with reduced performance. Indeed, work pressure has been shown to significantly correlate with emotional exhaustion (Lee & Ashforth, 1996). Therefore, when staff experience high strain, they will be less able to deliver timely patient care, and patients will report low levels of patient satisfaction.

The relationship between patient satisfaction and employee opportunity for involvement is predicted to be positive. In the JD-R model, opportunity for involvement is a resource which can mitigate the negative effects of job demands (Nahrgang et al., 2011). Giving employees autonomy to make decisions which concern them can improve their work processes, reduce job demands and improve work outcomes through goal attainment. The improvement of these work processes and associated outcomes is likely to reduce the probability of strain, which should increase motivation (as described with engagement). This increase in goal attainment is characterised by an ability to improve the patient experience – a core aim for most healthcare staff. Goal attainment in healthcare is directly related to patient care, therefore increasing the opportunity for involvement in work decisions should increase goal attainment and subsequently improve patient care. This improvement in patient care will be accompanied by a positive patient experience, and associated reported patient satisfaction.

Finally, the relationship between employee work-life balance and patient satisfaction is also proposed to be positive. Again, following the arguments that propose work-life balance will relate to job satisfaction, patient satisfaction should also be a consequence. Where job satisfaction is high this is inherently linked with employees' need for competence being fulfilled through the attainment of work goals. Where work-life balance is strained and job demands interfere with satisfaction outside work, affective reactions are produced which result in low satisfaction and commitment (O'Driscoll et al., 1992). Lower satisfaction is likely to be associated with poor performance, which will be associated with poor patient care and therefore low levels of patient satisfaction.

Therefore, the following hypotheses are proposed in relation to patient satisfaction:

Hypothesis 2

- a) Senior leadership will have a positive indirect effect on patient satisfaction through job design. Senior leadership will be positively associated with patient design and patient design will be positively associated with patient satisfaction.
- b) Senior leadership will have a positive indirect effect on patient satisfaction through engagement. Senior leadership will be positively associated with engagement and engagement will be positively associated with patient satisfaction.
- c) Senior leadership will have a positive indirect effect on patient satisfaction through work pressure. Senior leadership will be negatively associated with work pressure and work pressure will be negatively associated with patient satisfaction.
- d) Senior leadership will have a positive indirect effect on patient satisfaction through opportunity for involvement. Senior leadership will be positively associated with opportunity for involvement and opportunity for involvement will be positively associated with patient satisfaction.
- e) Senior leadership will have a positive indirect effect on patient satisfaction through work-life balance. Senior leadership will be positively associated with work-life balance and work-life balance will be positively associated with patient satisfaction.

3.3.3.3 Absenteeism

As discussed at the beginning of the previous section on patient satisfaction, arguments for the link between senior leadership and mediating variables will not be discussed as they have already been described. The relationships between these mediating variables and absenteeism are presented here.

Job design is expected to have a negative relationship with absenteeism. Based on the JD-R model and the work system model described in the previous section (Carayon & Smith, 2000; Carayon et al., 2006), the way in which the person performs work tasks is largely influenced by the resources they have available, as well as the environment they work in. The structure of these work systems will have an effect on the subjective experience of employees. Poorly designed work systems are likely to be associated with high levels of work demands and low levels of resources available to meet those demands. This is proposed to be associated with

low levels of job satisfaction (as described above) through high employee strain. Strain and stress are associated with a poorer well-being and more days absent from work due to work related stress. Conversely, where job design is well thought out and implemented, based on the demands employees experience, and the provision of appropriate support to perform their tasks, this will be associated with low levels of strain and stress, therefore minimising the number of days of absenteeism due to psychological or physical stress from work related demands.

Engagement is predicted to have a negative relationship with absenteeism. Engagement can be seen as the antithesis of burnout (Schaufeli et al., 2002), which has been explicitly linked with absenteeism (Toppinen-Tanner, Ojajarvi, Väänänen, Kalimo, & Jäppinen, 2005). The effect burnout has on well-being is due to its effect on physiological functions such as cardiovascular disease (Melamed, Shirom, Toker, Berliner, & Shapira, 2006), as well as impairment of psychological capacity at work resulting in reduced performance and social relationships (Etzion, 1984; Russell, Altmaier, & Van Velzen, 1987). It is also associated with poor health habits such as excessive drinking or smoking resulting in a greater probability of illness (Schaufeli & Enzmann, 1998). Where engagement is high however, these effects are likely to be minimised alongside associated health costs. Therefore, because engagement is associated with low work-related ill health, work-related absenteeism should also be low.

Work demands without adequate resources will result in an increase in the subjective experience of work pressure as described above. High work pressure is associated with burnout resulting in poor performance and social relationships (Etzion, 1984; Russell et al., 1987). Poor performance and social support at work is predicted to have a negative effect on physical and psychological well-being, due to the lack of resources available to recover from the effort required to accomplish work demands (Meijman & Mulder, 1998). Therefore, where work demands are reported as high, this is likely due to individuals' subjective experience of not having the adequate resources to accomplish their work goals. The strain placed on people, as a result, is predicted to have a detrimental effect on their well-being and their physical and psychological health. Therefore, high work pressure will negatively impact individuals' health and well-being, resulting in high levels of absenteeism.

The relationship between opportunity for involvement and absenteeism is thought to be negative. The process by which this occurs is based on the JD-R model that sees opportunity for involvement as a resource which can mitigate the negative effects of job demands. In the same way I described in the section on patient satisfaction, autonomy over work decisions should be associated with better work processes, low levels of job demands and high levels of goal attainment. Good work processes and associated outcomes will be associated with low strain and, thereby, high motivation (as described with engagement). Where strain is low and

motivation is high, well-being will then also be good. Conversely, where strain is high and motivation is low, negative health outcomes (for the employee) are likely. High levels of opportunity for involvement will be associated with low levels of job strain, which in turn will be associated with low levels of absenteeism.

Finally, the relationship between employee work-life balance and absenteeism is predicted to be negative. The argument follows the same pattern as described in the previous sections. Where job strain is low, absenteeism will also be low. When work-life balance is unhealthy, strain is placed on employees' well-being through affective reactions to that strain (O'Driscoll et al., 1992). These affective reactions are thought to be related to components of burnout (Shanafelt et al., 2012), resulting in a high number of days absent from work.

Therefore, the following hypotheses are presented in relation to absenteeism:

2. Hypothesis 3

- a) Senior leadership will have a negative indirect effect on absenteeism through job design. Senior leadership will be positively associated with job design and job design will be negatively associated with absenteeism.
- b) Senior leadership will have a negative indirect effect on absenteeism through engagement. Senior leadership will be positively associated with engagement and engagement will be negatively associated with absenteeism.
- c) Senior leadership will have a negative indirect effect on absenteeism through work pressure. Senior leadership will be negatively associated with work pressure and work pressure will be positively associated with absenteeism.
- d) Senior leadership will have a negative indirect effect on absenteeism through opportunity for involvement. Senior leadership will be positively associated with opportunity for involvement and opportunity for involvement will be negatively associated with absenteeism.
- e) Senior leadership will have a negative indirect effect on absenteeism through work-life balance. Senior leadership will be positively associated with work-life balance and work-life balance will be negatively associated with absenteeism.

3.3.3.4 Stability

The final outcome used to assess the influence of senior leadership in healthcare is stability. As discussed previously, stability of the workforce is the converse of turnover.

Turnover is measured as the percentage of staff who leave their employment annually whereas stability is the percentage who remain in employment. Again, arguments for the link between senior leadership and mediating variables will not be discussed as they have already been described. The relationships between the mediating variables and stability are presented here.

The relationship between job design and stability is expected to be positive. The arguments are essentially very similar to those made in discussing the relationships between job design, job satisfaction and absenteeism. The design and implementation of work roles is a core part of the organisational structure, which directly affects the ability of a person to perform work tasks, relative to the resources they have available. According to the JD-R model, poorly designed work systems are likely to increase work demands while reducing the resources available to meet those demands (Bakker & Demerouti, 2014). Where job design is well thought through and implemented, this creates opportunity for growth, learning and development by providing adequate resources, as well as challenging work situations, which facilitate this growth. High levels of well-being, opportunity for growth and low ill health effects of work strain will be associated with high levels of job satisfaction. Where job satisfaction is high, turnover should be low. Employees who report a high degree of satisfaction with their jobs should feel their needs for competence, relatedness and autonomy are fulfilled (Ryan & Deci, 2000) and consequently see a change of employment as high risk, compared with the work experience they currently have. Although employees may feel it is possible that a change of employment may enhance the fulfilment of these needs, they are more likely to think that the risks associated with job change may reduce their fulfilment. Conservation of resources theory (Demerouti et al., 2004; Hobfoll, 1989, 2001), argues that the threat of resource loss is said to be greater than the pull of resource gain, as people strive to protect what they have (and value) over the acquisition of further resources (Demerouti et al., 2004). Therefore, where job design is high, stability should also be high.

Engagement is also predicted to have a positive effect on stability. As discussed above, an antecedent of engagement is the creation of an organisational culture which engenders intrinsic, as well as extrinsic, motivation through the distribution of resources (Bass & Avolio, 1994; Lok & Crawford, 2004). Engaged employees are said to be more likely to have personal goals and values aligned with that of the organisation (goal concordance) (Vasalampi et al., 2009). Therefore achieving their organisational work goals may be in line with their own career goals, resulting in satisfaction with their work. Highly engaged employees are therefore more likely to regard their work environment as stimulating and supportive, as well as facilitating growth, learning and development. The mechanism by which engagement facilitates stability is the same as the mechanism by which job design facilitates stability. Based on the conservation of resources theory (Hobfoll, 1989, 2001), the threat of resource loss is more salient than the

attraction of resource gain. Where work engagement (and consequently job satisfaction) is high, people may attach more value to their current job than the potential gains to be made by changing their job. Changing jobs is associated with losing the resources associated with current employment, as well as the risk that a new role may not replace these. Therefore, where engagement is high, stability should also be high. However, where engagement is low, based on the same argument, resources are likely to be low and consequently the threat of resource loss will not be as salient as the resource gain potential from changing roles.

The rationale for how work pressure will relate to stability follows closely from the previous arguments. According to the JD-R model, work demands create strain where resources available to recover are low. This creates a situation where a high degree of work pressure is experienced, resulting in strain (psychological and/or physical). High strain is likely to result in physical or psychological stress associated with a reduction in motivation. The combination of low motivation with low resources is said to result in resource loss spiral (Demerouti et al., 2004; Hobfoll, 2001), where recovery from the effort expended to achieve goals is not possible, causing reduced capacity to maintain goal achievement. Additional resources are often the result of goal achievement, and as resources are said to be related to each other in a web like fashion, the loss of resources can result in further resources being depleted or failing to be acquired, with each loss resulting in a further reduction of capacity to deal with upcoming demands, creating a loss spiral (Demerouti et al., 2004). Additionally, resource loss spirals prevent switching to a 'resource gain' cycle (Demerouti et al., 2004). As argued in the previous sections, resource loss is said to be more salient than resource gain, therefore where resources are abundant the risk of resource loss is high and stability should also be high. Conversely, where work pressure is high, resource loss (and resource loss spirals) is probably already being experienced, and therefore, resource gain by switching employment will be more attractive.

The relationship between opportunity for involvement and stability is predicted to be positive. Previous research for example, has found that low levels of employee involvement were associated with higher turnover intentions (Scott, Bishop, & Chen, 2003). Opportunity for involvement may be a resource which can potentially facilitate resource gain. In the same way that resource loss spirals from one loss to the next, resource gain is proposed to act in the same way (Demerouti et al., 2004). The acquisition of resources enhances the ability to attain work goals which results in further acquisition of resources. In this example, the opportunity for involvement is likely to increase the potential for resource gains, and an increase in resource gains (seen through improved work performance) is likely to engender confidence in the delegation of autonomy to that employee or team. This effect should also create increased motivation which in turn will result in improved performance and associated resource gain. This resource gain spiral should activate the threat of resource loss as more salient than the

opportunity for further gain by changing employment. Therefore, where opportunity for involvement is high, stability should also be high.

The final mediating variable is work-life balance. It is predicted that work-life balance and stability will be positively related to one another. The argument follows the same logic described in the previous sections. An imbalance in work and home life leads to a decrease in satisfaction. Moreover, where work demands are high, satisfaction with home life is impeded (O'Driscoll et al., 1992). Low satisfaction is associated with low motivation (Harter et al., 2002), which is likely to result in a resource loss spiral (Demerouti et al., 2004). In this situation, as described above, a resource loss spiral will result in a reduction in stability (increase in turnover) through a diminished threat of resource loss compared with the potential for resource gain, associated with perceived increases in satisfaction, by switching employment. Therefore, where reported levels of work-life balance is good, stability should also be high.

These arguments lead to the following hypotheses:

3. Hypothesis 4

- a) Senior leadership will have a positive indirect effect on stability through job design. Senior leadership will be positively associated with job design and job design will be positively associated with stability.
- b) Senior leadership will have a positive indirect effect on stability through engagement. Senior leadership will be positively associated with engagement and engagement will be positively associated with stability.
- c) Senior leadership will have a positive indirect effect on stability through work pressure. Senior leadership will be negatively associated with work pressure and work pressure will be negatively associated with stability.
- d) Senior leadership will have a positive indirect effect on stability through opportunity for involvement. Senior leadership will be positively associated with opportunity for involvement and opportunity for involvement will be positively associated with stability.
- e) Senior leadership will have a positive indirect effect on stability through work-life balance. Senior leadership will be positively associated with work-life balance and work-life balance will be positively associated with stability.

3.3.4 Supervisor support

This section will present the predicted relationships in the research relating to supervisor support. However, the arguments for the effect of the mediating variables on the outcome variables are exactly the same as those presented in the preceding section on senior leadership. For example, work pressure is expected to have the same organisational outcome regardless if that pressure is due to senior leadership or supervisor support. Therefore the arguments for the hypotheses relating to mediating variable – outcome relationships will not be repeated here. The influence of supervisor support on the mediating variables is likely to be different from senior leadership however, requiring discussion here in order to derive associated hypotheses.

The influence of supervisor support on job design is expected to be positive. Morgeson and Humphrey (2006) proposed key characteristics of job (work) design, including task characteristics relating to how the work is performed, knowledge characteristics relating to the skill and ability that is required to perform tasks, social characteristics relating to the level of support available from various sources, and contextual characteristics relating to the work environment itself. Although senior leadership will have influence on many characteristics such as contextual or task characteristics, closer control of job design is likely to be exercised by immediate supervisors. Supervisor support is identified as being of particular importance to social characteristics (Karasek, 1979) and is linked with well-being (Ryan & Deci, 2001). The provision of feedback is also a key component of social characteristics of job design (Morgeson & Humphrey, 2006) which is likely to be more frequently provided by immediate supervisors rather than senior leadership. The level of support one receives from the immediate supervisor, then, is a direct result of the way that supervisor implements job design characteristics related to them. A supervisor, who gives a higher level of support as well as timely and useful feedback, is promoting effective job design characteristics. Alternatively, supervisors who are less supportive and do not provide useful feedback that facilitates the delivery of work tasks and increases knowledge and learning, will be associated with reports of poor job design.

Supervisors are also likely to have a positive effect on employee engagement. Tims, Bakker, and Xanthopoulou (2011) found a link between supervisors' transformational leadership behaviour and employee engagement. The theory of transformational leadership (Bass & Avolio, 1994; Bass, 1995) proposes that such leadership creates better fit between employee values and those of the organisation. Moreover, it is proposed that transformational leadership leads to performance exceeding expectation, resulting in high levels of employee motivation. The theory proposes that the inspiring vision of supervisors is an important antecedent (Den Hartog, Van Muijen, & Koopman, 1997). The behaviour of the supervisor can

have a number of effects. Optimistic supervisors who convey enthusiasm about work opportunities and a vision of the future, are likely to promote that enthusiasm in their followers, which facilitates work engagement in order to achieve that vision (Bono & Judge, 2003, 2004). Furthermore, engagement may be a result of the supervisor promoting work objectives as more desirable than individual objectives alone. Moreover, individual and organisational goal concordance may be fostered by the supervisor, which increases intrinsic motivation. In addition to encouraging individual goal attainment to be aligned with work goals, supervisors can provide resources to achieve these goals through supportive behaviours such as coaching and effective feedback, as well as acknowledging followers' emotions, and developmental needs (Den Hartog et al., 1997; Tims et al., 2011). Supervisors may also encourage intellectual stimulation by presenting appropriate work tasks which challenge employees to actively think about appropriate problem solving techniques. This may increase organisational effectiveness as well as employee motivation within the organisation (Bono & Judge, 2004; Tims et al., 2011). The link between supervisor behaviour and employee engagement has been shown in a number of studies, and is frequently referred to in the literature (e.g. Bono & Judge, 2004; Shamir, House, & Arthur, 1993; Tims et al., 2011). Therefore, supervisor support is predicted to have a positive relationship with engagement.

Work pressure is also thought to be related to supervisor support. The relationship between work pressure and burnout is well established (Maslach & Leiter, 2008; Schaufeli et al., 2009; Schaufeli & Bakker, 2004; Schaufeli & Enzmann, 1998) and burnout is considered to be the opposite to engagement (Schaufeli et al., 2002). Where supervisors can influence engagement as described in the previous section, they may also influence burnout. As the JD-R model predicts, if the behaviour of supervisors is the polar opposite to those described above, then supervisors will convey pessimism about the future, will not align work goals with the individual goals of their followers, and may place high demands on employees without providing the appropriate support to meet those demands. In this scenario, employees are likely to experience a high degree of work pressure. Conversely, supervisors who are attuned to their followers' needs should be able to provide appropriate support. Where work and home life demands are in conflict, supervisor support has been shown to reduce work pressure, thereby increasing satisfaction (Carayon et al., 2006; Maxwell, 2005; McCarthy et al., 2010). Consequently, where supervisor support is rated highly, work pressure experienced is expected to be low.

The relationship supervisor support has with employee opportunity for involvement is expected to be positive. According to transformational leadership theory, supervisors who have a positive perception of their employees will be more likely to believe their work force is capable of making informed, effective, autonomous decisions which are consistent with

organisational initiatives (Richardson & Vandenberg, 2005). For example, supervisors who take a positive view of their workforce may encourage them to seek out innovative ways of performing work tasks, which will increase employees' perceptions of their own capabilities as well as their assessment of their supervisor (Bass & Avolio, 1994; Eden, 1990; Richardson & Vandenberg, 2005). The increase in capability in turn should further promote supervisor confidence in their employees, creating a culture of mutual respect and trust. In addition, effective supervisors will understand the environmental context of their organisation, being able to accurately manage employee capabilities relative to organisational demands and practices. Individual supervisors may view organisational practices as either enhancing or constraining employee motivation (Ostroff & Bowen, 2000). When supervisors believe organisational practices are useful, they may be more likely to engage in transformational leadership behaviours which encourage employee involvement, promoting innovation (Richardson & Vandenberg, 2005). In contrast, if supervisors believe organisational practices do not enhance desirable outcomes, they will not adapt their leadership style to promote these organisational practices they see as detrimental to their employees. Again, this may result in their promotion of innovative behaviours (in the face of constraining organisational practices) in order to achieve the desired results. Therefore, supervisors who are rated as more supportive are predicted to be associated with greater opportunity for involvement.

Finally, the relationship with supervisor support and work-life balance is expected to be positive. McCarthy et al. (2010) argue that supervisors are increasingly involved with human resource decisions, acting as intermediaries between senior leadership and operational activities at the job level. This devolved power is argued to potentially increase disparities between senior leadership policies and decisions made by supervisors concerning working practices. Therefore, while work-life balance policies are conceived and distributed from the upper organisational echelons, these policies are implemented predominantly by immediate supervisors (Ryan & Kossek, 2008). Transformational leadership theory predicts that supportive supervisors will be sensitive to the demands placed on their employees (Bass, 1995; Shamir et al., 1993). Interference between work life and home life has been shown to increase psychological strain which can be reduced by supervisor support, increasing satisfaction as a result, as the JD-R model predicts (Carayon et al., 2006; Maxwell, 2005; McCarthy et al., 2010). Supervisors may be able to implement more or less flexible working, job sharing or the possibility of working from home where possible for those they lead, in order to increase the balance between work and home life, based on their interpretation and individual implementation of senior level work-life policy (McCarthy et al., 2010). Therefore, employees who report a greater level of supervisor support are predicted to also report more satisfaction with their work-life balance.

Following these arguments and based on previous arguments made regarding predicted links between mediating variables and outcomes, the following hypotheses are made in relation to supervisor support:

3.3.4.1 Job satisfaction

4. Hypothesis 5

- a) Supervisor support will have a positive indirect effect on job satisfaction through job design. Supervisor support will be positively associated with job design and job design will be positively associated with job satisfaction.
- b) Supervisor support will have a positive indirect effect on job satisfaction through engagement. Supervisor support will be positively associated with engagement and engagement will be positively associated with job satisfaction.
- c) Supervisor support will have a positive indirect effect on job satisfaction through work pressure. Supervisor support will be negatively associated with work pressure and work pressure will be negatively associated with job satisfaction.
- d) Supervisor support will have a positive indirect effect on job satisfaction through opportunity for involvement. Supervisor support will be positively associated with opportunity for involvement and opportunity for involvement will be positively associated with job satisfaction.
- e) Supervisor support will have a positive indirect effect on job satisfaction through work-life balance. Supervisor support will be positively associated with work-life balance and work-life balance will be positively associated with job satisfaction.

3.3.4.2 Patient satisfaction

5. Hypothesis 6

- a) Supervisor support will have a positive indirect effect on patient satisfaction through job design. Supervisor support will be positively associated with job design and job design will be positively associated with patient satisfaction.
- b) Supervisor support will have a positive indirect effect on patient satisfaction through engagement. Supervisor support will be positively

associated with engagement and engagement will be positively associated with patient satisfaction.

- c) Supervisor support will have a positive indirect effect on patient satisfaction through work pressure. Supervisor support will be negatively associated with work pressure and work pressure will be negatively associated with patient satisfaction.
- d) Supervisor support will have a positive indirect effect on patient satisfaction through opportunity for involvement. Supervisor support will be positively associated with opportunity for involvement and opportunity for involvement will be positively associated with patient satisfaction.
- e) Supervisor support will have a positive indirect effect on patient satisfaction through work-life balance. Supervisor support will be positively associated with work-life balance and work-life balance will be positively associated with patient satisfaction.

3.3.4.3 Absenteeism

6. Hypothesis 7

- a) Supervisor support will have a negative indirect effect on absenteeism through job design. Supervisor support will be positively associated with job design and job design will be negatively associated with absenteeism.
- b) Supervisor support will have a negative indirect effect on absenteeism through engagement. Supervisor support will be positively associated with engagement and engagement will be negatively associated with absenteeism.
- c) Supervisor support will have a negative indirect effect on absenteeism through work pressure. Supervisor support will be negatively associated with work pressure and work pressure will be positively associated with absenteeism.
- d) Supervisor support will have a negative indirect effect on absenteeism through opportunity for involvement. Supervisor support will be positively associated with opportunity for involvement and opportunity for involvement will be negatively associated with absenteeism.
- e) Supervisor support will have a negative indirect effect on absenteeism through work-life balance. Supervisor support will be positively associated

with work-life balance and work-life balance will be negatively associated with absenteeism.

3.3.4.4 Stability

7. Hypothesis 8

- a) Supervisor support will have a positive indirect effect on stability through job design. Supervisor support will be positively associated with job design and job design will be positively associated with stability.
- b) Supervisor support will have a positive indirect effect on stability through engagement. Supervisor support will be positively associated with engagement and engagement will be positively associated with stability.
- c) Supervisor support will have a positive indirect effect on stability through work pressure. Supervisor support will be negatively associated with work pressure and work pressure will be negatively associated with stability.
- d) Supervisor support will have a positive indirect effect on stability through opportunity for involvement. Supervisor support will be positively associated with opportunity for involvement and opportunity for involvement will be positively associated with stability.
- e) Supervisor support will have a positive indirect effect on stability through work-life balance. Supervisor support will be positively associated with work-life balance and work-life balance will be positively associated with stability.

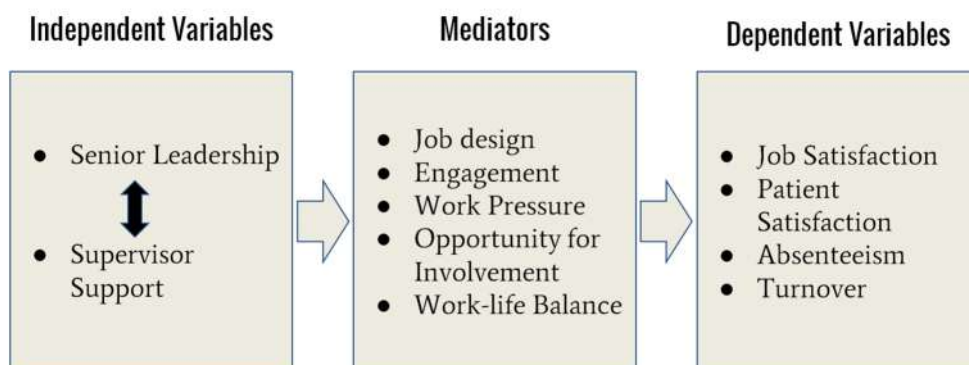


Figure 3-3: Conceptual Model

Figure 3-3 depicts the conceptual model framing these hypotheses. The independent variables of each leadership level (whilst controlling for the other) are presented in the first box, the mediators (representing the demands-resources) in the middle box, and the dependent variables are presented in the final box.

This concludes the presentation of the philosophical underpinnings of the research, the context best suited to investigating the research question, and the appropriate theoretical framework used leading to the development of the hypotheses. The next chapter presents the methodology followed in order to test these hypotheses.

4 Methodology

4.1 Introduction

This chapter presents the methodological approach used in this research. Both cross sectional and longitudinal research designs were applied, using data from the national staff survey (NSS) of NHS England between 2008 and 2010. The aim was to examine relationships between senior leadership and supervisor support and outcomes of job satisfaction, patient satisfaction, absenteeism, and turnover (stability) via the mediating variables identified from the job demands-resources model and described in the previous chapter. The analysis is at the organisational level and therefore NSS data were aggregated to the organisational level. Supervisor support and mediating variables were taken from established measures, but the measure for senior leadership was newly created, thereby requiring careful validation. This chapter presents the underlying philosophical approach to the research; describes the research context and the data sets used; presents justification for aggregating individual level data to the organisational level where appropriate; describes the psychometric validation of the senior leadership scale; and presents the statistical analysis methodology used to assess the hypotheses proposed.

4.2 Philosophical considerations

The discipline of occupational psychology is a part of the wider field of social psychology. Social psychology employs scientific methodology to study how the feelings, thoughts and behaviours of people are affected by the real, imagined or implied presence of other people (Allport, 1985). Occupational psychology focuses specifically on the interactions of people in working environments. It applies the scientific rigour from psychology research to issues that are relevant and important to people at work.

Paradigms are described as the representation of beliefs, values, techniques and rules accepted by a scientific field (Kuhn, 1962). A paradigm is a human construct which guides actions to generate knowledge (Guba & Lincoln, 1994). It does this by defining the view of the world adopted by the researcher, along with the methods and tools which are subsequently used to investigate that world through disciplined enquiry (Deshpande, 1986). The two paradigms which form the majority of literature in social psychology are of quantitative research, which is based on the philosophy of positivism, and qualitative research which is associated with an interpretivist philosophy (Johnson & Onwuegbuzie, 2004). The philosophies that these two paradigms stem from are based on opposing views of the world, which follows through to the different methodologies each uses to generate knowledge. This research will take an approach associated with positivist philosophies and the arguments for why this approach was utilised

will be presented shortly. However, before doing so it is worthwhile considering alternative approaches and explaining why these are not justified for this research.

The constructivist approach assumes that knowledge generation can only be performed based on an individual's subjective experience of the world around them. In constructivism then, reality is understood through the meaning a person ascribes to various stimuli (Guba & Lincoln, 1994). Within social research, these stimuli are used to generate knowledge through interactions between the researcher and the participant (Guba & Lincoln, 1994), which therefore creates a subjective epistemology (Guba, 1990). This epistemological approach requires research to be designed appropriately so that these subjective interactions can be accurately captured, and this requires the collection of multiple perspectives (Robson, 2011). The multiple subjective perspectives which, are sensitive to the specific context of individual participants, and empathetic to their subjective experience, are used to formulate theory (Leach & Scott, 2002). The constructivist approach accepts the individual's world view as reality and consequently the information used to generate knowledge focuses on a qualitative understanding of human behaviour rather than quantifying more objective laws which act upon it (Bryman, 2004). It is for this reason that a constructivist world view is not applicable to this research's ontology. The concepts which this research will deal with such as supervisor support, engagement, work-life balance, or work pressure are thought to have a quantifiable influence on organisational outcomes such as absenteeism or patient satisfaction. The research aim is to quantify how these mechanisms influence human behaviour in order to understand how this behaviour influences quantifiable organisational outcomes. Gathering qualitative data would not allow a numerical approach in this way, and consequently this research will be based from a positivist approach.

Positivism holds that an objective reality exists, which is directly observable and measureable. Furthermore, this reality is separate from the observer (as opposed to being a subjective view based on the observer's position) (Guba, 1990). Specifically, this research will be based on a post-positivist philosophy termed 'critical realism', which extends the epistemological arguments of positivism. Like positivism, critical realism accepts that there is one true reality but that this is only "probabilistically apprehendable", meaning it can only be imperfectly understood and measured (Lincoln & Guba, 2000). This reality is made up of three stratifications; the *real* domain, the *actual* domain, and the *empirical* domain (Bhaskar, 1975, 1989). At the real level, mechanisms exist but are not visible unless they manifest at the actual level through events. These actual events then become observable and measurable at the empirical level, and this conceptualisation necessitates certain epistemological implications (Bhaskar, 1975, 1989). Critical realism then, is concerned with understanding the mechanisms which lead to observable events although these events cannot be directly observed. This leads to

the philosophical position that it is never possible to know for certain if a mechanism exists, or not. The critical realist perspective accepts that knowledge is only ever imperfect (Bhaskar, 1975, 1989). However, in order to gain confidence in knowledge acquired, a pragmatic approach is applied. Retrodution is the process of generating knowledge based on previous theory and observations. By predicting the effects of the mechanisms at the real level, on observable events at the empirical level, an ontological perspective can be formed regarding those underlying mechanisms (Zachariadis, Scott, & Barrett, 2013). Additionally the critical realist perspective views knowledge as falsifiable; theories are only able to be discounted, and never *proved*. By forming predictions based on prior observation and theory, and examining these predictions in events at the empirical level, theories can be supported or rejected (based on the ability of the prediction to accurately describe subsequently observed events). The corollary of this is that no theory can ever be proved to be final, it is always possible that future research will present observations which disprove existing theories, furthering knowledge and guiding future research (Phillips, 1990).

Critical realism also identifies that not all phenomena are directly observable. Concepts such as 'leadership', 'engagement' and 'job satisfaction' cannot be directly observed in the way that a particle's velocity or position in space can be observed. Concepts such as these can only be indirectly observed, for example through their effects on a range of other observable phenomena (which can be indirectly observable themselves). Social science is tasked with the empirical documentation of these concepts, as a means of generating (imperfect) knowledge.

Building on the notion of falsifiability, knowledge is believed to be gained by building on prior understanding and is therefore progressive in nature. This concept is referred to as deductive inference, which contends that it is possible to predict outcomes given certain premises and that science can hypothesise and measure the effect of one variable on another. Based on prior knowledge, researchers can propose relationships between constructs such as those presented in this research, in order to form falsifiable hypotheses. These hypotheses then allow empirical examination of those constructs (Robson, 2011).

Positivist approaches take a deductive approach to knowledge generation, while constructivist approaches seek to understand human behaviour through inductive inference (Robson, 2011). Inductive inference is argued to be better suited to early theory development, where relatively little is known about a particular phenomenon. This lack of prior knowledge makes it difficult to generate hypotheses to test empirically. However, mature theories have a larger pool of knowledge related to them, and this allows hypotheses generation. Edmondson and McManus (2007) suggest that a mature theory such as leadership lends itself to the realist perspective of how science should be conducted and therefore dictates an empirical

methodology with focused questions or hypotheses relating existing constructs, collecting quantitative data and examining this data with statistical inference. In fact, the positivist approach has been profoundly influential to the field of psychology and occupational psychology, informing the vast majority of research conducted (Tolman, 1992), from which this research is driven. Based on the epistemological background of the research on which this thesis builds, as well as the suitability of hypothesis generation to tackle the questions proposed, a critical realist perspective will be taken to guide the methodological approach.

4.3 Research Context: The National Health Service (NHS)

The National Health Service (NHS) is a publicly funded system of healthcare which serves the four countries of the United Kingdom and was created through the National Health Service Act, 1946 following World War II with the aim to make healthcare equal to all and free at the point of use. Each country operates the service independently of one another, governed by their respective political leadership, although there is some cross country healthcare provision where necessary. As each country runs its healthcare system independently, differences between policies, priorities and operations exist. Due to the varying political influence of each country. However, funding for the NHS comes from a centralised taxation system and the four systems are combined when making international comparisons (World Health Organisation, 2000). The NHS is one of the largest employers in the world, and NHS England is by far the largest of the four services, with recent figures indicating that in 2014 it had approximately 1.38 million employees with a budget of £113.3 billion. Managers and senior managers account for 2.67% of the staff population. In England, NHS services are delivered by 209 clinical commissioning groups, 154 acute trusts, 56 mental health trusts, 37 community providers, 10 ambulance trusts, 7,875 GP practices, and 853 for-profit and not-for-profit independent sector organisations (NHS Confederation, 2016). Since 2003, a national staff survey (NSS) has been distributed to NHS employees to collect their views about working in the NHS.

4.4 The National Staff Survey

The National Staff Survey (NSS) was commissioned by the National Health Service and administered by a variety of researchers and institutions. Between 2008 and 2010, the data years used in this research (this point will be expanded on shortly), it was the regulatory body the 'Care Quality Commission' (CQC) (formerly the Healthcare Commission) that was responsible for running the NSS. The NSS is collected annually between October and December (the middle of the NHS year which runs from April to March). The survey covers all healthcare organisations, which make up the NHS and incorporates primary care, acute and specialist hospitals, mental health hospitals, and ambulance trusts.

This research will focus on data for NHS England, as this is the largest of the four NHS services. Data from 2008, 2009 and 2010 were used as the administration and measurement items of the NSS were changed in 2011, as well as survey measurement items in subsequent years. These changes meant that longitudinal analysis was difficult beyond 2010. Survey measurement was consistent between 2008 and 2010³, and suitable for longitudinal analysis; these years were selected therefore for inclusion.

Data were collected from every NHS organisation for each year. These data sets were made up as follows:

In 2008, 393 NHS healthcare organisations submitted 289,852 responses indicating a 55% response rate, from;

- 170 Acute Trusts (including 20 Acute Specialist Trusts)
- 12 Ambulance Trusts
- 59 Mental Health Trusts
- 152 Primary Care Trusts

In 2009, 390 NHS healthcare organisations submitted 288,435 responses indicating a 54% response rate, from;

- 167 Acute Trusts (including 20 Acute Specialist Trusts)
- 12 Ambulance Trusts
- 60 Mental Health Trusts
- 151 Primary Care Trusts

In 2010, 388 NHS healthcare organisations submitted 306,326 responses indicating a 54% response rate, from;

- 167 Acute Trusts (including 20 Acute Specialist Trusts)
- 12 Ambulance Trusts
- 59 Mental Health Trusts
- 150 Primary Care Trusts

4.5 Variables & justification of level of analysis

The variables used in the analyses were

- senior leadership

³ Engagement was measured in 2009 and 2010 only

- supervisor support
- job design
- engagement
- work pressure
- opportunity for involvement
- work-life balance
- job satisfaction
- patient satisfaction
- absenteeism
- turnover (measured as stability)

In addition, some of these variables were aggregated to the organisational level in order to be able to make comparisons with outcome data. However, in addition to the utility of performing this aggregation, reasonable arguments for aggregating these variables exist.

Job satisfaction

Group affective tone provides an understanding of a group's mood, by aggregating the mood of individual members to the group level, and the concept is well established in research (George, 1990, 1996). In addition, the idea of organisational affective tone has also received empirical support. Ostroff (1992) argued that individual satisfaction levels influence individual behaviour, but that this behaviour in aggregate predicts organisational effectiveness. Moreover, due to the interaction and interdependence of work processes and the influence of social norms, it has been argued that organisational climate is a result of collective processes rather than merely being the sum of individuals' attitudes or experiences (Mahoney, 1984). Rather, a measure of organisational climate will reflect the interaction and interdependencies of work processes which relate to organisational performance (Ostroff, 1992). Ostroff (1992) found support for this idea, reporting significant associations between an organisational level aggregation of job satisfaction among teachers, and several standardized measures of school performance. Moreover, aggregated employee satisfaction has been significantly correlated with subsequent company profitability (Koys, 2001), company productivity (Harter et al., 2002), and similar outcomes in manufacturing organisations (Patterson, Warr, & West, 2004). This therefore gives some justification of the aggregation of job satisfaction to the organisational level.

Job design

There is some justification for conceptualising job design at the organisational level. Organisational structure is likely to determine job design, as those who are responsible for

designing roles within the organisation are likely to implement similar designs organisation-wide. Therefore, perceptions of job design should be relatively consistent within, but vary between organisations.

Employee Engagement

Work engagement is often a result of organisational factors, and these are likely to have a relatively consistent influence throughout individual organisations (Saks, 2006). For example, significant influencing factors include trust in senior leaders, fairness and discrimination, the extent of the hierarchical structure (autonomy versus hierarchical control), leadership style in the organisation, and organisational vision and values (Saks, 2006; Salanova et al., 2005; Zhu, Avolio, & Walumbwa, 2009). When organisations do not provide adequate resources to facilitate engagement, members of staff are more likely to withdraw and disengage. Consequently, work performance is likely to be affected, as a direct result of the resources (both cognitive and physical) that the organisation provides (Saks, 2006). Moreover, aggregate engagement has been shown to have a significant relationship with organisational level outcomes including organisational performance (Crawford et al., 2010) and turnover (Shuck, 2011).

Work pressure

Although work pressure is measured at the individual level, it is a reflection of organisational climate (Patterson et al., 2004). It is argued that work pressure is likely to be perceived relatively consistently within an organisation, as a result of managerial decisions, which affect all staff. Additionally, the organisational context is likely to influence organisational climate, for example, high levels of demand or strong competition. Moreover, aggregate work pressure has been shown to differ between organisations, dependent on context, leadership and demands (Patterson et al., 2004). Therefore, aggregating to the organisational level is conceptually coherent.

Opportunity for involvement

The arguments for aggregating this variable to the organisational level are based on the likelihood that opportunity for involvement will reflect organisational climate. The perception of opportunity for involvement is likely to be consistent within an organisation, based on the managerial decisions which implement organisational structure (allowing involvement). This argument follows a similar pattern to that argued for work pressure, and therefore provides a similar justification – that aggregating to the organisational level is conceptually coherent.

Work life balance

Work-life balance is again likely to be a reflection of organisational climate. The policies, which are outlined and directed throughout the organisation, will determine the opportunity for work-life balance within that organisation, and this is likely to be different across different organisations. Moreover, human resource policies are frequently standardised, which will determine the latitude available for managing work-life balance. These policies are likely to be different, depending on the organisation's human resource department and the climate they set within that organisation. Therefore aggregating to the organisational level is justified.

4.6 Measures⁴

This section will present the measures used in the research to gather data to assess the hypotheses. Each measure will be described beginning with the leadership measures, followed by the mediation variables, the outcome variables, and finally the control variables.

The research followed the approach towards measurement taken by Buttigieg and West (2013), who used some of the same scales. All items for all predictor and mediator scales were taken from the NSS between 2008 and 2010, and included measures for senior management leadership, supervisor support, job design, work engagement, quantitative overload, opportunity for involvement, and work-life balance.

4.6.1 Leadership variables

4.6.1.1 Senior leadership

This scale was developed from existing items in the NSS, which does not contain a dedicated scale to measure senior leadership. This scale comprises five items and measures the extent to which staff report positive behaviours from senior managers in their organisation. The scale uses a five point Likert response scale ranging from 1 (strongly disagree) to 5 (strongly agree). The items selected for the senior leadership scale were done so based on theoretical justification of the extent to which they 'map' onto existing leadership theories and measures. The five items selected were:

1. Senior managers here try to involve staff in important decisions
2. Communication between senior management and staff is effective
3. Senior managers encourage staff to suggest new ideas for improving services
4. Senior managers where I work are committed to patient care

⁴ All measures are available in full in the Appendix

5. Senior managers act on staff feedback

As discussed in chapter 2⁵, transformational leadership theory (Bass, 1995) argues that transformational leaders exhibit behaviours or characteristics that powerfully influence follower experience (Judge & Piccolo, 2004). These behaviours or characteristics are: *charisma* or *idealised influence*, which represents the extent to which a leader instils pride, trust and respect, and appeals to followers on an emotional level; *individualised consideration*, which reflects the extent to which a leader delegates work in order to stimulate learning, providing support and coaching, as well as responding to followers' needs; *intellectual stimulation*, which concerns the motivational qualities a leader possesses, describing the ability of a leader to challenge assumptions, and encourage innovative and creative ways of problem solving as well as seeking followers' ideas; and *inspirational motivation*, which is concerned with the extent to which a leader inspires followers by articulating a vision which appeals to them, creating meaning for work tasks, and encouraging optimism and goal attainment (Judge & Piccolo, 2004).

The decisions about items to select for use in the senior leadership scale were theoretically driven based on these key concepts.

The item 'senior managers here try to involve staff in important decisions' relates to the extent to which a leader seeks followers' advice concerning work decisions and is captured by the concept 'intellectual stimulation'. Although this item does not completely capture the concept, it does relate to it as involving staff in important decisions is likely to involve soliciting followers' ideas.

The second item included is 'communication between senior management and staff is effective' and relates to both idealised influence and individualised consideration. If a leader is seen to be effective communicating with staff, it is likely that leader is viewed positively which is an indication of idealised influence. In addition, individualised consideration incorporates how well a leader responds to their followers' needs, which is likely to have an effect on how the follower assesses the quality of communication. Therefore, effective communication is likely to be associated with both idealised influence as well as individualised consideration.

The third item, 'senior managers encourage staff to suggest new ideas for improving services' is theoretically related to inspirational motivation as well as intellectual stimulation. Inspirational motivation includes the extent to which a leader provides meaning for employees in relation to their work tasks. By encouraging staff to seek new ideas and ways of improving, a

⁵ The nature of senior leadership is addressed in Chapter 2, and a working definition underpinning the concept of senior leadership for the purpose of this thesis is provided at the end of that chapter.

leader is likely to increase intrinsic motivation by increasing ownership over work tasks. If staff members have devised new ways of working themselves, they are likely to feel ownership over their work (Avolio, Zhu, et al., 2004). In addition, inspirational motivation includes the element of leaders seeking followers' ideas, which is captured in this item also.

'Senior managers at work are committed to patient care' is the next item and relates to idealised influence and inspirational motivation. A senior leader who is seen as committed to patient care is likely to communicate that commitment by articulating this vision to their followers, which is captured by the concept 'inspirational motivation'. In addition, by displaying commitment to patient care, this is likely to be seen by followers as displaying conviction in their beliefs, eliciting trust and respect, which is captured by the 'idealised influence' concept.

Finally 'senior managers act on staff feedback' is encompassed by the 'intellectual stimulation' and 'individualised consideration' concepts. Acting on staff feedback necessarily involves seeking staff input and advice, which is included in intellectual stimulation. Additionally, staff feedback is likely to include individual needs and concerns, and a leader who is attentive to their followers' needs and concerns is demonstrating individualised consideration.

4.6.1.2 Supervisor support

Supervisor support measures staff ratings of their immediate managers in terms of the level of support, guidance and feedback he or she provides and the extent to which the supervisor seeks their opinion before making decisions which affect their work. This scale was used in a previous major research programme in the NHS (Borrill et al., 1996) which examined levels and causes of stress in the NHS workforce. The psychometric properties of the scale are well established (Borrill et al., 1996) and the theoretical underpinnings of the scale were drawn from transformational leadership theory. Analysis of the items reveals the strong links to transformational leadership as the analysis of the scale items reveals. Below, I list the items and then describe their strong links to transformational leadership theory:

My immediate manager...

- Encourages those who work for her/him to work as a team
- Can be counted on to help me with a difficult task at work
- Gives me clear feedback on my work
- Asks for my opinion before making decisions that affect my work
- Is supportive in a personal crisis

This scale has been previously validated as an appropriate measurement tool to capture perceptions of ‘supervisor support’. However, as one of the key independent variables of this study the theoretical underpinning of supervisor support merits some attention. As with senior leadership, supervisor support is also theoretically linked with transformational leadership and the items from this scale reflect this. The theoretical background of transformational leadership is discussed in chapter 2 as well as being summarised in the description of the senior leadership scale immediately above.

Item one ‘my immediate manager encourages those who work for her/him to work as a team’ can be thought of as containing elements of a range of transformational leadership behaviours. Individualised consideration is relevant as a supervisor who encourages teamwork is likely to be someone who promotes learning by delegating work. Idealised influence is captured as promoting teamwork suggests trust in team members to contribute to the team goal as well as demonstrating the value of individuals’ contributions to the team. Inspirational motivation is also relevant as teamwork requires that a group objective or goal is the focus of joint efforts, and this goal vision and attainment is likely to be facilitated by the team leader (supervisor).

The second item ‘can be counted on to help me with a difficult task at work’, clearly relates to individualised consideration, as a supervisor who is rated highly on this item will be responding to individual needs and providing support and coaching.

Item three ‘gives me clear feedback on my work’ is related to both idealised influence as well as individualised consideration. Clear feedback necessarily indicates effective communication and this is likely to be viewed positively. By providing clear feedback it is likely that this will instil respect from the follower. In addition, this demonstrates a role of support and coaching, and should stimulate learning, which is incorporated through the individualised consideration dimension.

The fourth item ‘asks for my opinion before making decisions that affect my work’ is associated with the intellectual stimulation dimension. A supervisor who rates highly on this item is necessarily someone who seeks followers ideas and acts on feedback before making decisions.

The final item ‘is supportive in a personal crisis’ further demonstrates individualised consideration, as a supervisor who is rated highly on this item will be responding to individual needs and providing support when necessary.

4.6.2 Mediators

4.6.2.1 Job design

This measure captured the extent to which staff work in jobs which are designed well and rich in content. Characteristics of this include clear goals, having clear feedback, and having the opportunity to contribute to decisions. This scale contained six items that were originally adapted from the Job Diagnostic Survey (Hackman & Oldham, 1975). These items were scored on a five point Likert scale ranging from 'strongly agree' to 'strongly disagree'. Example items were:

To what extent do you agree or disagree with the following statements about your job:

- I have clear, planned goals and objectives for my job
- I often have trouble working out whether I am doing well or poorly in this job.
- I am involved in deciding on the changes introduced that affect my work area/team/department.

4.6.2.2 Engagement

This measure captured the extent to which staff reported experiencing engagement at work. This included items relating to the respondent's absorption in their jobs, whether they look forward to going to work and their enthusiasm. This scale was originally adapted from the Utrecht Work Engagement Scale (Schaufeli et al., 2002) and contained three items which were scored on a five point Likert scale ranging from 'never' to 'always'. The items included were:

Please indicate how frequently you feel this way about your job:

- I look forward to going to work
- I am enthusiastic about my job
- Time passes quickly when I am working

4.6.2.3 Work pressure

This measure assessed the extent to which staff reported experiencing a workload exceeding their ability to cope. This included items relating to time pressure and resources available and was originally adapted from Caplan, (1971), Firth-Cozens, (2003) and Cox and Griffiths (1995). The scale comprised of four items with responses made on a five point Likert scale ranging from 'strongly disagree' to 'strongly agree'. Example items were:

To what extent do you agree or disagree with the following statements:

- I cannot meet all the conflicting demands on my time at work

- I have adequate materials, supplies and equipment to do my work
- I do not have time to carry out all my work

4.6.2.4 Opportunity for involvement

This measure assessed the extent to which staff reported being able to contribute to decisions at work. This scale was originally adapted from the ‘What Matters to Staff in the NHS’ report (Ipsos MORI, 2008) and composed of three items which were scored using a five point Likert scale ranging from ‘strongly agree’ to ‘strongly disagree’. The items were:

To what extent do you agree or disagree with the following statements about improving work practices?

- I am able to make suggestions to improve the work of my team/department
- There are frequent opportunities for me to show initiative in my role
- I am able to make improvements happen in my area of work

4.6.2.5 Work-life balance

This scales measured staff perceptions of trust and immediate manager commitment to supporting a balance between work and home life. The scale was originally based on a review of work-life balance measures, and constructed for the NSS. The scale was composed of three items, scored using a five point Likert scale ranging from ‘strongly agree’ to ‘strongly disagree’. The items were:

To what extent do you agree or disagree with the following:

- My immediate manager helps me find a good work life balance
- My trust is committed to helping staff balance their work and home life
- I can approach my immediate manager to talk openly about flexible working

4.6.3 Outcome measures

4.6.3.1 Job satisfaction

This scale measures staff responses to items concerning job satisfaction, specifically relating to: recognition for good work, support from colleagues and immediate managers, freedom to choose working methods, amount of responsibility, opportunities to use skills, extent to which the trust values the work done. This scale was originally adapted from the Job Satisfaction Scale (Warr, Cook, & Wall, 1979), and included seven items that were measured with a five point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’. Example items were:

How satisfied are you with each of the following aspects of your job:

- The recognition I get for good work
- The opportunities I have to use my skills
- The freedom I have to choose my own method of working

Job satisfaction was aggregated to the organisational level (justified earlier), and therefore the average satisfaction score for each organisation was calculated. As satisfaction scores were taken from the NSS, three years of scores were collated. The 2008 satisfaction scores showed an average of 3.51, ranging from 3.01 to 3.82; 2009 averaged 3.53 ranging from 3.00 to 3.91, and 2010 averaged 3.54 ranging from 2.95 to 3.91.

4.6.3.2 Patient satisfaction

The patient satisfaction data was collected from the NHS inpatient survey over four years, between 2008 and 2011. The methodology for this score followed the methodology used by Dawson, (2009); the selection of inpatient experience was included as it is the most established patient survey, and because inpatients are more likely to encounter NHS staff. Therefore their perceptions are likely to be closely related to those of NHS staff (Dawson, 2009). Questions which specifically related to quality or experience were used from the patient satisfaction survey (excluding biographical information) and a composite score of patient satisfaction was created (Dawson, 2009). The composite score represents the percentage of staff who indicated satisfaction with the quality of their care. In 2008 the average patient satisfaction score was 77.38% ranging from 65.15% to 92.91%; in 2009 the average score was 78.24% ranging from 67.48% to 92.14%; in 2010 the average score was 77.72% with scores ranging from 66.70% to 92.63%; and in 2011 the average score was 77.61% with scores ranging from 64.54% to 93.22%.

4.6.3.3 Absenteeism

The measure of absenteeism was taken from Electronic Staff Record and followed the same procedure as Lyubovnikova, West, Dawson, and Carter, (2015) by dividing the total number of recorded days absent by the total number of working days possible for each staff member per month for each healthcare trust included. The Electronic Staff Record collects absenteeism data annually according to the NHS year which runs from April 1st to March 31st. Absenteeism data was collected for four years from 2008/2009 to 2011/2012. The average score for absenteeism in 2008/2009 was 4.45% ranging from 1.9% - 6.66%; 2009/2010 average was 4.31% ranging from 0.33% to 7.62%; 2010/2011 average was 4.13% ranging from 1.25% to 6.69%; and 2011/2012 average was 4.01% ranging from 0.08% to 6.73%.

4.6.3.4 Turnover (Stability)

The measure of turnover was taken from the NHS information centre and calculated as a stability index recording the percentage of staff who remained in their role following the previous NHS year for each NHS organisation. Turnover data was only collected for acute specialist and non-specialist hospital trusts (explained in the following section). Data was collected over four years from 2008/2009 to 2011/2012. The average percentage of staff remaining in their post for 2008/2009 was 85.68%, ranging from 75.24% to 92.86%; the average for 2009/2010 was 86.50% ranging from 77.13% to 92.83%; the average for 2010/2011 was 91.59% ranging from 81.14% to 99.14%; and the average for 2011/2012 was 92.49% ranging from 81.48% to 95.92%.

4.6.3.5 Outcome measures in relation to data sets

When testing the mediation analyses (explained later in this chapter), the outcome measures used relate specifically to certain NHS trusts. This is because the data collected for these outcomes is only relevant to (and therefore available for) specific trust types. For example, patient satisfaction as described above, is a measure of inpatient satisfaction, collated from patient responses regarding their hospital treatment. This therefore means that the data is specific to NHS hospital trusts, and not relevant to other trust types. For this reason, the analyses relating to the patient satisfaction hypotheses will only be run on the data collected from hospital trusts. That is acute trusts, and acute specialist trusts. Additionally, the turnover (stability) data will also be restricted to hospital (acute and acute specialist) trusts although turnover data is available for all trusts. The reason for this is that during the time that this data was collected (2008 – 2010), the organisational structure of the NHS in England was undergoing large scale organisational change in conjunction with the publication of the NHS white paper 'Equity and Excellence: Liberating the NHS' (Department of Health, 2010). This organisational change involved the disbandment of Primary Care Trusts (PCTs) and Strategic Health Authorities (SHAs) and during this period the rate of turnover in these organisations was understandably high. In addition the organisational restructure involved Mental Health Trusts merging with/into community trusts, again resulting in a high turnover rate. Since the proposal of this thesis is the effect of leadership on organisational outcomes, including turnover data which is known to contain trends relating to factors outside of leadership control, the models examining hypotheses relating to stability will only be performed on the hospital (acute and acute specialist) trusts. During this period, the hospital trusts remained relatively stable in terms of their organisational structure, and the effects seen in the PCTs, SHAs, and the Mental Health Trusts are less likely to permeate the hospitals. However, models relating to the hypotheses

concerning absenteeism and job satisfaction will be tested on the full data set, as these variables were more consistent across all trust types.

4.6.4 Control variables

In order to more identify the effects of all predictor variables in the multivariate mediation analyses, a number of control variables were included which were theoretically or practically expected to influence organisational outcomes. When selecting these control variables, the recommendations of Becker (2005) were adopted, advising that variables which have been shown to be related to the independent variables should be included. The variables included were:

- Trust type
- Teaching hospital status
- London based status
- Trust size
- Doctors per bed

Whether or not the organisation was classed as a teaching hospital was included as a control, as teaching hospitals are often associated with ‘enlightened’ management behaviour, as well as using advanced medical and technological practices which may affect organisational outcomes as well as staff well-being (Lyubovnikova et al., 2015). Additionally, this variable alongside the other variables included have all been associated with organisational outcomes (Jarman et al., 1999).

Trust type was included as each trust type is concerned with different outcomes – for example some trusts are more focused on commissioning services, whilst others are more focused on response times (such as ambulance trusts). The question here regards leadership practices rather than leadership practices specific to individual trust types and therefore controlling for trust type is necessary. Additionally, the number of doctors per bed has been shown to influence organisational outcomes (Jarman et al., 1999), in research explaining differences in English hospital death rates using routinely collected data, and therefore is included as a control.

Trust size was included as the JD-R model argues that resources will mitigate negative effects of demands. It is likely that larger organisations will have a greater level of resources available and therefore this was included as a control. The hospital location was included (as being situated in London – or not) as previous research has indicated that organisational outcomes have been influenced by this factor. Patient satisfaction particularly has been

highlighted as being affected by whether or not a hospital was based in London with lower levels of satisfaction generally in the capital city (King et al., 2011).

Trust size and doctors per bed were composed of continuous data, while teaching hospital status and London based status were 'yes or no', binary variables. Trust type was composed of categorical data and consequently had to be 'dummy coded' in order to include it in the models.

4.7 Reliability, validity and data aggregation overview

The following sections will outline the steps taken to ensure that the data and measures, which are used for subsequent analysis, are reliable and valid. Psychometric validation is central to the development of any psychometric measure. The aim of psychometric validation is to demonstrate that the psychometric measure accurately measures what it purports to, rather than measuring something else or measuring inaccurately (Tabachnick & Fidell, 2013).

The majority of measures used were taken from established scales and therefore there is previous evidence of their validity. It is necessary to show the reliability of these measures before their inclusion in the analysis, therefore reliability statistics will be presented. As the senior leadership scale is a newly created scale, psychometric validation is necessary, and therefore this will be described. In addition, as variables were aggregated to the organisational level, statistical justification for aggregation of individual level NSS responses is presented.

4.7.1 Reliability

Reliability describes the degree to which an instrument produces stable, consistent results, demonstrating the extent to which an instrument is free from random error (Tabachnick & Fidell, 2013). Internal consistency is a commonly used measure of reliability which shows the degree to which the items making up the latent variable are internally consistent in their measurement. A measure with high internal reliability will demonstrate similar scores for different items relating to the same overall construct. Poor internal reliability suggests that more than one construct is being measured (Coolican, 2014). In order to check a measure's reliability, Cronbach's coefficient alpha is most commonly used, which is an indication of the extent to which responses vary on individual items (Coolican, 2014). The alpha value produced ranges from zero to one with a value of 0.7 being recommended as the minimum score required to show adequate internal consistency (Nunally & Bernstein, 1994). Cronbach's alpha coefficients were calculated for all NSS measures in order to assess reliability. Table 4.1 shows the values for Cronbach's alpha for each scale used in subsequent analyses for all three data years. The figures show that all measures had high alpha values, well above the 0.70 level required, representing a high degree of reliability.

Table 4.1: Cronbach's Alpha reliability scores

	2008	2009	2010
Senior Leadership	.90	.90	.90
Supervisor support	.92	.92	.92
Job Design	.79	.80	.81
Engagement	Not measured	.81	.81
Work Pressure	.78	.78	.78
Opportunity for Involvement	.86	.86	.86
Work-life balance	.84	.85	.84
Job satisfaction	.85	.86	.86

4.8 Validity

Alongside a measure's reliability, its validity must also be shown. Validity describes the degree to which the measure being used accurately captures the construct it was designed to represent (Tabachnick & Fidell, 2013). Statistically speaking, a measure that is valid should have minimal systematic and random error. Validity can be broken into three types being; *measurement validity* which addresses the validity of measurement instruments, *internal validity* which refers to the degree to which the construct is accurately represented by the measures, and *external validity* which is the generalisability of the research to the wider environment.

To assess measurement validity, the following validation concepts were considered:

- a) *Content validity* refers to the extent to which a measure accurately represents the construct under consideration. It is therefore based on theoretical consideration of the construct. Theoretical consideration requires objective, logical examination and assessment by experts trained in the field of the construct being considered, as well as being trained in validation techniques. Theoretical consideration of individual items has already been presented with their justification for inclusion in the senior leadership scale, based on existing theories of leadership. In addition, my supervisors, experts in leadership theory and psychometric methodology, examined the measures used in this research as well as the theoretical justification before approving their inclusion.
- b) *Construct validity* concerns the extent to which a measure accurately reflects the construct, which it attempts to measure. It is made up of four sub-components; convergent validity, discriminant validity, nomological validity and content validity (discussed above). *Convergent validity* denotes the extent to which items, which measure the same construct, share a high proportion of the variance. The convergent validity must have good reliability (shown to be adequate in the reliability tables above), average variance extracted, and

convergence or internal consistency to be supported (Hair, Black, Babin, & Anderson, 2014). *Discriminant validity* refers to the extent to which constructs are different from one another. For example, in the research here the construct ‘leadership’ is proposed to have two separate components within it of ‘senior leadership’ and ‘supervisor support’ which are anticipated to be distinct constructs. Discriminant validity measures the extent to which constructs are discrete. *Nomological validity* can be derived from testing the correlations among the constructs and examining if these correlations are theoretically logical (Hair et al., 2014).

Nomological validity will be discussed first before moving on to presenting the results of confirmatory factor analyses, demonstrating an appropriate underlying factor structures, good convergent validity, as well as exploratory factor analyses demonstrating discriminant validity between the leadership scales.

4.8.1 Nomological validity

Nomological validity examines the extent to which correlations among constructs make sense theoretically. In order to do this a matrix of construct correlations was calculated (Hair et al., 2014). These correlations are presented in Table 4.2 for the 2008 data, Table 4.3 for the 2009 data, and Table 4.4 for the 2010 data.

Table 4.2: Correlation matrix for 2008 data at the individual level

	Senior Leadership	Supervisor Support	Job design	Work pressure	Opportunity for involvement	Work-life balance
Senior leadership	.					
Supervisor Support	.78**	.				
Job design	.87**	.80**	.			
Work pressure	-.53**	-.47**	-.41**	.		
Opportunity for involvement	.81**	.87**	.84**	-.37**	.	
Work-life balance	.76**	.74**	.74**	-.53**	-.84**	.

**Correlation is significant at the 0.01 level (2-tailed).

Table 4.3: Correlation matrix for 2009 data at the individual level

	Senior Leadership	Supervisor Support	Job design	Engagement	Work pressure	Opportunity for involvement	Work-life balance
Senior leadership	.						
Supervisor Support	.77**	.					
Job design	.85**	.79**	.				
Engagement	.56**	.47**	.59**	.			
Work pressure	-.45**	-.38**	-.32**	-.15**	.		
Opportunity for involvement	.74**	.82**	.75**	.43**	-.37**	.	
Work-life balance	.69**	.81**	.64**	.36**	-.53**	.84**	.

****Correlation is significant at the 0.01 level (2-tailed).**

Table 4.4: Correlation matrix for 2010 data at the individual level

	Senior Leadership	Supervisor Support	Job design	Engagement	Work pressure	Opportunity for involvement	Work-life balance
Senior leadership	.						
Supervisor Support	.72**	.					
Job design	.80**	.76**	.				
Engagement	.39**	.29**	.58**	.			
Work pressure	-.57**	-.44**	-.43**	-.09	.		
Opportunity for involvement	.81**	.83**	.80**	.29**	-.40**	.	
Work-life balance	.78**	.89**	.70**	.22**	-.54**	.83**	.

****Correlation is significant at the 0.01 level (2-tailed).**

As we can see from the correlation matrices, all variables are significantly correlated with one another. In addition, the relationships between these constructs is as expected. The two leadership variables theoretically should correlate to some extent, given that they are proposed to be components of an overarching leadership construct. In addition, the hypotheses are based on theoretical arguments that predict the correlation between the two leadership variables and the remaining mediation variables in the matrices. Furthermore, the mediating variables are expected to correlate with one another. It theoretically makes sense that job design correlates with the other variables in the model. The better the job is designed, the more likely staff are achieve work goals which leads to engagement, as well as reducing work pressure (Buttigieg & West, 2013). Moreover, good job design should allow employees the opportunity to be involved with work decisions (Shadur & Kienzle, 1999), as well as providing opportunity to make decisions promoting healthy work-life balance (McCarthy et al., 2010). In turn, high engagement levels are known to be negatively related to work pressure (Schaufeli et al., 2002)

as well as positively related with opportunity for involvement (Hallberg & Schaufeli, 2006) and work-life balance (Grawitch, Gottschalk, & Munz, 2006). Opportunity for involvement, is theoretically linked with work-life balance, as employees who are able to make decisions or suggestions about how to improve their work role, can use that opportunity to make decisions about how to promote healthy work-life balance (for example, through flexitime, or any other method). In turn, both these factors are capable of providing resources which reduce work pressure. Therefore, the correlations between these variables are theoretically consistent. Whilst no value is agreed as an appropriate cut off the closer the correlation is to 1, the greater the likelihood of issues of multicollinearity (Hair et al., 2014). Many of the values are below the 0.7 rule of thumb and none are above 0.9 which would indicate a worryingly high level (Katz, 2006). Coupled with the theoretical justification for these correlations, these figures are acceptable. Moreover, the use of objective data as outcome variables provides further mitigation in relation to potential issues of multicollinearity.

4.8.2 Construct validity

In order to establish the construct validity of the measures used in this analysis, and to establish that the senior leadership scale is sufficiently different from the other leadership scale to be included in the analysis (supervisor support), different measurement models were tested against each other using confirmatory factor analysis (CFA). Particular attention was paid to the senior leadership scale as it was the only scale used which was not supported by previous scale development and research. All other scales in the analysis have been previously validated. Nevertheless, CFA was performed on all measures as a way of establishing discriminant validity.

The reliabilities of all scales have already been reported, demonstrating appropriate construct reliability but I wanted to first establish that the new 'senior leadership' measure was distinct from the existing leadership scale in the NSS - 'supervisor support'. It is important to establish that supervisor support and senior leadership are distinct concepts, measuring two distinct leadership influences rather than assessing the same leadership construct. In order to do this, first each individual data set from the NSS (2008 – 2010) was randomly split in half (Browne & Cudeck, 1989). This was done by using the SPSS software to randomly assign a 0 or a 1 to approximately 50% (respectively) of the cases in the data file. These were then split into two files based on the number assigned. To establish discriminant validity, exploratory factor analysis (EFA) using SPSS was performed on the first half of the data, and confirmatory factor analysis was then performed on the second half, to confirm the factor structure. Confirmatory factor analysis was performed in Mplus.

The results of EFA using maximum likelihood analysis (MLA) demonstrated a two factor structure across all years. Across all years the Kaiser-Meyer-Olkin (a test of sampling adequacy) value was .92, above the recommended value of .6 (Pallant, 2005) while Bartlett's test of sphericity (testing for appropriateness of the factor model) was significant. For every year, MLA revealed a two-factor structure with eigenvalues above 1, and explaining 66.6% of the variance in 2008, 67.27% in 2009, and 67.47% in 2010. These analyses showed that across all years, all items for senior leadership loaded onto one factor but not the second, while all items for supervisor support loaded onto the second factor but not the first, providing support for discriminant validity.

In order to assess replicability of the two-factor structure in the first half of the data, and to show construct validity, CFA was performed on the second half of the data using Mplus. Initially all items from both leadership scales were loaded onto a single factor model. This was then compared with a two-factor model, in which supervisor support items loaded onto one factor and senior leadership items onto the second. The results for 2008 are presented in Table 4.5, the results for 2009 in Table 4.6, and the results for 2010 in Table 4.7 .

Table 4.5: Leadership confirmatory factor analysis for 2008

	CFI	TLI	RMSEA (90% CI)	Chi-square	DF	AIC
Model 1 (single factor)	.68	.58	.25 (.246, .248)	168920.512	35	1913777.740
Model 2 (two leadership scales)	.99	.97	.06 (.061, .063)	10400.398	34	1755259.626

Table 4.6: Leadership confirmatory factor analysis for 2009

	CFI	TLI	RMSEA (90% CI)	Chi-square	DF	AIC
Model 1 (single factor)	.68	.59	.25 (.249, .251)	170786.943	35	1891436.504
Model 2 (two leadership scales)	.98	.98	.06 (.061, .063)	10222.504	34	1730874.065

Table 4.7: Leadership confirmatory factor analysis for 2010

	CFI	TLI	RMSEA (90% CI)	Chi-square	DF	AIC
Model 1 (single factor)	.68	.58	.25 (.253, .255)	178181.174	35	1949401.961
Model 2 (two leadership scales)	.98	.97	.06 (.062, .064)	10826.700	34	1782049.487

Across all years the statistics show that the single factor loading model gives low validity but that the two-factor models have high values for the comparative fit index (CFI) and Tucker Lewis index (TLI), above 0.95 (Bentler, 1990). The root mean square error of approximation (RMSEA) figures do not quite reach the cut-off value of 'about 0.05 or less'

proposed by Browne and Cudeck (1992) for close fit, but at 0.06 they do fall below the value of ‘0.08 or less’ given to represent a reasonable error of approximation (Browne & Cudeck, 1993). In addition, the single factor models all give values above 1, which is classed as poor fit. Additionally Maccallum, Browne, and Sugawara (1996), emphasised the arbitrariness in the choice of cut-off values, while others (Hayduk & Glaser, 2000; Hayduk, Cummings, Boadu, Pazderka-Robinson, & Boulianne, 2007; Steiger, 2000) note that such precise cut-off values should not be used. Given this advice, the values obtained here are sufficient. In addition, in order to compare the models against each other, the chi-square values in relation to the degrees of freedom were calculated for each model and checked against a chi-square distribution table. The chi-square comparison showed that there was a significant difference between models 1 and 2 in 2008; $\chi^2(df) = 158520.114 (1) p < 0.005$, in 2009; $\chi^2(df) = 160564.439 (1) p < 0.005$, and 2010; $\chi^2(df) = 167354.474 (1) p < 0.005$. These results show that the model fit the data in a more coherent way when separated into two factors, suggesting that the creation of a senior leadership variable, which is distinctive from supervisor support, makes sense. This is further supported by lower AIC values for every two-factor model. These figures show sufficient support for construct validity of the senior leadership scale.

4.8.3 Construct validity of the full data set

Finally, in order to establish sufficiently that all variables to be included in the analyses were sufficiently different from one another, a further CFA was performed on all the variables. For each year the data was included into a CFA with one factor, and this was compared with a CFA, which loaded the variables onto the corresponding number of factors to theoretical constructs. The multi-factor CFA models included senior leadership, supervisor support, job design, engagement (2009 and 2010 only), work pressure, opportunity for involvement, work-life balance, and job satisfaction. This was done in order to demonstrate that the model represented the data accurately when the proposed variables were included in the model, against a CFA which modelled all variables as loading onto a single super-ordinate factor. The results for 2008 are presented in Table 4.8, 2009 in Table 4.9, and 2010 in Table 4.10.

Table 4.8: 2008 confirmatory factor analysis for all variables

	CFI	TLI	RMSEA (90% CI)	Chi-square	DF	AIC	SRMR
Model 1 (single factor)	.62	.59	.138 (.138, .139)	453126.463	299	5053088.010	.10
Model 2 (7 factors)	.91	.90	.069 (.068, .069)	105764.596	284	4705756.143	.56

Table 4.9: 2009 confirmatory factor analysis for all variables

	CFI	TLI	RMSEA (90% CI)	Chi-square	DF	AIC	
Model 1 (single factor)	.60	.57	.135 (.135, .135)	536194.164	377	5572440.125	.10
Model 2 (8 factors)	.91	.90	.065 (.064, .065)	116732.953	356	5153020.914	.59

Table 4.10: 2010 confirmatory factor analysis for all variables

	CFI	TLI	RMSEA (90% CI)	Chi-square	DF	AIC	
Model 1 (single factor)	.60	.60	.14 (.139, .140)	501798.125	350	5133713.009	.10
Model 2 (8 factors)	.91	.90	.067 (.066, .067)	107464.221	329	4739421.105	.06

Across all years tables show that there are reasonable values for the CFI and TLI indices in the second multi-variable model. CFIs are 0.91 and TLIs are 0.90, although these do fall short of 0.95 (Hu & Bentler, 1999). However, while these are not within the desired range, the purpose of this CFA comparison is not to establish construct validity, but to adequately show that the variables have discriminant validity. A limitation of the CFI and TLI fit indices methods, is that they are subject to penalties for model complexity. However, the standardised root mean square residual (SRMR) measure of fit has no penalty for model complexity and values less than 0.08 are considered acceptable (Hu & Bentler, 1999). Since the models presented here are likely to suffer from problems of complexity, the SRMR was considered, showing acceptable values below 0.08 of 0.56 for 2008, 0.59 for 2009, and 0.60 for 2010. Additionally the RMSEA figures fell below the value of 0.08 recommended for ‘adequate’ fit. Finally, the chi-square values in relation to the degrees of freedom were calculated for each model and checked against a chi-square distribution table. The chi-square comparison showed that there was a significant difference between models 1 and 2 in 2008; $\chi^2(df)=4947323.414(15)$ $p<0.005$, in 2009; $\chi^2(df)=419461.211(21)$ $p<0.005$, and 2010; $\chi^2(df)=394333.904(21)$ $p<0.005$, indicating that the multi-variable models provided a better fit. In addition, for all scales across all years the average variance extracted was above the 0.5 level required to show convergent validity, and construct reliability scores reached the desired 0.7 cut-off demonstrating adequate internal consistency or convergence (Hair et al., 2014).

4.9 Aggregation of lower level data to higher level constructs

Bliese and Hanges (2004) argue that organisational data is frequently nested, or influenced by group membership. They warn that ignoring non-independence can increase type II errors and reduce power. The data sets used here show some non-independence and operate on different levels such as individual, group and organisational levels. Moreover much of the data was collected at the individual level but can give insight into higher-level variables such as

‘leadership’ or ‘organisational engagement’, while performance outcome data is reported at the trust level. Since the NSS is collected at the individual level and the outcome data, which it will be compared with is at the organisational level, it is appropriate to aggregate the NSS data to the organisational level to make accurate comparisons.

In order to satisfy appropriate psychometric criteria for aggregating individual level data, the within-group agreement, non-independence, and reliability are considered (Bliese, 2000).

Within-group agreement refers to the interchangeability of individual responses from the same group. When using nested data as this data set contains, before moving to higher-level hypothesis testing, we must first show that ratings at the individual level are homogenous with respect to those higher-level variables. Within-group agreement is measured by $R_{wg(j)}$ (James, Demaree, & Wolf, 1984, 1993) and when found to be above 0.70 (Nunally & Bernstein, 1994), suggests acceptable within-group reliability, and therefore justification for aggregating individual level data to higher level variables.

Non-independence refers to how individual responses from the same group are influenced by, or depend on, or cluster by group. This is measured by intraclass correlation ICC(1). This statistic describes the amount of the total variance described by group membership (Bryk & Raudenbush, 1992). Reliability of individual responses shows the level of consistency of responses among individuals, and is measured by both ICC(1) and ICC(2). ICC(2) estimates the reliability of the group means, while ICC(1) estimates reliability when calculated on the predictor variable, in order to justify aggregation to the unit level. Moreover, it estimates non-independence of data by establishing if the predictor or outcome variables are influenced by group membership (Bliese, 2000).

Intraclass correlations judge within group agreement by comparing between group variance with the total variance across the data set. This then shows if constructs vary across groups (Yammarino & Markham, 1992). Intraclass correlations were calculated for all the variables used in this study by first computing one-way ANOVA values. An ICC(1) ANOVA F-ratio value of more than one give the level required to show differences across groups, enough to justify aggregation (Klein et al., 2000).

Once an appropriate ICC(1) is achieved, the ICC(2) must be looked at. Klein et al. (2000) propose values of 0.70 or above are acceptable, 0.50 to 0.70 are marginal, while less than 0.50 are poor. The $R_{wg(j)}$, ICC(1), ICC(2), and F-ratio values are reported in Table 4.11 for 2008, Table 4.12 for 2009, and Table 4.13 for 2010. The results of the $R_{wg(j)}$ calculations show that all variables meet the suggested 0.70 cut-off value, showing adequate within-group

reliability. The F-ratios of ICC(1) are all well above 1 and statistically significant at the 0.001 level, showing evidence of differences across units and further justifying aggregation. Finally, the ICC(2) values are all greater than 0.70, providing evidence of sufficient within-group agreement as well as between-group variability, demonstrating justification for aggregation to unit level.

Table 4.11: 2008 indices of non-independence, reliability, and within-group agreement

	Rwg(j)	ICC(1)	ICC(2)	F-value
Senior Leadership	.83	.05	.95	20.69**
Supervisor Support	.88	.02	.89	9.22**
Job design	.86	.02	.90	10.38**
Work pressure	.75	.02	.89	9.09**
Opportunity for involvement	.82	.02	.89	9.24**
Work-life balance	.74	.03	.93	14.56**
Job satisfaction	.89	.02	.90	9.99**

**significant at the 0.001 level

Table 4.12: 2009 indices of non-independence, reliability, and within-group agreement

	Rwg(j)	ICC(1)	ICC(2)	F-value
Senior Leadership	.83	.05	.95	19.56**
Supervisor Support	.88	.02	.89	8.88**
Job design	.86	.02	.90	10.32**
Engagement	.81	.01	.71	3.45**
Work pressure	.74	.02	.89	9.35**
Opportunity for involvement	.82	.02	.90	9.87**
Work-life balance	.74	.03	.93	13.80**
Job satisfaction	.89	.02	.90	9.54**

**significant at the 0.001 level

Table 4.13: 2010 indices of non-independence, reliability, and within-group agreement

	Rwg(j)	ICC(1)	ICC(2)	F-value
Senior Leadership	.83	.05	.96	22.75**
Supervisor Support	.88	.02	.89	9.18**
Job design	.86	.02	.90	9.53**
Engagement	.79	.01	.80	4.97**
Work pressure	.74	.02	.91	10.52**
Opportunity for involvement	.82	.02	.89	9.41**
Work-life balance	.74	.03	.94	15.75**
Job satisfaction	.89	.02	.90	9.60**

**significant at the 0.001 level

4.10 Conclusion of reliability, validity and aggregation appropriateness

The methodology followed here provides appropriate justification for using the senior leadership scale in the analysis alongside the other established variables included. It demonstrated the steps taken to ensure reliability and validity of this scale, and offers some confidence that the scale is adequately measuring the construct of senior leadership. In addition, I have shown that it is appropriate to aggregate the NSS data to the organisational level in order to compare it with objective organisational outcomes. Furthermore, the analyses provide evidence that the variables included in preliminary analyses adequately represent the data.

4.11 Methodological approach to the analysis (PROCESS – mediation)

4.11.1 Cross sectional analysis

Following CFA analyses using Mplus confirming the underlying factor structure of the data in relation to leadership and mediation variables, multiple mediated regression analyses were used to address hypotheses 1 to 8. Hypotheses 1 – 4 relate to the ability of senior leadership to predict organisational outcomes (job satisfaction, patient satisfaction, absenteeism, turnover) *indirectly* via its influence on mediating variables (job design, engagement, work pressure, opportunity for involvement, work-life balance), and hypotheses 5 – 8 replicate the senior leadership hypotheses with supervisor support as the predictor variable. These mediation analyses were performed on cross-sectional data, with comparisons between predictor and outcome variables being made for individual years. For each model tested, both leadership predictor variables were included, although in order to assess the variance attributed to each predictor exclusively, one would be included as a predictor while the other was included as a control. In addition, all mediators were included in each model, with every model predicting a single outcome. For example, in 2008 there were four senior leadership models tested, each measuring the indirect effect of senior leadership on each outcome, via every mediator, controlling for supervisor support (as well as other stated control variables). Finally, in order to assess the relative importance of each leadership predictor, relative weight analysis was performed in SPSS (Johnson, 2004). Example syntax for all analyses are provided in the appendices.

4.11.2 Justification and description of PROCESS

PROCESS is a macro designed to be used within the SPSS software which implements a logistic regression-based path analysis framework to assess direct and indirect effects in single and multiple mediator models (discussed shortly). Bootstrapping and Monte Carlo confidence intervals are used which allow for indirect effect inferences as well as effect sizes. PROCESS is designed to be a simple command, which integrates a wide variety of analytical techniques, otherwise dependent on multiple different software tools (Hayes, 2013).

The PROCESS macro for SPSS (Hayes, 2013) was used for this analysis over other common approaches⁶ which use the causal steps method (Baron & Kenny, 1986). The causal steps method argues that a series of hypotheses tests must be confirmed in order to establish the

⁶ MPlus was also considered but its main advantage is the ability to include multiple outcome variables in a single model. Since the scope of this thesis was to examine the effects of leadership on individual outcomes, a more complex model including all variables simultaneously was not considered appropriate. Moreover, there is no strong theoretical rationale for combining the outcome variables in the same analysis. Therefore the PROCESS macro was selected for clarity and ease of use.

presence of mediation, each stage being necessary before moving on to the next. In this approach, the first hypothesis test must show a correlation between the predictor variable (X) and the outcome (Y), establishing the presence of an effect that can be mediated (M). The second step then must show a relationship between the predictor (X) and the mediator (M) essentially treating M as the outcome. The next stage must show a relationship between M and Y , controlling for any influence of X (as M and Y may be correlated due to any causal effect of X), before finally establishing that the effect of X on Y is zero when controlling for the effect through M . However, when testing multiple mediation models, it is advantageous to include all mediators simultaneously. This allows us to understand if the mediation is independent of the effect of other mediators. The causal steps method presents a potential pitfall when testing multiple mediation as two mediators may affect the outcome in opposite directions, thereby cancelling each other's effect out. For example, if the size of one mediation effect was found to be 0.5 and a simultaneous effect from a second mediator was found to be -0.5, then the sum of these effects would be zero, and no main effect would be found at the first hypothesis stage. This means that the causal steps approach is less sensitive as it is less likely to detect indirect effects in multiple mediation models (Fritz & MacKinnon, 2007). The PROCESS analysis technique does not require a main effect before looking for indirect effects however (Hayes, 2013). Moreover, Hayes (2013) argues that the PROCESS analysis technique is preferred to the causal steps approach as it does not use *complete* or *partial* mediation, which do not quantify the indirect effect. PROCESS, on the other hand, uses objectively quantifiable criteria to assess any mediation effects, allowing for significance testing of those effects as well as the inclusion of control variables (which may oppositely mediate any simultaneous effects).

As the methodology to be followed here requires the use of multiple mediation, the use of PROCESS as an analytic technique is justified.

4.11.3 Common method variance

As the NHS staff survey produces self-reported data, the leadership and mediating variables, as well as the outcome of job satisfaction are all subject to issues of common method variance, and are consequently vulnerable to inflated relationships (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In order to address this issues, the data files were split into two random halves (described earlier) for the cross sectional analyses in order to reduce the effect of this when analysing the job satisfaction outcome (as this was also self-report data) (Browne & Cudeck, 1989). Moreover, longitudinal analyses were conducted (explained in the following sections), comparing data from one year with responses captured in subsequent years. Doing so further reduces possible common method bias (Podsakoff et al., 2003). Additionally, this issue was addressed by comparing self-report data with objective outcome data of patient satisfaction,

absenteeism, and turnover. A final step taken was the inclusion of mediation analyses (explained in the next section) which are less susceptible to common method biases (Podsakoff et al., 2003).

4.12 Simple mediation⁷

Mediation analysis is used to help to understand how a causal agent X conducts its effect on Y . The simple mediation model is the most basic of mediation models and represented in Figure 4-1 (Hayes, 2013). This model contains two consequent variables (M) and (Y), two antecedent variables (X) and (M), with X causally influencing M , and M causally influencing Y . Simple mediation demands that at least one antecedent X influences outcome Y through the mediating variable M . The influence X has on Y can either be directly (from X to Y) without passing through M , called the *direct effect* and represented in Figure 4-1 by c' , or indirectly through M , called the *indirect effect*.

Figure 4-1 represents two statistical equations:

$$M = i_1 + aX + e_m$$

$$Y = i_2 + c'X + bM + e_y$$

Where i_1 and i_2 = regression intercepts, e_m and e_y = error estimation of M and Y , and a , b and c' = regression coefficients of the antecedents on the consequents.

⁷ The sections explaining simple and multiple mediation closely follow Hayes's (2013) explanation of mediation models.

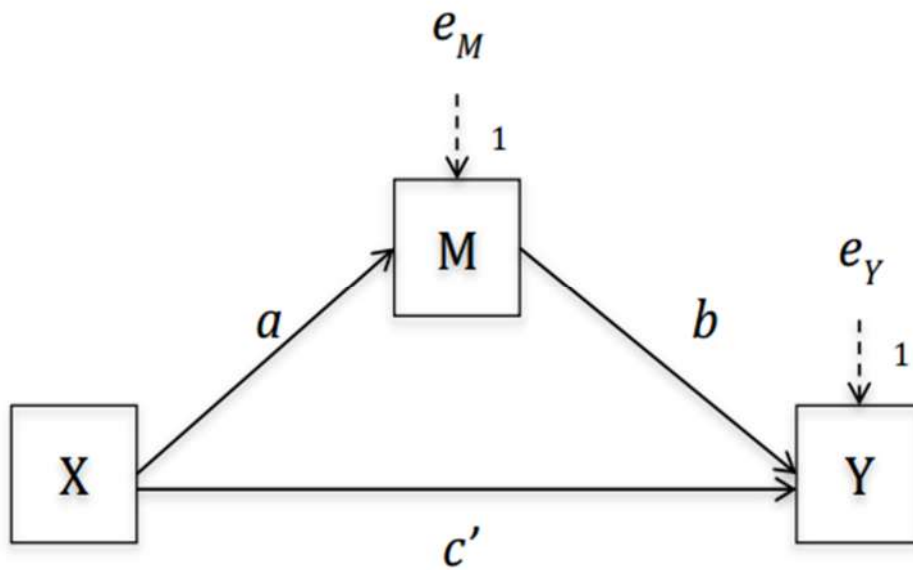


Figure 4-1: Simple mediation model. Adapted from Hayes (2013: p91)

The indirect effect represents the extent to which X influences Y as a result of the causal sequence where X influences M , represented as a in Figure 4-1, which subsequently influences Y , represented as b in Figure 4-1, the indirect effect being the product of $a*b$. The path a quantifies the change in M based on a one unit increase (or decrease) in X . An example of this using the models proposed here would be the effect of senior leadership (X) on work pressure (M). Path b subsequently quantifies the effect of one unit change in M on Y , controlling for X , for example the effect of work pressure (M) on patient satisfaction (Y). This can be represented by the two formulas,

$$a = [\widehat{M} | (X = x)] - [\widehat{M} | (X = x - 1)]$$

$$b = [\widehat{Y} | (M = m, X = x)] - [\widehat{Y} | (M = m - 1, X = x)]$$

where m and x represent any value of M and X , $|$ is given or conditioned on, and $\widehat{}$ over X and Y mean expected or estimated from the model. These equations explain a one unit change of two cases in X are estimated to differ by ab units on Y as a result of the effect of X on M which, in turn, affects Y (Hayes, 2013: p92). The indirect effect is positive if both a and b are positive or negative, whereas if one is positive while the other is negative, the indirect effect will be negative.

In addition to the indirect effect, the direct effect is calculated, where two cases with a one unit increase in X , but equal (controlled for) on M , are estimated to differ on Y by c' units:

$$c' = [\hat{Y} | (X = x, M = m)] - [\hat{Y} | (X = x - 1, M =)]$$

If the direct effect is found to be non-significant, then it can be concluded that X does not affect Y independent of the effect of M on Y . That is, that the association between X and Y does not exist without accounting for the effect of M on Y .

The final relationship that is necessary to discuss is the total effect, which represents the sum of the direct and indirect effects, denoted as c :

$$c = c' + ab$$

The total effect quantifies the extent to which a one unit change in two cases of X estimates a change on Y .

$$c = [\hat{Y} | (X = x)] - [\hat{Y} | (X = x - 1)]$$

As already explained, a significant total effect is not necessary to establish before looking for the presence of any indirect effects. To establish the presence of mediation, the simple mediation model must demonstrate that the direct effect c' is not statistically significant when controlling for M . Multiple mediation models however, include more than one mediator, and indirect effects are dependent on other mediators.

4.13 Multiple mediation

Multiple mediation models extend the simple mediation models by including more than one mediator in the model. Simple mediation is limited when studying phenomena that have multiple influences (Hayes, 2013). Whilst acknowledging that it is never possible to completely account for every influence in any model, Hayes (2013) argues that where there is theoretical justification for predicting that an antecedent's effect will operate through more than one variable, a model estimation, which includes multiple processes, is advisable. The hypotheses presented in chapter 3 propose multiple processes through which leadership predicts organisational outcomes. Therefore, multiple mediation models are appropriate.

In multiple mediation models, each variable's effect can be assessed in relation to the effects of the other variables in the model. Each effect is termed the *specific indirect effect*, represented through $k + 1$ paths, where the direct effect is accounted for as well as the specific indirect effects of k mediators. The specific indirect effect does not equal the indirect effect in a simple mediation model however. The effect of a given mediator is conditional on the other

mediators in the model, unless all mediators are uncorrelated (Preacher & Hayes, 2008). The multiple mediation model with three mediators is depicted in Figure 4-2. The specific indirect effects are calculated as:

$$M_1 = a_1b_1; M_2 = a_2b_2; \text{ and } M_3 = a_3b_3$$

Each specific indirect effect represents the effects of a one unit change in the mediator on Y whilst holding all other antecedent variables constant. Therefore the total indirect effect is the sum of each specific indirect effect, while the total effect remains unchanged from the simple mediation model, and is represented by the sum of the direct effect and the total indirect effect. Similarly, if the direct effect is non-significant after accounting for the total indirect effect, then the effect of X on Y cannot be said to be independent of the effect of M_i on Y . However, in order to make statistical inferences regarding the magnitude of specific indirect effects, further tests are required.

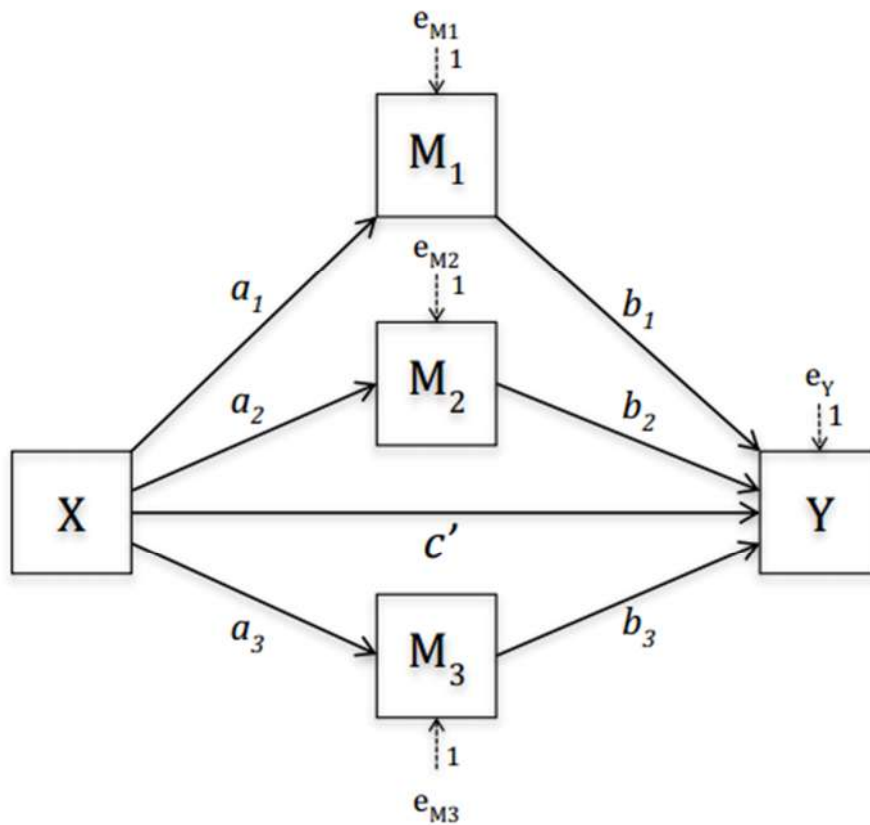


Figure 4-2: Multiple mediation model. Adapted from Hayes (2013: 127)

4.14 Statistical inference in multiple mediation models

PROCESS uses bootstrap confidence intervals to make statistical inference which do not make assumptions about the sampling distribution of $a_i b_i$. Normal theory approach which does not use bootstrapping makes unrealistic assumptions of normality regarding the sampling

distribution of $a_i b_i$. The causal steps method (Baron & Kenny, 1986) is a frequently used approach to mediation which follows a normal theory approach and uses Sobel tests to detect significance of the indirect effect. However, since this test calculates a p statistic based on the ratio of ab to its standard error, it violates assumptions of normality. This is because this approach assumes a normally distributed sample of ab , but studies have shown the distribution of ab is frequently irregular (Bollen & Stine, 1990; Stone & Sobel, 1990). In addition, the sampling distribution of ab cannot be known for certain, and for this reason tests which do not make this assumption are preferable (Hayes, 2013).

Rather than p statistics, bootstrapping uses confidence intervals to examine statistical inference as it does not make any assumptions about sampling distributions. A bootstrap confidence interval randomly samples n cases from the original sample, constructing a miniature representation of the original population sampled, and estimating the indirect effect ab . This procedure is repeated many times, typically 5 – 10,000 times (Hayes, 2013). Confidence intervals are then calculated as a representation of this repeated sampling distribution. The repeated bootstrap estimates of specific indirect effects generate estimates of confidence interval endpoints, in this analysis using the bias corrected method (see Hayes, 2013). If zero is outside of this confidence interval, the presence of a specific indirect effect is supported, while if the confidence interval straddles zero, evidence for a specific indirect effect is not found (as the probability of an indirect effect is not statistically different from zero).

The analyses presented in this thesis followed bias corrected bootstrapping methods for multiple mediation models to test for the presence of indirect effects of both levels of leadership on organisational outcomes, through five simultaneous mediators. The confidence intervals of the specific indirect effects allow for comparisons of indirect effects to be made, however, in order to test for the relative importance of each leadership variable on each outcome regardless of the indirect effects, relative weight analysis was performed.

4.15 Relative weight analysis

It is useful to understand to what extent senior leadership and supervisor support independently predict each organisational outcome. In order to do this, relative weight analysis was performed (Johnson, 2004). The results of PROCESS analyses are unstandardised, allowing for useful comparisons within a scale, but mean that comparisons between different scales are misleading. In addition, when multiple predictors are correlated, the proportion of variance each predictor accounts for cannot be understood through regression coefficients (R^2) alone (Johnson, 2004), as each variable may share variance with other variables. In this case, relative weights can be used which allow for comparisons between predictors regarding their relative importance (to other predictors) on the consequent. Relative weight analysis compares

the amount of unique variance explained in the R^2 by a given predictors, as well as its joint effects combined with other predictors (Johnson, 2004). The relative weight statistic is given as a range from 0 to 1, with the figure representing the amount of variance explained by the predictor variable. Johnson (2000) suggests that relative weight analysis is particularly useful when comparing predictors that are correlated. As has been demonstrated, in the section on validity, the variables used in this thesis are correlated with one another. Moreover, theoretical explanations for these correlations are available. For example, senior leadership and supervisor support are both likely to be facets of a latent leadership construct, while job design, opportunity for involvement, and work pressure (for example) have been found to be correlated in other studies (Boyd et al., 2011; Buttigieg & West, 2013; Hallberg & Schaufeli, 2006). However, relative weights are influenced by sampling error and as such, adequate scale reliability is crucial (Johnson, 2004). Since I have already demonstrated appropriate Cronbach's alpha values for scale reliabilities, and based on the significant correlations between variables, the relative weight analysis was conducted with Johnson's (2001) SPSS macro. For consistency, the same control variables as used in the mediation analyses were included. However, mediating variables were not included, as the purpose of this analysis was to understand the relative importance of each leadership level in total, and therefore including the effects each has through various mediating variables. The inclusion of mediating variables in the relative weight analysis would remove any variance accounted for by these indirect effects, leaving only the direct effect of leadership on the outcome.

4.16 Longitudinal analysis

In addition to the cross sectional analysis, multiple data collection points allowed for longitudinal analysis of the data.

The longitudinal analysis was performed following the same statistical procedure described in the previous section, so that consistency was maintained. The same approach to hypothesis testing was followed, with both leadership predictor (X) variables included (one always included as a control), all mediators (M) included in each model, with every model predicting a single outcome (Y). However, where the cross sectional analysis examined these models at a single data point, for example, in 2008, the longitudinal analysis examined these relationships over time. Two overall longitudinal models were tested. The first examined the effects of leadership at time 1 (T1), on the mediation variables at time 2 (T2), and the subsequent effects of the mediators at time 2 on the outcome at time 3 (T3). Each stage of the model represented the following year's data. For example, the effects of senior leadership in 2008 on the mediators in 2009 were modelled in the first mediation path (a), the subsequent path (b) looked at the effects of the mediators in 2009 on a given outcome (for example patient

satisfaction) in 2010. This was done for every case where data was available for three consecutive years. In addition, the second type of longitudinal model measured tested the effects of the predictor (X) at time one on the mediators *and* the outcome at time 2. The difference in the mediation models here attempts to examine any differences in distal effects over one or two years following the measurement of X . It is possible that any influence of leadership operates over time (for example the implementation of a new systems of working), and changes in mediating variables are seen the following year. In turn, any effects of mediation variables may take time to materialise in the outcome variable, and consequently the relationship between M and Y is examined over the following year. It may also be that the effects of leadership are seen in both the mediating variable and the outcome in the following year, hence the inclusion of two types of longitudinal mediation model. An example of the three year longitudinal model is represented by Figure 4-3, which shows senior leadership in 2008 (T1) predicting the mediating variables in 2009 (T2), and in turn, the mediating variables predicting patient satisfaction in 2010 (T3).

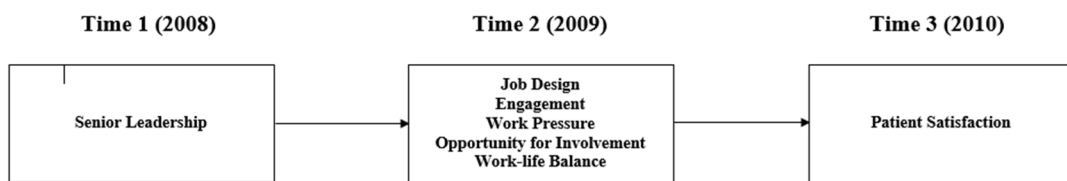


Figure 4-3: Three-year longitudinal mediation model example with senior leadership on patient satisfaction

The second of the longitudinal models is represented by Figure 4-4, which shows senior leadership in 2008 (T1) predicting the mediators in 2009 (T2), and the mediators in 2009 predicting patient satisfaction in 2009 (T2).

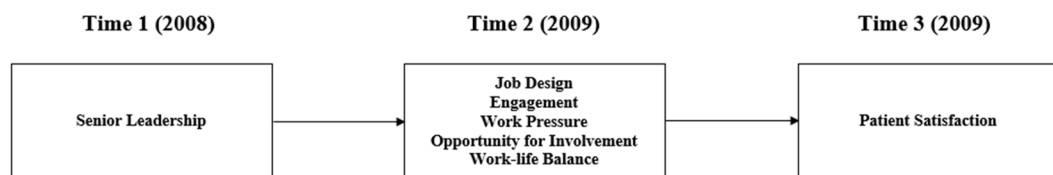


Figure 4-4: Two-year longitudinal mediation model example with senior leadership on patient satisfaction

It is important to note that causation cannot be inferred for all analyses performed at cross sectional level. Although longitudinal analyses can indicate the predictive ability of leadership in one year on outcomes the following year, this does not imply that leadership is *causing* any change in that outcome, it only shows that this relationship exists over time.

This chapter has presented the methodology and analytic strategy. The next chapters will present the results of these examinations, starting with the results from the senior leadership hypotheses, followed by the hypotheses relating to supervisor support, and finally the relative weight analyses.

5 Effects of senior leadership

This chapter will present the findings of the senior leadership analyses. Each hypothesis is presented, separated by outcome. Because the hypotheses relating to job satisfaction (H1) and absenteeism (H3) were tested on all trusts, they will be presented first, followed by hypotheses 2 (patient satisfaction) and 4 (stability), which were tested on acute trusts only. Within each outcome sub-section, the cross sectional data analysis is presented first, with each mediator tested systematically. Following this, the longitudinal analysis will then be presented, obeying the same structure as the cross sectional analysis.

At the end of this chapter a summary of all analyses is provided, including significant, consistent indirect effects (both cross-sectional and longitudinal).

5.1 Study 1: Senior leadership cross sectional analysis

The first study examined the relationship between senior leadership and outcome variables contemporaneously, testing for any effects through mediating variables. Cross sectional analyses only assess associations and cannot infer directionality of any relationships, but should increase my confidence in proposing the directionality in the hypotheses.

5.1.1 Job satisfaction

Hypothesis 1 stated that senior leadership would be positively associated with job satisfaction, mediated by job design (H1a), engagement (H1b), work-life balance (H1c), opportunity for involvement (H1d) and work pressure (H1e). The indirect effects will first be reported, followed by the total effects and direct effects. Job satisfaction was tested across the whole sample and variables that were controlled for, were supervisor support, London based, trust size, and trust type. The number of trusts included in the final analysis was 385 in 2008, 389 in 2009, and 356 in 2010.

5.1.1.1 Job design

Table 5.1 shows the effects of senior leadership on job satisfaction in 2008. No indirect effects of senior leadership were found on job satisfaction through job design for this year ($a_1b_1 = -.01$, (95%CI [-.05, .04])). The first stage of the indirect path between senior leadership and job design was significant ($a_1 = .26$, $p < .001$), while the second stage effect was not significant ($b_1 = -.02$, *n.s.*).

Table 5.1. 2008 senior leadership and job satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)					Job satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.26	.02	<.001	.22	.31	c	.27	.03	<.001	.21	.34				
	a ₂	-.47	.05	<.001	-.50	-.33	c'	.17	.04	<.001	.09	.25				
	a ₃	.12	.02	<.001	.08	.15										
	a ₄	.21	.04	<.001	.14	.29					Total	.01	.03	.05	.16	
M ₁	--	--	--			b ₁	-.02	.08	.82	-.17	.14	a ₁ b ₁	-.01	.02	-.05	.04
M ₂	--	--	--			b ₂	-.10	.04	<.01	-.17	-.03	a ₂ b ₂	.05	.02	.01	.08
M ₃	--	--	--			b ₃	.28	.10	<.01	.08	.74	a ₃ b ₃	.03	.01	.01	.06
M ₄	--	--	--			b ₄	.17	.05	<.001	.09	.25	a ₄ b ₄	.04	.01	.01	.07

Covariates: Supervisor support, London based, trust size, trust type. N=385.

Table 5.2 shows the effects of senior leadership on job satisfaction in 2009. No indirect effects of senior leadership were found on job satisfaction through job design for this year ($a_1b_1 = .01$, 95%CI [-.03, .06]). The first stage of the indirect path was significant ($a_1 = .27$, $p < .001$) indicating a significant relationship between senior leadership and job design, while the second stage effect was not significant ($b_1 = .03$, *n.s.*).

Table 5.2. 2009 senior leadership and job satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Job satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.27	.02	<.001	.23	.31	c	.31	.03	<.001	.25	.36				
	a ₂	.17	.03	<.001	.11	.23	c'	.23	.04	<.001	.15	.30				
	a ₃	-.50	.04	<.001	-.57	-.41										
	a ₄	.13	.02	<.001	.09	.16										
	a ₅	.22	.03	<.001	.16	.27					Total	.08	.03	.02	.13	
M ₁	--	--	--			b ₁	.03	.07	.67	-.11	.18	a ₁ b ₁	.01	.02	-.03	.06
M ₂	--	--	--			b ₂	.09	.05	.06	-.003	.19	a ₂ b ₂	.02	.01	-.002	.04
M ₃	--	--	--			b ₃	-.05	.04	.17	-.13	.02	a ₃ b ₃	.03	.02	-.01	.06
M ₄	--	--	--			b ₄	.07	.09	.43	-.11	.25	a ₄ b ₄	.01	.01	-.02	.03
M ₅	--	--	--			b ₅	.08	.05	.10	-.02	.18	a ₅ b ₅	.02	.01	-.004	.04

Covariates: Supervisor support, London based, trust size, trust type. N=389.

Table 5.3 shows the effects of senior leadership on job satisfaction in 2010. No indirect effects of senior leadership were found on job satisfaction through job design for this year ($a_1b_1 = .02$, (95%CI [-.02, .06])). The first stage of the indirect path was significant ($a_1 = .22$, $p < .001$) indicating a significant relationship between senior leadership and job design, while the second stage effect was not significant ($b_1 = -.08$, *n.s.*).

Table 5.3. 2010 senior leadership and job satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Job satisfaction (Y)						Indirect effect			
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.22	.02	<.001	.18	.26	c	.24	.03	<.001	.19	.30				
	a ₂	.14	.03	<.001	.08	.21	c'	.18	.04	<.001	.10	.25				
	a ₃	-.45	.04	<.001	-.53	-.36										
	a ₄	.11	.02	<.001	.08	.14										
	a ₅	.27	.03	<.001	.19	.32										
M ₁	--	--	--			b ₁	.08	.09	.37	-.10	.26	a ₁ b ₁	.02	.02	-.02	.06
M ₂	--	--	--			b ₂	.10	.05	.83	-.09	.11	a ₂ b ₂	.002	.01	-.01	.02
M ₃	--	--	--			b ₃	-.02	.04	.53	-.10	.05	a ₃ b ₃	.01	.02	-.03	.05
M ₄	--	--	--			b ₄	.04	.11	.71	-.18	.26	a ₄ b ₄	.01	.01	-.02	.03
M ₅	--	--	--			b ₅	.14	.05	<.005	.05	.24	a ₅ b ₅	.04	.01	.01	.07
												Total	.07	.03	.02	.14

Covariates: Supervisor support, London based, trust size, trust type. N=356.

These findings do not provide support for hypothesis 1a, suggesting that the relationship between senior leadership and job satisfaction is not mediated by job design.

5.1.1.2 Engagement

Engagement was not measured in 2008. Table 5.2 shows no indirect effect of senior leadership on job satisfaction through engagement for 2009 ($a_2b_2 = .02$, (95%CI [-.002, .04])). The first component of the indirect path was significant ($a_2 = .17$, $p < .001$) indicating a significant relationship between senior leadership and engagement, while the second stage effect was not significant ($b_2 = .09$ *n.s.*) (although it is marginally significant at the $p < .1$ level). It is worth noting that the 95%CI confidence interval value falls just short of statistical significance, the lower bound confidence interval being -.003 with the upper bound interval being .19. As this interval includes zero it is not significant, however the interval lies just short of remaining outside of zero.

As Table 5.3 shows, no indirect effect of senior leadership was found on job satisfaction through engagement for 2010 ($a_2b_2 = .002$, (95%CI [-.01, .02])). The first component of the indirect path was significant ($a_2 = .14$, $p < .001$) indicating a significant relationship between senior leadership and engagement, while the second stage effect was not significant ($b_2 = .10$, *n.s.*).

These findings do not provide support for hypothesis 1b, suggesting that the relationship between senior leadership and job satisfaction is not mediated by engagement.

5.1.1.3 Work pressure

As Table 5.1 shows, there is an indirect effect of senior leadership on job satisfaction through work pressure for 2008, supporting hypothesis 1c ($a_2b_2 = .05$, (95%CI [.01, .08])). Those who reported higher levels of senior leadership also reported significantly lower levels of work pressure ($a_2 = -.48$, $p < .001$) and in turn lower levels of work pressure were associated with higher levels of job satisfaction ($b_2 = -.10$, $p < .01$). On the other hand, Table 5.2 shows no indirect effects of senior leadership on job satisfaction through work pressure for 2009 ($a_3b_3 = .03$, (95%CI [-.01, .06])). The first component of the indirect path was significant ($a_3 = -.50$, $p < .001$) indicating a significant negative relationship between senior leadership and work pressure, while the second stage effect was not significant ($b_3 = -.05$, *n.s.*). Similarly, Table 5.3 shows no indirect effects of senior leadership on job satisfaction through work pressure for 2010 ($a_3b_3 = .01$, (95%CI [-.03, .05])). The first component of the indirect path was significant ($a_3 = -.45$, $p < .001$) indicating a significant negative relationship between senior leadership and work pressure, while the second stage effect was not significant ($b_3 = -.02$, *n.s.*).

Therefore, hypothesis 1c is supported in 2008, but this support is not maintained in 2009 and 2010, suggesting that there is some evidence that senior leadership influences job satisfaction through work pressure, albeit not replicated from year to year in this research. Those who rate their senior leaders higher, are more likely to report reduced levels of work pressure and in turn increased levels of job satisfaction.

5.1.1.4 Opportunity for involvement

Table 5.1 shows an indirect effect of senior leadership on job satisfaction through opportunity for involvement for 2008, supporting hypothesis 1d ($ab_3 = .03$, (95%CI [.01, .06])). Those who reported higher levels of senior leadership also reported significantly more opportunity for involvement ($a_3 = .12$, $p < .001$) and in turn more opportunity for involvement was associated with higher levels of job satisfaction ($b_3 = .28$, $p < .001$). On the other hand, Table 5.2 shows no indirect effects of senior leadership on job satisfaction through opportunity for involvement for 2009 ($a_4b_4 = .01$, (95%CI [-.02, .03])). The first component of the indirect path was significant ($a_4 = .13$, $p < .001$) indicating a significant relationship between senior leadership and opportunity for involvement, while the second stage effect was not significant ($b_4 = .07$, *n.s.*). Similarly, Table 5.3 shows no indirect effects of senior leadership on job satisfaction through opportunity for involvement for 2010 ($a_4b_4 = .01$, (95%CI [-.02, .03])). The first component of the indirect path was significant ($a_4 = .11$, $p < .001$) indicating a significant relationship between senior leadership and opportunity for involvement, while the second stage effect was not significant ($b_4 = .04$, *n.s.*).

Therefore, similar to hypothesis 1c, support for hypothesis 1d was only found in 2008, suggesting that opportunity for involvement mediates the relationship between senior leadership and job satisfaction, albeit not replicated for 2009 and 2010. People who rate their senior leaders more highly are more likely to report increased opportunity for involvement, which leads to an increase in job satisfaction.

5.1.1.5 Work-life balance

Table 5.1 shows an indirect effect of senior leadership on job satisfaction through work-life balance for 2008, supporting hypothesis 1e ($a_4b_4 = .04$, (95%CI [.01, .07])). Those who reported higher levels of senior leadership also reported significantly better work-life balance ($a_4 = .21$, $p < .001$) and in turn better work life balance was associated with higher levels of job satisfaction ($b_4 = .17$, $p < .001$). However, Table 5.2 shows no indirect effects of senior leadership on job satisfaction through work-life balance for 2009 ($a_5b_5 = .02$, (95%CI [-.004, .04])). The first component of the indirect path was significant ($a_5 = .22$, $p < .001$) indicating a significant relationship between senior leadership and work-life balance, while the second stage effect was not significant ($b_5 = .08$, *n.s.*). Furthermore, Table 5.3 shows an indirect effect of senior leadership on job satisfaction through work-life balance for 2010, supporting hypothesis 1e ($a_5b_5 = .04$, (95%CI [.01, .07])). Those who reported higher levels of senior leadership also reported significantly better work-life balance ($a_5 = .27$, $p < .001$) and in turn better work life balance was associated with higher levels of job satisfaction ($b_5 = .14$, $p < .005$).

Support for hypothesis 1e was stronger than for hypotheses 1c and 1d as the support found in 2008 was replicated in 2010, suggesting that work-life balance mediates the relationship between senior leadership and job satisfaction. Despite the fact that the result was not replicated in 2009, it is worth noting that the 2009 confidence interval for the indirect effect is just short of falling outside of zero. The lower bound interval is -.004 while the upper bound interval is .04. Therefore, there is a sizeable support for the hypothesis that people, who rate their senior leaders more highly are more likely to report better work-life balance, which leads to an increase in job satisfaction.

5.1.1.6 Total and direct effects

A total effect of senior leadership in predicting job satisfaction was found for all years. As ratings of senior leadership increased by one unit, job satisfaction increased by $c = .27$ (95%CI [.21, .34]) in 2008, $c = .31$ (95%CI [.25, .36]) in 2009, and $c = .24$ (95%CI [.19, .30]) in 2010.

A direct effect was found for 2008 $c' = .17$ (95%CI [.09, .25]), 2009 $c' = .23$ (95%CI [.15, .30]), and 2010 $c' = .18$ (95%CI [.10, .25]). This suggests that when controlling for the

mediators, senior leadership has an effect on job satisfaction indicating that this relationship may be described further by more variables than contained within these models.

5.1.2 Absenteeism

Hypothesis 3 stated that senior leadership would be negatively associated with absenteeism, mediated by job design (H3a), engagement (H3b), work life balance (H3c), opportunity for involvement (H3d) and work pressure (H3e). The indirect effects will first be reported, followed by the total effect and direct effect. Absenteeism was tested across the whole sample and variables that were controlled for were supervisor support, London based, trust size, and trust type. The number of trusts included in the final analysis was 310 in 2008, 384 in 2009, and 379 in 2010.

5.1.2.1 Job design:

Table 5.4 shows no indirect effects of senior leadership on absenteeism through job design for 2008. The first stage of the indirect path was significant ($a_1=.25, p<.001$) indicating a significant relationship between senior leadership and job design, while the second stage effect was not significant ($b_1= -.01, n.s$).

Table 5.4. 2008 senior leadership and absenteeism multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)						Absenteeism (Y)				Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.25	.02	<.001	.21	.29	c	-.01	.004	<.05	-.02	-.002				
	a ₂	-.40	.05	<.001	-.49	-.30	c'	-.01	.005	<.05	-.02	-.002				
	a ₃	.09	.02	<.001	.06	.12										
	a ₄	.16	.04	<.001	.08	.23					Total	.002	.003	-.005	.01	
M ₁	--	--	--			b ₁	-.01	.01	.64	-.03	.02	a ₁ b ₁	-.001	.003	-.01	.01
M ₂	--	--	--			b ₂	-.02	.01	<.001	-.03	-.01	a ₂ b ₂	.01	.002	.003	.01
M ₃	--	--	--			b ₃	-.04	.01	<.01	-.07	-.01	a ₃ b ₃	-.003	.001	-.01	-.001
M ₄	--	--	--			b ₄	.002	.01	<.05	-.02	-.00	a ₄ b ₄	.0002	.001	-.002	.003

Covariates: Supervisor support, London based, trust size, trust type. N=310

Table 5.5 shows no indirect effects of senior leadership on absenteeism through job design for 2009. The first stage of the indirect path was significant ($a_1=.26, p<.001$) indicating a significant relationship between senior leadership and job design, while the second stage effect was not significant ($b_1= .01, n.s$).

Table 5.5. 2009 senior leadership and absenteeism multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Absenteeism (Y)					Indirect effect				
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.26	.02	<.001	.22	.30	c	-.01	.003	.15	-.01	.002				
	a ₂	.16	.03	<.001	.10	.22	c'	-.01	.004	<.05	-.02	-.001				
	a ₃	-.53	.04	<.001	-.61	-.45										
	a ₄	.12	.02	<.001	.09	.15										
	a ₅	.22	.03	<.001	.16	.28					Total	.01	.003	-.02	.01	
M ₁	--	--	--			b ₁	.01	.01	.28	-.01	.03	a ₁ b ₁	.003	.003	-.003	.01
M ₂	--	--	--			b ₂	-.01	.01	.22	-.02	.004	a ₂ b ₂	-.001	.001	-.004	.001
M ₃	--	--	--			b ₃	-.01	.00	<.005	-.02	-.004	a ₃ b ₃	.01	.002	.002	.01
M ₄	--	--	--			b ₄	-.04	.01	<.001	-.06	-.02	a ₄ b ₄	-.01	.002	-.01	-.002
M ₅	--	--	--			b ₅	.01	.01	.31	-.01	.02	a ₅ b ₅	.001	.001	-.001	.004

Covariates: Supervisor support, London based, trust size, trust type. N=384

Table 5.6 shows an indirect effect of senior leadership on absenteeism through job design for 2010, $a_1b_1 = .004$ (95%CI[.001, .01]). This suggests that senior leaders indirectly increase absenteeism through their influence on job design. Those who reported higher levels of senior leadership also reported higher levels of job design ($a_1 = .21$, $p < .001$) and the second stage of the path was significant between job design and absenteeism ($b_1 = .02$, $p < .05$). It is worth noting that the effect size of the indirect effect is small at .004 and the confidence interval is very close to including zero with the lower bound figure being .0001.

Table 5.6. 2010 senior leadership and absenteeism multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Absenteeism (Y)					Indirect effect				
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.21	.02	<.001	.18	.24	c	-.01	.003	.15	-.01	-.001				
	a ₂	.16	.03	<.001	.10	.23	c'	-.01	.004	<.05	-.02	-.003				
	a ₃	-.44	.04	<.001	-.52	-.34										
	a ₄	.11	.01	<.001	.08	.13										
	a ₅	.24	.03	<.001	.19	.30					Total	.01	.003	-.02	-.01	
M ₁	--	--	--			b ₁	.02	.01	<.05	-.01	.04	a ₁ b ₁	.004	.002	.001	.01
M ₂	--	--	--			b ₂	.005	.004	.32	-.04	.01	a ₂ b ₂	-.00	.001	-.001	.003
M ₃	--	--	--			b ₃	-.006	.004	.11	-.01	.001	a ₃ b ₃	.01	.002	-.001	.01
M ₄	--	--	--			b ₄	-.03	.01	<.005	-.05	-.01	a ₄ b ₄	-.01	.001	-.006	-.001
M ₅	--	--	--			b ₅	.001	.01	.89	-.01	.01	a ₅ b ₅	.00	.001	-.002	.002

Covariates: Supervisor support, London based, trust size, trust type. N=379

While senior leadership was significantly associated with job design across all years, taken together, these findings do not provide general support for hypothesis 3a, suggesting that the relationship between senior leadership and absenteeism is not mediated by job design.

5.1.2.2 Engagement

Engagement was not measured in 2008. Table 5.5 shows no indirect effects of senior leadership on absenteeism through engagement for 2009. The first stage of the indirect path was significant ($a_2=.16, p<.001$) indicating a significant relationship between senior leadership and engagement, while the second stage effect was not significant ($b_2= -.01 n.s$).

Table 5.6 shows no indirect effects of senior leadership on absenteeism through engagement for 2010. The first stage of the indirect path was significant ($a_2=.16, p<.001$) indicating a significant relationship between senior leadership and engagement, while the second stage effect was not significant ($b_2= .005, n.s$).

These findings do not provide support for hypothesis 3b, suggesting that the relationship between senior leadership and absenteeism is not mediated by engagement, although senior leadership was significantly associated with engagement across all years.

5.1.2.3 Work pressure

Table 5.4 shows an indirect effect of senior leadership on absenteeism through work pressure for 2008, $a_2b_2= .01, (95\%CI [.003, .01])$. Those who reported higher levels of senior leadership also reported significantly lower levels of work pressure ($a_2= -.40, p<.001$) and in turn higher levels of work pressure were associated with lower levels of absenteeism ($b_2= -.02, p<.001$).

Table 5.5 shows an indirect effect of senior leadership on absenteeism through work pressure in 2009, $a_3b_3= .01, (95\%CI [.002, .01])$. Those who reported higher levels of senior leadership also reported significantly lower levels of work pressure ($a_3= -.53, p<.001$) and in turn higher levels of work pressure were associated with lower levels of absenteeism ($b_3= -.01, p<.005$).

Table 5.6 shows the effects of senior leadership on absenteeism in 2010. No indirect effects of senior leadership were found on absenteeism through work pressure for this year. The first stage of the indirect path was significant ($a_3=-.44, p<.001$) indicating a significant negative relationship between senior leadership and work pressure, while the second stage effect was not significant ($b_3= -.006, n.s$).

These results do not support hypothesis 3c. However, an indirect effect was found through work pressure, but the nature of this relationship was in the opposite direction to that originally suggested. Work pressure positively mediated the senior leadership – absenteeism relationship. The effect sizes for these results were small however and this is worth considering before forming opinions about this relationship.

5.1.2.4 Opportunity for involvement

Table 5.4 shows the effects of senior leadership on absenteeism in 2008. An indirect effect of senior leadership on absenteeism through opportunity for involvement was found, supporting hypothesis 2d ($a_3b_3 = -.003$, (95%CI [-.01, -.001])). Those who reported higher levels of senior leadership also reported significantly more opportunity for involvement ($a_3 = .09$, $p < .001$) and in turn more opportunity for involvement was associated with lower levels of absenteeism ($b_3 = -.04$, $p < .05$).

Table 5.6 shows the effects of senior leadership on absenteeism in 2009. An indirect effect of senior leadership on absenteeism through opportunity for involvement was found, supporting hypothesis 2d ($a_4b_4 = -.01$, (95%CI [-.01, -.002])). Those who reported higher levels of senior leadership also reported significantly more opportunity for involvement ($a_4 = .12$, $p < .001$) and in turn more opportunity for involvement was associated with lower levels of absenteeism ($b_4 = -.04$, $p < .00$).

Table 5.6 shows the effects of senior leadership on absenteeism in 2010. An indirect effect of senior leadership were found on absenteeism through opportunity for involvement for this year ($a_4b_4 = -.01$, (95%CI [-.006, -.001])). Those who reported higher levels of senior leadership also reported significantly more opportunity for involvement ($a_4 = .11$, $p < .001$) and in turn more opportunity for involvement was associated with lower levels of absenteeism ($b_4 = -.03$, $p < .005$).

Support for hypothesis 3d was found in all models suggesting that opportunity for involvement mediates the relationship between senior leadership and absenteeism. People who rate their senior leaders more highly are more likely to report increased opportunity for involvement, which leads to a decrease in absenteeism. It is worth noting that the size of the indirect effects in all years is relatively small.

5.1.2.5 Work-life balance

Table 5.4 shows the effects of senior leadership on absenteeism in 2008. No indirect effects of senior leadership were found on absenteeism through work pressure for this year. The relationship between senior leadership and work-life balance was significant ($a_4 = .16$, $p < .001$) and the relationship between work life balance and absenteeism was also significant ($b_4 = .00$, $p < .05$).

Table 5.6 shows the effects of senior leadership on absenteeism in 2009. No indirect effects of senior leadership were found on absenteeism through work pressure for this year. The relationship between senior leadership and work-life balance was significant ($a_5 = .22$, $p < .001$)

but the relationship between work life balance and absenteeism was not significant ($b_5 = .01$, *n.s.*).

Table 5.6 shows the effects of senior leadership on absenteeism in 2010. No indirect effects of senior leadership were found on absenteeism through work pressure for this year. The relationship between senior leadership and work-life balance was significant ($a_5 = .24$, $p < .001$) but the relationship between work life balance and absenteeism was not significant ($b_5 = .00$, *n.s.*).

Support for hypothesis 2e was not found in these analyses suggesting that work-life balance does not mediate the relationship between senior leadership and absenteeism.

5.1.2.6 Total, direct and total indirect effects

A total effect was found where an increase of one unit in senior leadership was associated with a decrease in absenteeism of $c = -.01$ (95%CI[-.02, -.002]) in 2008, and $c = -.01$ (95%CI[-.01, -.001]) in 2010, but no total effect was found in 2009.

A direct effect was found across all years; 2008 $c' = -.01$ (95%CI[-.02, -.002]), 2009 $c' = -.01$ (95%CI[-.02, -.001]), and 2010 $c' = -.01$ (95%CI[-.02, -.003]). This shows that when controlling for the mediators included in this model, there is still a significant effect of senior leadership on absenteeism indicating that this relationship may be described further by more variables than contained within these models.

5.1.3 Patient Satisfaction

Hypothesis 2 stated that senior leadership would be positively associated with patient satisfaction, mediated by job design (H2a), engagement (H2b), work life balance (H2c), opportunity for involvement (H2d) and work pressure (H2e). The indirect effects will first be reported, followed by the total effects and direct effects. Patient satisfaction was tested in acute trusts only and variables that were controlled for were supervisor support, London based, trust size, teaching status, doctors per bed, and specialist status. The number of trusts included in the final analysis was 155 in 2008, 159 in 2009, and 158 in 2010.

5.1.3.1 Job design:

Table 5.7 shows no indirect effect of senior leadership on patient satisfaction through job design for 2008. The first stage of the indirect path was significant ($a_1 = .22$, $p < .001$) indicating a significant relationship between senior leadership and job design, while the second stage effect was not significant ($b_1 = -.16.06$, *n.s.*).

Table 5.7. 2008 senior leadership and patient satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)					Patient satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.22	.03	<.001	.17	.23	c	2.93	2.78	.30	-2.58	8.43				
	a ₂	-.44	.07	<.001	-.57	-.31	c'	-.65	3.45	.85	-7.47	6.17				
	a ₃	.05	.02	<.05	.01	.10										
	a ₄	.29	.05	<.001	.19	.39					Total	3.58	2.14	-.69	7.74	
M ₁	--	--	--	--	--	b ₁	-16.1	9.17	.08	-34.2	2.06	a ₁ b ₁	-3.59	2.16	-8.16	.34
M ₂	--	--	--	--	--	b ₂	-8.31	3.52	<.05	-15.3	-1.34	a ₂ b ₂	3.66	1.64	.73	7.24
M ₃	--	--	--	--	--	b ₃	10.74	10.3	.30	-9.55	31.04	a ₃ b ₃	.56	.69	-.41	2.56
M ₄	--	--	--	--	--	b ₄	10.13	4.70	<.05	.847	19.41	a ₄ b ₄	2.95	1.58	.26	6.47

Covariates: Supervisor support, London based, trust size, teaching hospital status, doctors per bed, specialist trust status. N=155.

Table 5.8 shows no indirect effect of senior leadership on patient satisfaction through job design for 2009. The first stage of the indirect path was significant ($a_1=.23$, $p<.001$) indicating a significant relationship between senior leadership and job design, while the second stage effect was not significant ($b_1= -11.69$, $n.s$).

Table 5.8. 2009 senior leadership and patient satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Patient satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.23	.03	<.001	.18	.28	c	1.65	2.40	.49	-3.10	6.40				
	a ₂	.19	.05	<.001	.10	.28	c'	-.674	3.29	.84	-7.18	5.83				
	a ₃	-.49	.06	<.001	-.61	-.36										
	a ₄	.08	.02	<.001	.04	.12										
	a ₅	.25	.04	<.001	.18	.33					Total	2.32	2.63	-2.86	7.54	
M ₁	--	--	--	--	--	b ₁	-11.6	8.20	.16	-27.9	4.52	a ₁ b ₁	-2.68	1.95	-6.57	1.18
M ₂	--	--	--	--	--	b ₂	-5.49	4.44	.22	-14.2	3.28	a ₂ b ₂	-1.06	.93	-3.15	.604
M ₃	--	--	--	--	--	b ₃	-8.84	3.27	<.01	-15.3	-2.37	a ₃ b ₃	4.30	1.91	1.01	8.46
M ₄	--	--	--	--	--	b ₄	16.88	10.04	.10	-2.96	36.72	a ₄ b ₄	1.41	1.01	-.272	3.82
M ₅	--	--	--	--	--	b ₅	1.40	4.91	.78	-8.31	11.10	a ₅ b ₅	.355	1.37	-2.32	3.12

Covariates: Supervisor support, London based, trust size, teaching hospital status, doctors per bed, specialist trust status. N=159.

Table 5.9 shows an indirect effect of senior leadership on patient satisfaction through job design for 2010, $a_1b_1= -3.39$ (95%CI[-6.42, -.82]). This suggests that senior leaders indirectly decrease patient satisfaction through their influence on job design. Those who reported higher levels of senior leadership also reported higher levels of job design ($a_1=.16$, $p<.001$). In turn those higher levels of job design was associated with lower levels of patient satisfaction ($b_1= -20.1$, $p<.05$).

Table 5.9. 2010 senior leadership and patient satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Patient satisfaction (Y)						Indirect effect			
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.17	.03	<.001	.12	.22	c	6.2	2.36	<.01	1.55	10.86				
	a ₂	.20	.04	<.001	.12	.29	c'	5.3	2.91	.069	-.42	11.09				
	a ₃	-.44	.07	<.001	-.57	-.32										
	a ₄	.10	.02	<.001	.05	.14										
	a ₅	.24	.04	<.001	.15	.33										
												Total	.871	2.25	-3.45	5.51
M ₁	--	--	--			b ₁	-20.1	7.79	<.05	-35.6	-4.79	a ₁ b ₁	-3.39	1.43	-6.42	-.82
M ₂	--	--	--			b ₂	-5.88	4.60	.204	-14.9	3.22	a ₂ b ₂	-1.19	.962	-3.25	.525
M ₃	--	--	--			b ₃	-10.4	2.99	<.001	-16.3	-4.52	a ₃ b ₃	4.63	1.53	2.13	8.33
M ₄	--	--	--			b ₄	22.02	9.19	<.05	3.86	40.18	a ₄ b ₄	2.09	1.07	.342	4.58
M ₅	--	--	--			b ₅	-5.35	4.30	.216	-13.8	3.15	a ₅ b ₅	-1.27	.967	-3.42	.51

Covariates: Supervisor support, London based, trust size, teaching hospital status, doctors per bed, specialist trust status. N=158.

While senior leadership was significantly associated with job design across all years, taken together, these findings suggest limited support for hypothesis 2a, suggesting that the relationship between senior leadership and patient satisfaction may be mediated by job design.

5.1.3.2 Engagement

Engagement was not measured in 2008. Table 5.8 shows no indirect effects of senior leadership on patient satisfaction through engagement for 2009. The first stage of the indirect path was significant ($a_2=.19, p<.001$) indicating a significant relationship between senior leadership and engagement, while the second stage effect was not significant ($b_2=-5.49, n.s$).

Table 5.9 shows no indirect effect of senior leadership on patient satisfaction through engagement for 2010. The first stage of the indirect path was significant ($a_2=.20, p<.001$) indicating a significant relationship between senior leadership and engagement, while the second stage effect was not significant ($b_2=-5.9, n.s$).

These findings do not provide support for hypothesis 2b, suggesting that the relationship between senior leadership and patient satisfaction is not mediated by engagement, although senior leadership was significantly associated with engagement across all years.

5.1.3.3 Work pressure

Table 5.7 shows an indirect effect of senior leadership on patient satisfaction through work pressure in 2008, $a_2b_2= 3.66, (95\%CI [.73, 7.23])$. Those who reported higher levels of senior leadership also reported significantly lower levels of work pressure ($a_2= -.44, p<.001$) and in turn higher levels of work pressure were associated with lower levels of patient satisfaction ($b_2= -8.31, p<.05$).

Table 5.8 an indirect effect of senior leadership on patient satisfaction through work pressure in 2009, $a_3b_3= 4.30$, (95%CI [1.01, 8.46]). Those who reported higher levels of senior leadership also reported significantly lower levels of work pressure ($a_3= -.49$, $p<.001$) and in turn higher levels of work pressure were associated with lower levels of patient satisfaction ($b_3= -8.84$, $p<.01$).

Table 5.9 shows an indirect effect of senior leadership on patient satisfaction through work pressure in 2010, $a_3b_3= 4.63$, (95%CI [2.13, 8.33]). Those who reported higher levels of senior leadership also reported significantly lower levels of work pressure ($a_3= -.44$, $p<.001$) and in turn higher levels of work pressure were associated with lower levels of patient satisfaction ($b_3= -10.43$, $p<.001$).

These results support hypothesis 2c across all years, suggesting that senior leadership positively predicts patient satisfaction through its negative influence on work pressure.

5.1.3.4 Opportunity for involvement

Table 5.7 shows no indirect effect of senior leadership on patient satisfaction through opportunity for 2008. Senior leadership was significantly associated with opportunity for involvement at the first stage ($a_3= .05$, $p<.05$) but opportunity for involvement did not significantly predict patient satisfaction at the second stage ($b_3= 10.74$, *n.s*).

Table 5.8 shows no indirect effect of senior leadership on patient satisfaction through opportunity for 2009. Senior leadership was significantly associated with opportunity for involvement at the first stage ($a_4= .08$, $p<.001$) but opportunity for involvement did not significantly predict patient satisfaction at the second stage ($b_4= 16.88$, *n.s*).

Table 5.9 shows an indirect effect of senior leadership on patient satisfaction through opportunity for involvement for 2010, ($a_4b_4= 2.09$ (95%CI [.34, 4.58]). Senior leadership was significantly associated with opportunity for involvement at the first stage ($a_4= .10$, $p<.001$) and opportunity for involvement significantly predicted patient satisfaction at the second stage ($b_4= 22.02$, $p<.05$).

Support for hypothesis 2d was found only in 2010 providing some limited support that opportunity for involvement mediates the relationship between senior leadership and patient satisfaction. People who rate their senior leaders more highly are more likely to report increased opportunity for involvement, which may lead to an increase in patient satisfaction.

5.1.3.5 Work-life balance

Table 5.7 shows an indirect effect of senior leadership on patient satisfaction through work-life balance for 2008, ($a_4b_4= 2.95$ (95%CI [.26, 6.47])). Senior leadership was significantly associated with work-life balance at the first stage ($a_4= .29$, $p=<.001$) and in turn, work-life balance significantly predicted patient satisfaction at the second stage ($b_4= 10.13$, $p=<.05$).

Table 5.8 shows no indirect effect of senior leadership on patient satisfaction through work pressure for 2009. The relationship between senior leadership and work-life balance was significant ($a_5=.25$, $p=<.001$) but the relationship between work life balance and patient satisfaction was not significant ($b_5= 1.40$, *n.s*).

Table 5.9 shows no indirect effect of senior leadership on patient satisfaction through work pressure for 2010. The relationship between senior leadership and work-life balance was significant ($a_5=.24$, $p=<.001$) but the relationship between work life balance and patient satisfaction was not significant ($b_5= -5.35$, *n.s*).

Support for hypothesis 2e was limited to 2008 in these analyses suggesting that work-life balance may positively mediate the relationship between senior leadership and patient satisfaction.

5.1.3.6 Total and direct effects

A total effect was found in 2010 where one unit increase in senior leadership led to an increase of $c=6.20$ (95%CI [1.55, 10.86]) in patient satisfaction, but this was not replicated in the other years. No significant direct effects were found.

5.1.4 Stability

Hypothesis 4 stated that senior leadership would be positively associated with stability, mediated by job design (H4a), engagement (H4b), work life balance (H4c), opportunity for involvement (H4d) and work pressure (H4e). The indirect effects will first be reported, followed by the total effect and direct effect. Stability was tested in acute trusts only and variables that were controlled for were supervisor support, London based, trust size, teaching status, doctors per bed, and specialist status. The number of trusts included in the final analysis was 160 in 2008, 162 in 2009, and 162 in 2010.

5.1.4.1 Job design:

Table 5.10 shows no indirect effects of senior leadership on stability through job design for 2008. The first stage of the indirect path was significant ($a_1=.21$, $p=<.001$) indicating a

significant relationship between senior leadership and job design, while the second stage effect was not significant ($b_1 = -4.80, n.s$).

Table 5.10. 2008 senior leadership and stability multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)						Stability (Y)					Indirect effect				
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.21	.12	<.001	.16	.27	c	4.03	1.84	<.05	.39	7.67				
	a ₂	-.47	.07	<.001	-.60	-.34	c'	1.58	2.29	.49	-2.94	6.10				
	a ₃	.05	.02	.06	-.00	.09										
	a ₄	.30	.05	<.001	.20	.39							Total	2.45	1.73	-.99
M ₁	--	--	--	--	--	b ₁	-4.80	5.96	4.22	-16.6	6.98	a ₁ b ₁	-1.03	1.31	-3.71	1.38
M ₂	--	--	--	--	--	b ₂	-6.96	2.43	<.005	-11.7	-2.16	a ₂ b ₂	3.25	1.27	1.02	6.08
M ₃	--	--	--	--	--	b ₃	-8.42	6.76	.21	-21.7	4.93	a ₃ b ₃	-.38	.40	-1.56	.11
M ₄	--	--	--	--	--	b ₄	2.04	3.14	.51	-4.14	8.25	a ₄ b ₄	.60	.88	-1.07	2.43

Covariates: Supervisor support, London based, trust size, teaching hospital status, doctors per bed, specialist trust status. N=160.

Table 5.11 shows no indirect effects of senior leadership on stability through job design for 2009. The first stage of the indirect path was significant ($a_1 = .23, p < .001$) indicating a significant relationship between senior leadership and job design, while the second stage effect was not significant ($b_1 = 4.53, n.s$).

Table 5.11. 2009 senior leadership and stability multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Stability (Y)					Indirect effect				
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.23	.03	<.001	.18	.28	c	-.25	1.83	.89	-3.87	3.38				
	a ₂	.18	.05	<.001	.09	.27	c'	-4.87	2.45	<.05	-9.71	-.03				
	a ₃	-.49	.06	<.001	-.61	-.37										
	a ₄	.07	.02	<.001	.03	.12										
	a ₅	.26	.04	<.001	.18	.33							Total	4.62	1.78	1.06
M ₁	--	--	--	--	--	b ₁	4.53	6.26	.47	-7.83	16.89	a ₁ b ₁	1.04	1.53	-1.80	4.17
M ₂	--	--	--	--	--	b ₂	-2.74	3.31	.41	-9.29	3.81	a ₂ b ₂	-.50	.64	-1.91	.68
M ₃	--	--	--	--	--	b ₃	-7.97	2.50	<.005	-12.9	-3.01	a ₃ b ₃	3.90	1.33	1.62	6.92
M ₄	--	--	--	--	--	b ₄	-10.5	7.34	.15	-25.0	3.96	a ₄ b ₄	-.79	.65	-2.52	.12
M ₅	--	--	--	--	--	b ₅	3.77	3.66	.31	-3.47	10.10	a ₅ b ₅	.97	.86	-.65	2.75

Covariates: Supervisor support, London based, trust size, teaching hospital status, doctors per bed, specialist trust status. N=162.

Table 5.12 shows no indirect effects of senior leadership on stability through job design for 2010. The first stage of the indirect path was significant ($a_1 = .17, p < .001$) indicating a significant relationship between senior leadership and job design, while the second stage effect was not significant ($b_1 = .27, n.s$).

Table 5.12. 2010 senior leadership and stability multiple mediation model

Antecedent	Consequent																
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Stability (Y)						Indirect effect				
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI			
X (Senior Leadership)	a ₁	.17	.02	<.001	.12	.21	c	1.15	1.34	.39	-1.51	3.81					
	a ₂	.19	.04	<.001	.12	.27	c'	-2.72	1.63	.10	-5.95	.50					
	a ₃	-.45	.06	<.001	-.58	-.33											
	a ₄	.09	.02	<.001	.05	.13											
	a ₅	.25	.04	<.001	.17	.33											
													Total	3.88	2.26	.41	9.04
M ₁	--	--	--			b ₁	.27	4.44	.95	-8.50	9.04	a ₁ b ₁	.04	.73	-1.38	1.54	
M ₂	--	--	--			b ₂	-3.52	2.63	.18	-8.71	1.67	a ₂ b ₂	-.68	.55	-1.76	.42	
M ₃	--	--	--			b ₃	-8.34	1.70	<.001	-11.7	-4.99	a ₃ b ₃	3.79	1.38	1.70	7.11	
M ₄	--	--	--			b ₄	-2.73	5.25	.60	-13.1	7.64	a ₄ b ₄	-.25	.44	-1.27	.51	
M ₅	--	--	--			b ₅	3.95	2.46	.11	-.92	8.82	a ₅ b ₅	.98	.72	-.22	2.67	

Covariates: Supervisor support, London based, trust size, teaching hospital status, doctors per bed, specialist trust status. N=162.

These findings do not support for hypothesis 4a, suggesting that the relationship between senior leadership and stability is not mediated by job design.

5.1.4.2 Engagement

Engagement was not measured in 2008. Table 5.11 shows no indirect effect of senior leadership on stability through engagement for 2009. The first stage of the indirect path was significant ($a_2=.18, p<.001$) indicating a significant relationship between senior leadership and engagement, while the second stage effect was not significant ($b_2=-2.74, n.s.$).

Table 5.12 shows no indirect effect of senior leadership on stability through engagement for 2010. The first stage of the indirect path was significant ($a_2=.19, p<.001$) indicating a significant relationship between senior leadership and engagement, while the second stage effect was not significant ($b_2=-3.52, n.s.$).

These findings do not provide support for hypothesis 4b, suggesting that the relationship between senior leadership and stability is not mediated by engagement, although senior leadership was significantly associated with engagement across all years.

5.1.4.3 Work pressure

Table 5.10 shows an indirect effect of senior leadership on stability through work pressure for 2008 ($a_2b_2= 3.25, (95\%CI [1.02, 6.08])$). Those who reported higher levels of senior leadership also reported significantly lower levels of work pressure ($a_2= -.47, p<.001$) and in turn lower levels of work pressure were associated with higher levels of stability ($b_2= -6.96, p<.005$).

Table 5.11 shows an indirect effect of senior leadership on stability through work pressure for 2009 ($a_3b_3= 3.90$, (95%CI [1.62, 6.92])). Those who reported higher levels of senior leadership also reported significantly lower levels of work pressure ($a_3= -.49$) and in turn lower levels of work pressure were associated with higher levels of stability ($b_3= -7.97$, $p<.005$).

Table 5.12 shows an indirect effect of senior leadership on stability through work pressure for 2010 ($a_3b_3= 3.79$, (95%CI [1.70, 7.11])). Those who reported higher levels of senior leadership also reported significantly lower levels of work pressure ($a_3= -.45$, $p<.001$) and in turn lower levels of work pressure were associated with higher levels of stability ($b_3= -8.34$, $p<.001$).

These results support hypothesis 4c across all years, suggesting that senior leadership positively predicts stability through its negative influence on work pressure.

5.1.4.4 Opportunity for involvement

Table 5.10 shows no indirect effects of senior leadership on stability through opportunity for involvement for 2008. Senior leadership was not significantly associated with opportunity for involvement at the first stage ($a_3=.05$, $n.s$), and opportunity for involvement did not significantly predict stability at the second stage ($b_3= -8.42$, $n.s$).

Table 5.11 shows no indirect effects of senior leadership on stability through opportunity for involvement for 2009. Senior leadership was significantly associated with opportunity for involvement at the first stage ($a_4= .07$, $p<.001$) but opportunity for involvement did not significantly predict stability at the second stage ($b_4= -10.54$, $n.s$).

Table 5.12 shows no indirect effects of senior leadership on stability through opportunity for involvement for 2010. Senior leadership was significantly associated with opportunity for involvement at the first stage ($a_4= .09$, $p<.001$) but opportunity for involvement did not significantly predict stability at the second stage ($b_4= -2.73$, $n.s$).

Support for hypothesis 4d was not found, suggesting that opportunity for involvement does not mediate the relationship between senior leadership and stability.

5.1.4.5 Work-life balance

Table 5.10 shows no indirect effect of senior leadership on stability through work pressure for 2008. The relationship between senior leadership and work-life balance was significant ($a_4=.30$, $p<.001$) but the relationship between work life balance and stability was not significant ($b_4= 2.04$, $n.s$).

Table 5.11 shows no indirect effect of senior leadership on stability through work pressure for 2009. The relationship between senior leadership and work-life balance was significant ($a_5=.26, p<.001$) but the relationship between work life balance and stability was not significant ($b_5= 3.77, n.s$).

Table 5.12 shows no indirect effect of senior leadership on stability through work pressure for 2010. The relationship between senior leadership and work-life balance was significant ($a_5=.25, p<.001$) but the relationship between work life balance and stability was not significant ($b_5= 3.95, n.s$).

Support for hypothesis 4e was not found, suggesting that work-life balance does not mediate the relationship between senior leadership and stability.

5.1.4.6 Total, direct and total indirect effects

A significant total effect was found in 2008 where one unit increase in senior leadership was associate with an increase in stability of $c=4.03$ (95%CI[.39, 5.87]) but this was not replicated in the other years.

A significant, negative direct effect was found in 2009 $c' = -4.87$, (95%CI[-9.71, -.03]) but this was not replicated in other years.

5.2 Study 2: Senior leadership longitudinal analysis

The second study looked to build on the relationships found in study one, further testing the hypotheses proposed between senior leadership and all outcome variables. The ability of senior leadership to predict the outcome variables in the subsequent year through contemporaneous (to senior leadership) mediating variables was assessed first, followed by an assessment of the extent to which senior leadership predicts mediating variables in the following year and effects on outcome variables the year after. This study will be presented in the same way as the previous study, with the results structured around the outcome variables.

5.2.1 Job satisfaction

Hypothesis 1 stated that senior leadership would be positively associated with job satisfaction, mediated by job design (H1a), engagement (H1b), work life balance (H1c), opportunity for involvement (H1d) and work pressure (H1e). The indirect effects will first be reported, followed by the total effect and direct effect. Job satisfaction was tested across the whole sample and variables that were controlled for were supervisor support, London based, trust size, and trust type. The number of trusts included in the final analysis was 380 in model 1, 385 in model 2, and 384 in model 3.

5.2.1.1 Job design

Table 5.13 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with job satisfaction in 2010. A significant, positive indirect effect of senior leadership on job satisfaction through job design was found $a_1b_1 = .05$ (95%CI [.01, .09]) suggesting that senior leadership in 2008 is positively associated with job satisfaction in 2010 and that this relationship is mediated by the effect senior leadership has on job design in 2009.

Table 5.13. 2008 senior leadership, 2009 mediators and 2010 job satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Job satisfaction (Y)					Indirect effect					
		Coeff.	SE	p	LLCI	ULCI		Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI
X (Senior Leadership)	a ₁	.22	.03	<.001	.17	.27	c	.22	.03	<.001	.15	.29				
	a ₂	.12	.03	<.001	.05	.18	c'	.11	.04	<.005	.04	.19				
	a ₃	-.43	.05	<.001	-.53	-.33										
	a ₄	.10	.07	<.001	.06	.13										
	a ₅	.19	.04	<.001	.11	.27							Total	.10	.02	.06
M ₁	--	--	--	--	--	b ₁	.21	.08	<.05	.04	.37	a ₁ b ₁	.05	.02	.01	.09
M ₂	--	--	--	--	--	b ₂	.15	.06	<.05	.04	.26	a ₂ b ₂	.02	.01	.001	.04
M ₃	--	--	--	--	--	b ₃	-.03	.04	.44	-.11	.05	a ₃ b ₃	.01	.02	-.02	.05
M ₄	--	--	--	--	--	b ₄	-.04	.11	.70	-.27	.18	a ₄ b ₄	-.00	.01	-.03	.02
M ₅	--	--	--	--	--	b ₅	.17	.05	<.001	.07	.27	a ₅ b ₅	.03	.01	.01	.06

Covariates: Supervisor support, London based, trust size, trust type. N=380.

Table 5.14 shows the effects of senior leadership and mediators in 2008 on job satisfaction in 2009. No indirect effects of senior leadership were found on job satisfaction through job design for this year. The first stage of the indirect path was significant ($a_1 = .26$, $p < .001$) indicating a significant relationship between senior leadership and job design, while the second stage effect was not significant ($b_1 = .11$, *n.s.*).

Table 5.14. 2008 senior leadership and mediators, and job satisfaction in 2009 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work Pressure (M ₂) Involvement (M ₃), Work-life balance (M ₄)						Job satisfaction (Y)						Indirect effect			
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.26	.02	<.001	.22	.29	c	.23	.03	<.001	.18	.29				
	a ₂	-.43	.04	<.001	-.52	-.35	c'	.18	.04	<.001	.11	.25				
	a ₃	.09	.01	<.001	.06	.12										
	a ₄	.19	.03	<.001	.12	.25					Total	.05	.03	-.00	.11	
M ₁	--	--	--	--	--	b ₁	.11	.08	.21	-.06	.27	a ₁ b ₁	.03	.02	-.02	.08
M ₂	--	--	--	--	--	b ₂	-.03	.04	.40	-.10	.04	a ₂ b ₂	.01	.02	-.02	.05
M ₃	--	--	--	--	--	b ₃	.12	.11	.28	-.10	.34	a ₃ b ₃	.01	.01	-.01	.03
M ₄	--	--	--	--	--	b ₄	.00	.05	.95	-.09	.09	a ₄ b ₄	.00	.01	-.02	.02

Covariates: Supervisor support, London based, trust size, trust type. N=385.

Table 5.15 shows the effects of senior leadership and mediators in 2009 on job satisfaction in 2010. No indirect effect was found through job design. Senior leadership had a significant, positive effect on job design at the first stage ($a_1 = .26, p < .001$) but the relationship between job design in 2009 and job satisfaction in 2010 was not significant ($b_1 = .18, n.s$). It is worth noting that the confidence interval for this relationship was only marginally non-significant. Whilst the interval did include zero, the lower bound interval was only $-.001$ while the upper bound interval was $.37$.

Table 5.15. 2009 senior leadership and mediators, job satisfaction in 2010 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Job satisfaction (Y)						Indirect effect			
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.26	.02	<.001	.22	.30	c	.24	.03	<.001	.17	.30				
	a ₂	.16	.03	<.001	.10	.22	c'	.12	.04	<.01	.04	.21				
	a ₃	-.54	.04	<.001	-.62	-.45										
	a ₄	.12	.01	<.001	.09	.15										
	a ₅	.23	.03	<.001	.17	.29					Total	.11	.03	.05	.18	
M ₁	--	--	--	--	--	b ₁	.18	.10	.05	-.00	.37	a ₁ b ₁	.05	.03	-.00	.10
M ₂	--	--	--	--	--	b ₂	.13	.06	<.05	.01	.24	a ₂ b ₂	.02	.01	.001	.06
M ₃	--	--	--	--	--	b ₃	-.02	.04	.59	-.10	.06	a ₃ b ₃	.01	.02	-.03	.06
M ₄	--	--	--	--	--	b ₄	-.02	.11	.83	-.25	.20	a ₄ b ₄	-.00	.01	-.03	.03
M ₅	--	--	--	--	--	b ₅	.16	.06	<.005	.05	.27	a ₅ b ₅	.04	.02	.01	.07

Covariates: Supervisor support, London based, trust size, trust type. N=384.

Hypothesis 1a is supported in the first model, but support is limited here. The remaining models do not provide further support for this hypothesis. This suggests that there is some limited evidence that job design mediates the relationship between senior leadership and job satisfaction.

5.2.1.2 Engagement

Table 5.13 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with job satisfaction in 2010. A significant, positive indirect effect of senior leadership on job satisfaction through engagement was found $a_2b_2 = .02$ (95%CI [.001, .04]) suggesting that senior leadership in 2008 is positively associated with job satisfaction in 2010 and that this relationship is partly mediated by the effect senior leadership has on engagement in 2009.

Engagement was not measured in 2008 and as such is not included in the second longitudinal model analysis (Table 5.14). Table 5.15 shows the effects of senior leadership and mediators in 2009 on job satisfaction in 2010. A significant, positive indirect effect of senior leadership on job satisfaction through engagement was found $a_2b_2 = .02$ (95%CI [.001, .06]) suggesting that senior leadership in 2009 is positively associated with job satisfaction in 2010 and that this relationship is partly mediated by the effect senior leadership has on engagement in 2009.

Hypothesis 1b is supported in each model tested. This finding suggests that senior leadership has a positive effect on job satisfaction through its positive influence on engagement.

5.2.1.3 Work pressure

Table 5.13 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with job satisfaction in 2010. No indirect effects of senior leadership were found on job satisfaction through work pressure for this year. The first stage of the indirect path was significant ($a_3 = -.43$, $p < .001$) indicating a significant negative relationship between senior leadership and work pressure, while the second stage effect was not significant ($b_3 = -.03$, *n.s.*).

Table 5.14 shows the effects of senior leadership and mediators in 2008 on job satisfaction in 2009. No indirect effects of senior leadership were found on job satisfaction through work pressure for this year. The first stage of the indirect path was significant ($a_2 = -.43$, $p < .001$) indicating a significant negative relationship between senior leadership and work pressure, while the second stage effect was not significant ($b_2 = -.03$, *n.s.*).

Table 5.15 shows the effects of senior leadership and mediators in 2009 on job satisfaction in 2010. No indirect effect was found through work pressure. Senior leadership had a significant, negative effect on work pressure at the first stage ($a_3 = -.54$, $p < .001$) but the relationship between work pressure in 2009 and job satisfaction in 2010 was not significant ($b_3 = -.02$, *n.s.*).

These findings do not provide support for hypothesis 1c. This suggests that the relationship between senior leadership and job satisfaction is not mediated by work pressure.

5.2.1.4 Opportunity for involvement

Table 5.13 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with job satisfaction in 2010. No indirect effects of senior leadership in 2008 were found on job satisfaction in 2010 through opportunity for involvement for in 2009. The first stage of the indirect path was significant ($a_4 = .10, p < .001$) indicating a significant positive relationship between senior leadership in 2008 and opportunity for involvement in 2009, while the second stage effect was not significant ($b_4 = -.04, n.s.$).

Table 5.14 shows the effects of senior leadership and mediators in 2008 on job satisfaction in 2009. No indirect effects of senior leadership in 2008 were found on job satisfaction in 2009 through opportunity for involvement in 2008. The first stage of the indirect path was significant ($a_3 = .09, p < .001$) indicating a significant positive relationship between senior leadership in 2008 and opportunity for involvement in the same year, while opportunity for involvement in 2008 was not associated with job satisfaction in 2009 ($b_3 = .12, n.s.$).

Table 5.15 shows the effects of senior leadership and mediators in 2009 on job satisfaction in 2010. No indirect effect was found through opportunity for involvement. Senior leadership in 2009 had a significant positive effect on opportunity for involvement in 2009 ($a_4 = .12, p < .001$) but the relationship between opportunity for involvement in 2009 and job satisfaction in 2010 was not significant ($b_4 = -.02, n.s.$).

These findings do not provide support for hypothesis 1d. This suggests that the relationship between senior leadership and job satisfaction is not mediated by opportunity for involvement.

5.2.1.5 Work-life balance

Table 5.13 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with job satisfaction in 2010. A significant, positive indirect effect of senior leadership on job satisfaction through work-life balance was found $a_5b_5 = .03$ (95%CI [.01, .06]) suggesting that senior leadership in 2008 is positively associated with job satisfaction in 2010 and that this relationship is partly mediated by the effect senior leadership has on work-life balance in 2009.

Table 5.14 shows the effects of senior leadership and mediators in 2008 on job satisfaction in 2009. No indirect effects of senior leadership in 2008 were found on job satisfaction in 2009 through work-life balance in 2008. The first stage of the indirect path was

significant ($a_4 = .19, p < .001$) indicating a significant positive relationship between senior leadership in 2008 and work-life balance in the same year, while work-life balance in 2008 was not associated with job satisfaction in 2009 ($b_4 = .00, n.s.$).

Table 5.15 shows the effects of senior leadership and mediators in 2009 on job satisfaction in 2010. A significant positive indirect effect was found through work-life balance $a_5b_5 = .04$ (95%CI [.01, .07]) suggesting that senior leadership in 2009 is positively associated with job satisfaction in 2010 and that this relationship is partly mediated by the positive effect senior leadership in 2009 has on work-life balance in 2009.

Hypothesis 1e was supported in the first and last models tested. Senior leadership in 2008 and in 2009 predicted job satisfaction in 2010 and this relationship was mediated by the positive effect senior leadership had on work-life balance. This relationship was not found in the second model however.

5.2.1.6 Total and direct effects

A significant total effect of senior leadership in predicting job satisfaction was found across all models. As ratings of senior leadership increased by one unit, job satisfaction increased by $c = .22$ (95%CI [.15, .29]) in the first model, $c = .23$ (95%CI [.18, .29]) in the second, and $c = .24$ (95%CI [.17, .30]) in the last.

In addition, a significant direct effect was found across all models ($c' = .11$ (95%CI [.04, .19]), $c' = .18$ (95%CI [.11, .25]), and $c' = .12$ (95%CI [.04, .21]). This suggests that when controlling for the mediators, senior leadership has a remaining effect on job satisfaction indicating that this relationship may be described further by more variables than contained within these models.

5.2.2 Absenteeism

Hypothesis 3 stated that senior leadership would be negatively associated with absenteeism, mediated by job design (H3a), engagement (H3b), work life balance (H3c), opportunity for involvement (H3d) and work pressure (H3e). The results of these hypotheses testing are described here, presented by mediator. The indirect effects will first be reported, followed by the total effect and direct effect. Absenteeism was tested across the whole sample and variables controlled for were supervisor support, London based, trust size, and trust type. The number of trusts included in the final analysis was 376 in model 1, 376 in model 2, 380 in model 3, 376 in model 4, and 380 in model 5.

5.2.2.1 Job design

Table 5.16 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with absenteeism in 2010. No indirect effect of senior leadership on absenteeism through job design was found. Senior leadership was positively associated with job design ($a_1 = .22, p < .001$) but job design was not significantly associated with absenteeism ($b_1 = -.00, n.s$).

Table 5.16. 2008 senior leadership, 2009 mediators and 2010 absenteeism multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Absenteeism (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.22	.03	<.001	.17	.27	c	-.01	.00	<.05	-.01	-.001				
	a ₂	.12	.03	<.001	.05	.18	c'	-.01	.00	<.01	-.02	-.001				
	a ₃	-.43	.05	<.001	-.53	-.33										
	a ₄	.10	.07	<.001	.06	.13										
	a ₅	.19	.04	<.001	.11	.27										
M ₁	--	--	--	--	--	b ₁	-.00	.01	.74	-.02	.01	a ₁ b ₁	-.00	.00	-.00	.00
M ₂	--	--	--	--	--	b ₂	-.01	.01	.16	-.02	.00	a ₂ b ₂	-.00	.00	-.00	.00
M ₃	--	--	--	--	--	b ₃	-.01	.00	<.01	-.02	-.00	a ₃ b ₃	.001	.002	.001	.009
M ₄	--	--	--	--	--	b ₄	-.02	.01	.11	-.04	.00	a ₄ b ₄	-.00	.00	-.00	.00
M ₅	--	--	--	--	--	b ₅	.01	.00	.15	-.00	.02	a ₅ b ₅	.00	.00	-.00	.00
Total												.00	.00	-.00	.01	

Covariates: Supervisor support, London based, trust size, trust type. N=376.

Table 5.17 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with absenteeism in 2011. No indirect effect of senior leadership on absenteeism through job design was found. Senior leadership was positively associated with job design ($a_1 = .24, p < .001$) but job design was not significantly associated with absenteeism ($b_1 = .02, n.s$).

Table 5.17. 2009 senior leadership, 2010 mediators and 2011 absenteeism multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Absenteeism (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Senior Leadership)	a ₁	.24	.03	<.001	.18	.30	c	-.01	.00	<.01	-.02	-.001				
	a ₂	.14	.04	<.001	.06	.22	c'	-.01	.00	.06	-.01	.001				
	a ₃	-.44	.06	<.001	-.54	-.33										
	a ₄	.12	.02	<.001	.08	.15										
	a ₅	.28	.05	<.001	.18	.37							Total	-.00	.00	-.01
M ₁	--	--	--	--	--	b ₁	.02	.01	.05	-.00	.03	a ₁ b ₁	.00	.00	-.00	.01
M ₂	--	--	--	--	--	b ₂	.01	.01	.26	-.00	.02	a ₂ b ₂	.00	.00	-.00	.00
M ₃	--	--	--	--	--	b ₃	.00	.00	.78	-.01	.01	a ₃ b ₃	-.00	.00	-.00	.00
M ₄	--	--	--	--	--	b ₄	-.07	.01	<.001	-.09	-.05	a ₄ b ₄	-.008	.002	-.013	-.005
M ₅	--	--	--	--	--	b ₅	.00	.00	.50	-.01	.01	a ₅ b ₅	.00	.00	-.00	.00

Covariates: Supervisor support, London based, trust size, trust type. N=376.

Table 5.18 shows the effects of senior leadership and mediators in 2008 on absenteeism in 2009. No indirect effect of senior leadership on absenteeism through job design was found. Senior leadership was positively associated with job design ($a_1 = .25, p < .001$) but job design was not significantly associated with absenteeism ($b_1 = -.00, n.s$).

Table 5.18. 2008 senior leadership and mediators, absenteeism 2009 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)					Absenteeism (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Senior Leadership)	a ₁	.25	.02	<.001	.22	.29	c	-.01	.00	<.05	-.01	.001				
	a ₂	-.43	.04	<.001	-.52	-.35	c'	-.01	.00	<.01	-.02	-.00				
	a ₃	.09	.01	<.001	.06	.11										
	a ₄	.18	.03	<.001	.11	.25							Total	.00	.00	-.00
M ₁	--	--	--	--	--	b ₁	-.00	.01	.97	-.02	.02	a ₁ b ₁	-.00	.00	-.00	.01
M ₂	--	--	--	--	--	b ₂	-.02	.00	<.001	-.02	-.01	a ₂ b ₂	.007	.002	.003	.012
M ₃	--	--	--	--	--	b ₃	-.03	.01	<.01	-.06	-.01	a ₃ b ₃	-.003	.001	-.006	-.001
M ₄	--	--	--	--	--	b ₄	.00	.01	.44	-.01	.01	a ₄ b ₄	.00	.00	-.00	.00

Covariates: Supervisor support, London based, trust size, trust type. N=380.

Table 5.19 shows the effects of senior leadership and mediators in 2009 on absenteeism in 2010. No indirect effect of senior leadership on absenteeism through job design was found. Senior leadership was positively associated with job design ($a_1 = .26, p < .001$) but job design was not significantly associated with absenteeism ($b_1 = .00, n.s$).

Table 5.19. 2009 senior leadership and mediators, absenteeism 2010 multiple mediation model

Antecedent	Consequent												Indirect effect			
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Absenteeism (Y)									
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.26	.02	<.001	.22	.30	c	-.01	.00	.11	-.01	.001				
	a ₂	.16	.03	<.001	.10	.21	c'	-.01	.00	<.05	-.02	-.001				
	a ₃	-.53	.04	<.001	-.62	-.45										
	a ₄	.12	.01	<.001	.09	.15										
	a ₅	.22	.03	<.001	.17	.28										
M ₁	--	--	--	--	--	b ₁	.00	.01	.28	-.02	.02	a ₁ b ₁	.00	.00	-.00	.01
M ₂	--	--	--	--	--	b ₂	-.01	.01	.28	-.02	.01	a ₂ b ₂	-.00	.00	-.00	.00
M ₃	--	--	--	--	--	b ₃	-.01	.00	<.05	-.02	-.00	a ₃ b ₃	.005	.002	.000	.010
M ₄	--	--	--	--	--	b ₄	-.02	.01	.07	-.04	.00	a ₄ b ₄	-.00	.00	-.01	.00
M ₅	--	--	--	--	--	b ₅	.01	.01	.09	-.00	.02	a ₅ b ₅	.00	.00	-.00	.01
												Total	-.00	.00	-.00	.01

Covariates: Supervisor support, London based, trust size, trust type. N=376.

Table 5.20 shows the effects of senior leadership and mediators in 2009 on absenteeism in 2010. No indirect effect of senior leadership on absenteeism through job design was found. Senior leadership was positively associated with job design ($a_1 = .21, p = <.001$) and job design was also significantly associated with absenteeism ($b_1 = .02, p = <.05$) but the indirect effect was not significant as it included zero. It is worth noting that the size of the indirect effect was small which could account for the significant first and second path with a non-indirect effect.

Table 5.20. 2010 senior leadership and mediators, absenteeism 2011 multiple mediation model

Antecedent	Consequent												Indirect effect			
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Absenteeism (Y)									
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.21	.02	<.001	.17	.24	c	-.01	.00	<.001	-.02	-.004				
	a ₂	.16	.03	<.001	.09	.22	c'	-.01	.00	<.01	-.02	-.003				
	a ₃	-.43	.04	<.001	-.52	-.35										
	a ₄	.11	.01	<.001	.08	.14										
	a ₅	.25	.03	<.001	.19	.31										
M ₁	--	--	--	--	--	b ₁	.02	.01	<.05	.00	.04	a ₁ b ₁	.00	.00	-.001	.01
M ₂	--	--	--	--	--	b ₂	.01	.01	.21	-.00	.02	a ₂ b ₂	.00	.00	-.00	.00
M ₃	--	--	--	--	--	b ₃	-.00	.00	.94	-.01	.01	a ₃ b ₃	.00	.00	-.00	.00
M ₄	--	--	--	--	--	b ₄	-.06	.01	<.001	-.09	-.04	a ₄ b ₄	-.007	.002	-.011	-.004
M ₅	--	--	--	--	--	b ₅	.01	.01	.22	-.00	.02	a ₅ b ₅	.00	.00	-.00	.00

Covariates: Supervisor support, London based, trust size, trust type. N=380.

These results do not support Hypothesis 3a suggesting that the relationship between senior leadership and absenteeism is not mediated by job design.

5.2.2.2 Engagement

Table 5.16 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with absenteeism in 2010. No indirect effect of senior leadership on absenteeism through engagement was found. Senior leadership was positively associated with engagement ($a_2 = .12, p < .001$) but engagement was not significantly associated with absenteeism ($b_2 = -.01, n.s.$).

Table 5.17 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with absenteeism in 2011. No indirect effect of senior leadership on absenteeism through engagement was found. Senior leadership was positively associated with engagement ($a_2 = .14, p < .001$) but engagement was not significantly associated with absenteeism ($b_2 = .01, n.s.$).

Engagement was not measured in 2008 and as such is not included in the model described by Table 5.18. Table 5.19 shows the effects of senior leadership and mediators in 2009 on absenteeism in 2010. No indirect effect of senior leadership on absenteeism through engagement was found. Senior leadership was positively associated with engagement ($a_2 = .16, p < .001$) but engagement was not significantly associated with absenteeism ($b_2 = -.01, n.s.$).

Table 5.20 shows the effects of senior leadership and mediators in 2010 on absenteeism in 2011. No indirect effect of senior leadership on absenteeism through engagement was found. Senior leadership was positively associated with engagement ($a_2 = .16, p < .001$) but engagement was not significantly associated with absenteeism ($b_2 = .01, n.s.$).

These results do not support Hypothesis 3b suggesting that the relationship between senior leadership and absenteeism is not mediated by engagement.

5.2.2.3 Work pressure

Table 5.16 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with absenteeism in 2010. An indirect effect of senior leadership on absenteeism through work pressure was found ($a_3b_3 = .001, 95\%CI [.001, .009]$). Senior leadership was negatively associated with work pressure ($a_3 = -.22, p < .001$) and work pressure was negatively associated with absenteeism ($b_3 = -.01, p < .01$).

Table 5.17 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with absenteeism in 2011. No indirect effect of senior leadership on absenteeism through work pressure was found. Senior leadership was negatively associated with work pressure ($a_3 = -.44, p < .001$) but work pressure was not significantly associated with absenteeism ($b_3 = .00, n.s.$).

Table 5.18 shows the effects of senior leadership and mediators in 2008 on absenteeism in 2009. An indirect effect of senior leadership on absenteeism through work pressure was found ($a_2b_2 = .007$, 95%CI[.003, .012]). Senior leadership was negatively associated with work pressure ($a_2 = -.43$, $p < .001$) while work pressure was negatively associated with absenteeism ($b_2 = -.02$, $p < .001$).

Table 5.19 shows the effects of senior leadership and mediators in 2009 on absenteeism in 2010. An indirect effect of senior leadership on absenteeism through work pressure was found ($a_3b_3 = .005$, 95%CI[.001, .01]). Senior leadership was negatively associated with work pressure ($a_3 = -.53$, $p < .001$) while work pressure was negatively associated with absenteeism ($b_3 = -.01$, $p < .05$).

Table 5.20 shows the effects of senior leadership and mediators in 2010 on absenteeism in 2011. No indirect effect of senior leadership on absenteeism through work pressure was found. Senior leadership was negatively associated with work pressure ($a_3 = -.43$, $p < .001$) but work pressure was not significantly associated with absenteeism ($b_3 = -.00$, *n.s.*).

These results do not support Hypothesis 3c. However, in three of the five models tested an indirect effect was found that was not expected. Senior leadership was negatively associated with work pressure, but unexpectedly work pressure was negatively associated with absenteeism. Therefore senior leadership indirectly increased absenteeism by reducing work pressure. It is worth noting when describing this result that the effect sizes of the indirect effects are small.

5.2.2.4 Opportunity for involvement

Table 5.16 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with absenteeism in 2010. No indirect effect of senior leadership on absenteeism through opportunity for involvement was found. Senior leadership was positively associated with opportunity for involvement ($a_4 = .10$, $p < .001$) but opportunity for involvement was not significantly associated with absenteeism ($b_4 = -.02$, *n.s.*).

Table 5.17 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with absenteeism in 2011. A negative indirect effect of senior leadership on absenteeism through opportunity for involvement was found ($a_4b_4 = -.01$, 95%CI[-.01, -.01]). Senior leadership was positively associated with opportunity for involvement ($a_4 = .12$, $p < .001$) while opportunity for involvement was negatively associated with absenteeism ($b_4 = -.07$, $p < .001$).

Table 5.18 shows the effects of senior leadership and mediators in 2008 on absenteeism in 2009. A significant negative indirect effect of senior leadership on absenteeism through opportunity for involvement was found ($a_3b_3 = -.003$, 95%CI [-.006, -.001]). Senior leadership was positively associated with opportunity for involvement ($a_3 = .09$, $p < .001$) while opportunity for involvement was negatively associated with absenteeism ($b_3 = -.03$, $p < .01$).

Table 5.19 shows the effects of senior leadership and mediators in 2009 on absenteeism in 2010. No indirect effect of senior leadership on absenteeism through opportunity for involvement was found. Senior leadership was positively associated with opportunity for involvement ($a_4 = .12$, $p < .001$) but opportunity for involvement was not significantly associated with absenteeism ($b_4 = -.02$, *n.s.*).

Table 5.20 shows the effects of senior leadership and mediators in 2010 on absenteeism in 2011. A significant negative indirect effect of senior leadership on absenteeism through opportunity for involvement was found ($a_4b_4 = -.01$, (95%CI [-.01, -.001])). Senior leadership was positively associated with opportunity for involvement ($a_4 = .11$, $p < .001$) while opportunity for involvement was negatively associated with absenteeism ($b_4 = -.06$, $p < .001$).

Hypothesis 3d is supported in three of the five models tested providing some support that opportunity for involvement mediates the relationship between senior leadership and absenteeism. The higher the senior leadership rating, the higher the reports of opportunity for involvement. In turn, the higher the reports of opportunity for involvement, the lower the absenteeism.

5.2.2.5 Work-life balance

Table 5.16 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with absenteeism in 2010. No indirect effect of senior leadership on absenteeism through work-life balance was found. Senior leadership was positively associated with work-life balance ($a_5 = .19$, $p < .001$) but work-life balance was not significantly associated with absenteeism ($b_5 = .01$, *n.s.*).

Table 5.17 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with absenteeism in 2011. No indirect effect of senior leadership on absenteeism through work-life balance was found. Senior leadership was positively associated with work-life balance ($a_5 = .28$, $p < .001$) but work-life balance was not significantly associated with absenteeism ($b_5 = .00$, *n.s.*).

Table 5.18 shows the effects of senior leadership and mediators in 2008 on absenteeism in 2009. No indirect effect of senior leadership on absenteeism through work-life balance was

found. Senior leadership was positively associated with work-life balance ($a_4 = .18, p < .001$) but work-life balance was not significantly associated with absenteeism ($b_4 = .00, n.s.$).

Table 5.19 shows the effects of senior leadership and mediators in 2009 on absenteeism in 2010. No indirect effect of senior leadership on absenteeism through work-life balance was found. Senior leadership was positively associated with work-life balance ($a_5 = .22, p < .001$) but work-life balance was not significantly associated with absenteeism ($b_5 = .01, n.s.$).

Table 5.20 shows the effects of senior leadership and mediators in 2010 on absenteeism in 2011. No indirect effect of senior leadership on absenteeism through work-life balance was found. Senior leadership was positively associated with work-life balance ($a_5 = .25, p < .001$) but work-life balance was not significantly associated with absenteeism ($b_5 = .01, n.s.$).

Hypothesis 3e is not supported in any of the models tested suggesting that work-life balance does not mediate the relationship between senior leadership and absenteeism.

5.2.2.6 Total and direct effects

A significant total effect of senior leadership in predicting absenteeism was found across four of the five models tests. As ratings of senior leadership increased by one unit in 2008, absenteeism decreased by $c = -.01$ (95%CI[-.01, -.001]) in 2010 (Table 5.16), and by $c = -.01$ (95%CI[-.01, -.001]) in 2009 (Table 5.18). A one unit increase in senior leadership in 2009 significantly predicted a decrease in absenteeism of $c = -.01$ (95%CI[-.02, -.001]) in 2011 (Table 5.17), and one unit increase in senior leadership in 2010 predicted a decrease in absenteeism in 2011 of $c = -.01$ (95%CI[-.02, -.001]) (Table 5.20).

In addition, a significant direct effect was found across all four of the five models (Table 5.16; $c' = -.01$ (95%CI[-.01, -.001]), Table 5.18; $c' = -.01$ (95%CI[-.02, -.001]), and Table 5.19; $c' = -.01$ (95%CI[-.02, -.001]), and Table 5.20; $c' = -.01$ (95%CI[-.02, -.001]). This suggests that when controlling for the mediators, senior leadership has a remaining effect on absenteeism indicating that this relationship may be described further by more variables than contained within these models. However, it is worth noting that overall, the effect size of the total, direct and indirect effects of senior leadership on absenteeism are relatively small.

5.2.3 Patient Satisfaction

Hypothesis 2 stated that senior leadership would be positively associated with patient satisfaction, mediated by job design (H2a), engagement (H2b), work life balance (H2c), opportunity for involvement (H2d) and work pressure (H2e). The results of these hypotheses testing are described here, presented by mediator. The indirect effects will first be reported, followed by the total effect and direct effect. Patient satisfaction was tested in acute trusts only

and variables controlled for were supervisor support, London based, trust size, teaching status, doctors per bed, and specialist status. The number of trusts included in the final analysis was 156 in model 1, 158 in model 2, 157 in model 3, 158 in model 4, and 158 in model 5.

5.2.3.1 Job design

Table 5.21 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with patient satisfaction in 2010. No indirect effect of senior leadership on patient satisfaction through job design was found. Senior leadership was positively associated with job design ($a_1 = .18, p < .001$) but job design was not significantly associated with patient satisfaction ($b_1 = -11.5, n.s.$).

Table 5.21. 2008 senior leadership, 2009 mediators and 2010 patient satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Patient satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.18	.04	<.001	.09	.26	c	8.50	2.52	<.001	3.53	13.47				
	a ₂	.16	.05	<.005	.05	.26	c'	5.05	2.75	.07	-.40	10.49				
	a ₃	-.41	.08	<.001	-.56	-.26										
	a ₄	.10	.03	<.001	.05	.15										
	a ₅	.30	.06	<.001	.18	.42										
						Total					3.45	1.63	.66	7.26		
M ₁	--	--	--	--	--	b ₁	-11.5	7.86	.14	-27.1	3.99	a ₁ b ₁	-2.04	1.52	-5.35	.60
M ₂	--	--	--	--	--	b ₂	-3.75	4.49	.41	-12.6	5.13	a ₂ b ₂	-.60	.76	-2.32	.71
M ₃	--	--	--	--	--	b ₃	-8.95	3.12	<.01	-15.3	-2.6	a ₃ b ₃	3.66	1.47	1.20	7.06
M ₄	--	--	--	--	--	b ₄	22.8	9.89	<.05	3.25	42.35	a ₄ b ₄	2.27	1.29	.25	5.35
M ₅	--	--	--	--	--	b ₅	.49	4.30	.91	-8.01	8.98	a ₅ b ₅	.15	1.37	-2.80	2.80

Covariates Supervisor support, London status, trust size, teaching hospital status, doctors per bed, specialist trust status. N=156.

Table 5.22 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with patient satisfaction in 2011. No indirect effect of senior leadership on patient satisfaction through job design was found. Senior leadership was positively associated with job design ($a_1 = .19, p < .001$) but job design was not significantly associated with patient satisfaction ($b_1 = -12.6, n.s.$).

Table 5.22. 2009 senior leadership, 2010 mediators and 2011 patient satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Patient satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.19	.04	<.001	.11	.28	c	4.49	2.57	.08	-.58	9.56				
	a ₂	.18	.05	<.001	.08	.28	c'	3.33	2.71	.22	-2.02	8.69				
	a ₃	-.34	.07	<.001	-.48	-.19										
	a ₄	.09	.03	<.005	.03	.15										
	a ₅	.22	.07	<.005	.09	.36					Total	1.16	1.51	-1.87	4.11	
M ₁	--	--	--	--	--	b ₁	-12.6	7.5	.09	-27.5	2.2	a ₁ b ₁	-2.42	1.61	-6.16	.20
M ₂	--	--	--	--	--	b ₂	-5.83	4.85	.23	-15.4	3.75	a ₂ b ₂	-1.04	.95	-3.36	.45
M ₃	--	--	--	--	--	b ₃	-11.1	3.08	<.001	-17.1	-4.96	a ₃ b ₃	3.70	1.24	1.67	6.48
M ₄	--	--	--	--	--	b ₄	18.0	9.51	.06	-.78	36.8	a ₄ b ₄	1.62	1.09	.07	4.32
M ₅	--	--	--	--	--	b ₅	-3.14	3.92	.43	-10.9	4.62	a ₅ b ₅	-.70	.87	-2.74	.79

Covariates: Supervisor support, London status, trust size, teaching hospital status, doctors per bed, specialist trust status. N=158.

Table 5.23 shows the effects of senior leadership and mediators in 2008 on patient satisfaction in 2009. An indirect effect of senior leadership on patient satisfaction through job design was found ($a_1b_1 = -4.95$, 95%CI[-8.76, -1.54]). Senior leadership was positively associated with job design ($a_1 = .22$, $p < .001$) and job design was significantly negatively associated with patient satisfaction ($b_1 = -22.2$, $p < .01$).

Table 5.23. 2008 senior leadership and mediators, patient satisfaction 2009 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)					Patient satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.22	.03	<.001	.17	.23	c	4.50	2.51	.07	-.46	9.46				
	a ₂	-.44	.07	<.001	-.57	-.31	c'	2.93	3.09	.34	-3.17	9.02				
	a ₃	.05	.02	<.05	.01	.10										
	a ₄	.29	.05	<.001	.19	.39					Total	1.57	1.98	-2.32	5.54	
M ₁	--	--	--	--	--	b ₁	-22.2	8.14	<.01	-38.3	-6.09	a ₁ b ₁	-4.95	1.82	-8.76	-1.54
M ₂	--	--	--	--	--	b ₂	-8.70	3.16	<.01	-14.9	-2.47	a ₂ b ₂	3.83	1.49	1.18	7.23
M ₃	--	--	--	--	--	b ₃	15.32	9.14	.10	-2.74	33.38	a ₃ b ₃	.81	.67	-.07	2.69
M ₄	--	--	--	--	--	b ₄	6.49	4.20	.12	-1.81	14.79	a ₄ b ₄	1.89	1.26	-.38	4.61

Covariates: Supervisor support, London status, trust size, teaching hospital status, doctors per bed, specialist trust status. N=157.

Table 5.24 shows the effects of senior leadership and mediators in 2009 on patient satisfaction in 2010. No indirect effect of senior leadership on patient satisfaction through job design was found. Senior leadership was positively associated with job design ($a_1 = .23$, $p < .001$) but job design was not significantly associated with patient satisfaction ($b_1 = -14.1$, *n.s.*).

Table 5.24. 2009 senior leadership and mediators, patient satisfaction 2010 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Patient satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Senior Leadership)	a ₁	.23	.03	<.001	.18	.28	c	5.44	2.45	<.05	.60	10.28				
	a ₂	.19	.05	<.001	.10	.28	c'	2.42	3.35	.47	-4.19	9.03				
	a ₃	-.49	.06	<.001	-.61	-.36										
	a ₄	.08	.02	<.001	.04	.12										
	a ₅	.25	.04	<.001	.18	.33					Total	3.02	2.51	-1.84	8.11	
M ₁	--	--	--	--	--	b ₁	-14.1	8.33	.09	-30.5	2.42	a ₁ b ₁	-3.23	1.87	-6.89	.55
M ₂	--	--	--	--	--	b ₂	-3.31	4.51	.46	-12.2	5.60	a ₂ b ₂	-.64	.94	-2.57	1.19
M ₃	--	--	--	--	--	b ₃	-9.63	3.33	<.005	-16.2	-3.05	a ₃ b ₃	4.68	1.8	1.4	8.63
M ₄	--	--	--	--	--	b ₄	24.19	10.21	<.05	3.98	44.40	a ₄ b ₄	2.03	1.15	.28	4.78
M ₅	--	--	--	--	--	b ₅	.67	5.00	.89	-9.21	10.55	a ₅ b ₅	.17	1.41	-2.72	2.89

Covariates: Supervisor support, London status, trust size, teaching hospital status, doctors per bed, specialist trust status. N=158.

Table 5.25 shows the effects of senior leadership and mediators in 2009 on patient satisfaction in 2010. An indirect effect of senior leadership on patient satisfaction through job design was found ($a_1b_1 = -2.66$, 95%CI[-5.77, -.22]). Senior leadership was positively associated with job design ($a_1 = .17$, $p < .001$) although job design was not significantly associated with patient satisfaction ($b_1 = -16.1$, $n.s$). The relationship between job design and patient satisfaction produces a p value of 0.54, while bias corrected bootstrap interval marginally included zero.

Table 5.25. 2010 senior leadership and mediators, patient satisfaction 2011 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Patient satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Senior Leadership)	a ₁	.17	.03	<.001	.12	.22	c	6.20	2.47	<.05	1.31	11.09				
	a ₂	.21	.04	<.001	.13	.29	c'	5.51	3.11	.08	-.63	11.65				
	a ₃	-.45	.06	<.001	-.57	-.32										
	a ₄	.09	.02	<.001	.05	.14										
	a ₅	.24	.04	<.001	.16	.33					Total	.69	2.27	-3.89	5.05	
M ₁	--	--	--	--	--	b ₁	-16.1	8.27	.054	-32.4	.28	a ₁ b ₁	-2.66	1.41	-5.77	-.22
M ₂	--	--	--	--	--	b ₂	-7.28	4.92	.14	-17.0	2.45	a ₂ b ₂	-1.52	1.05	-3.78	.38
M ₃	--	--	--	--	--	b ₃	-11.2	3.19	<.005	-17.5	-4.91	a ₃ b ₃	4.99	1.58	2.28	8.44
M ₄	--	--	--	--	--	b ₄	14.32	9.82	.15	-5.09	33.74	a ₄ b ₄	1.35	.94	-.34	3.46
M ₅	--	--	--	--	--	b ₅	-6.09	4.60	.19	-15.2	3.01	a ₅ b ₅	-1.47	1.00	-3.62	.37

Covariates: Supervisor support, London status, trust size, teaching hospital status, doctors per bed, specialist trust status. N=158.

Hypothesis 2a was supported not supported in these modes. On the contrary, in 2 of the five models tested a relationship between senior leadership and patient satisfaction was mediated by job design, but the direction of this relationship was opposite to that expected. Senior leadership was associated with an increase in job design but job design was associated

with a decrease in patient satisfaction. It is worth noting that for one of the significant models, the second stage effect of the indirect effect was not statistically significant and due to the limited consistency of this finding, caution should be taken before generalising.

5.2.3.2 Engagement

Table 5.21 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with patient satisfaction in 2010. No indirect effect of senior leadership on patient satisfaction through engagement was found. Senior leadership was positively associated with engagement ($a_2 = .16, p < .005$) but engagement was not significantly associated with patient satisfaction ($b_2 = -3.75, n.s.$).

Table 5.22 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with patient satisfaction in 2011. No indirect effect of senior leadership on patient satisfaction through engagement was found. Senior leadership was positively associated with engagement ($a_2 = .18, p < .001$) but engagement was not significantly associated with patient satisfaction ($b_2 = -5.83, n.s.$).

Engagement was not measured in 2008 and as such is not included in the model described by Table 5.23. Table 5.24 shows the effects of senior leadership and mediators in 2009 on patient satisfaction in 2010. No indirect effect of senior leadership on patient satisfaction through engagement was found. Senior leadership was positively associated with engagement ($a_2 = .19, p < .001$) but engagement was not significantly associated with patient satisfaction ($b_2 = -3.31, n.s.$).

Table 5.25 shows the effects of senior leadership and mediators in 2010 on patient satisfaction in 2011. No indirect effect of senior leadership on patient satisfaction through engagement was found. Senior leadership was positively associated with engagement ($a_2 = .21, p < .001$) but engagement was not significantly associated with patient satisfaction ($b_2 = -7.28, n.s.$).

These results do not support Hypothesis 2b suggesting that the relationship between senior leadership and patient satisfaction is not mediated by engagement.

5.2.3.3 Work pressure

Table 5.21 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with patient satisfaction in 2010. An indirect effect of senior leadership on patient satisfaction through work pressure was found ($a_3b_3 = 3.66, 95\%CI[1.20, 7.06]$). Senior leadership was negatively associated with work pressure ($a_3 = -.41, p < .001$) and work pressure was negatively associated with patient satisfaction ($b_3 = -8.95, p < .01$).

Table 5.22 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with patient satisfaction in 2011. An indirect effect of senior leadership on patient satisfaction through work pressure was found ($a_3b_3= 3.70$, 95%CI[1.67, 6.48]). Senior leadership was negatively associated with work pressure ($a_3 = -.34$, $p=<.001$) and work pressure was negatively associated with patient satisfaction ($b_3 = -11.10$, $p=<.01$).

Table 5.23 shows the effects of senior leadership and mediators in 2008 on patient satisfaction in 2009. An indirect effect of senior leadership on patient satisfaction through work pressure was found ($a_2b_2= 9.83$, 95%CI[1.18, 7.23]). Senior leadership was negatively associated with work pressure ($a_2 = -.44$, $p=<.001$) while work pressure was negatively associated with patient satisfaction ($b_2= -8.70$, $p=<.01$).

Table 5.24 shows the effects of senior leadership and mediators in 2009 on patient satisfaction in 2010. An indirect effect of senior leadership on patient satisfaction through work pressure was found ($a_3b_3= 4.68$, 95%CI[1.4, 8.63]). Senior leadership was negatively associated with work pressure ($a_3 = -.49$, $p=<.001$) while work pressure was negatively associated with patient satisfaction ($b_3 = -9.63$, $p=<.005$).

Table 5.25 shows the effects of senior leadership and mediators in 2010 on patient satisfaction in 2011. An indirect effect of senior leadership on patient satisfaction through work pressure was found ($a_3b_3= 4.99$, 95%CI[2.28, 8.44]). Senior leadership was negatively associated with work pressure ($a_3 = -.45$, $p=<.001$) while work pressure was negatively associated with patient satisfaction ($b_3 = -11.2$, $p=<.005$).

Hypothesis 2c is supported in every model tested providing strong support that work pressure mediates the relationship between senior leadership and patient satisfaction. Senior leadership increases patient satisfaction by reducing work pressure.

5.2.3.4 Opportunity for involvement

Table 5.21 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with patient satisfaction in 2010. An indirect effect of senior leadership on patient satisfaction through opportunity for involvement was found ($a_4b_4= 2.27$, 95%CI[.25, 5.35]). Senior leadership was positively associated with opportunity for involvement ($a_4= .10$, $p=<.001$) while opportunity for involvement was positively associated with patient satisfaction ($b_4= 22.8$, $p=<.05$).

Table 5.22 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with patient satisfaction in 2011. An indirect effect of senior leadership on patient satisfaction through opportunity for involvement was found ($a_4b_4= 1.62$,

95%CI[.07, 4.32]). Senior leadership was positively associated with opportunity for involvement ($a_4 = .09, p < .005$) and although opportunity for involvement was not significantly associated with patient satisfaction ($b_4 = 18.0, n.s.$), the p value was .06 with the confidence interval marginally including zero (LLCI=-78, ULCI=36.8).

Table 5.23 shows the effects of senior leadership and mediators in 2008 on patient satisfaction in 2009. No significant negative indirect effect of senior leadership on patient satisfaction through opportunity for involvement was found. Senior leadership was positively associated with opportunity for involvement ($a_3 = .05, p < .05$) while opportunity for involvement was not significantly associated with patient satisfaction ($b_3 = 15.32, n.s.$).

Table 5.24 shows the effects of senior leadership and mediators in 2009 on patient satisfaction in 2010. An indirect effect of senior leadership on patient satisfaction through opportunity for involvement was found ($a_4 b_4 = 2.03, 95\%CI[.28, 4.78]$). Senior leadership was positively associated with opportunity for involvement ($a_4 = .08, p < .001$) while opportunity for involvement was positively associated with patient satisfaction ($b_4 = 24.19, p < .05$).

Table 5.25 shows the effects of senior leadership and mediators in 2010 on patient satisfaction in 2011. No significant negative indirect effect of senior leadership on patient satisfaction through opportunity for involvement was found. Senior leadership was positively associated with opportunity for involvement ($a_4 = .09, p < .001$) while opportunity for involvement was positively associated with patient satisfaction ($b_4 = 14.32, n.s.$).

Hypothesis 2d is supported in three of the five models tested providing some support that opportunity for involvement mediates the relationship between senior leadership and patient satisfaction. The higher the senior leadership rating, the higher the reports of opportunity for involvement. In turn, the higher the reports of opportunity for involvement, the lower the patient satisfaction. Therefore senior leadership increases patient satisfaction through their influence on opportunity for involvement.

5.2.3.5 Work-life balance

Table 5.21 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with patient satisfaction in 2010. No indirect effect of senior leadership on patient satisfaction through work-life balance was found. Senior leadership was positively associated with work-life balance ($a_5 = .30, p < .001$) but work-life balance was not significantly associated with patient satisfaction ($b_5 = .49, n.s.$).

Table 5.22 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with patient satisfaction in 2011. No indirect effect of senior

leadership on patient satisfaction through work-life balance was found. Senior leadership was positively associated with work-life balance ($a_5 = .22, p < .005$) but work-life balance was not significantly associated with patient satisfaction ($b_5 = -3.14, n.s.$).

Table 5.23 shows the effects of senior leadership and mediators in 2008 on patient satisfaction in 2009. No indirect effect of senior leadership on patient satisfaction through work-life balance was found. Senior leadership was positively associated with work-life balance ($a_4 = .29, p < .001$) but work-life balance was not significantly associated with patient satisfaction ($b_4 = 6.49, n.s.$).

Table 5.24 shows the effects of senior leadership and mediators in 2009 on patient satisfaction in 2010. No indirect effect of senior leadership on patient satisfaction through work-life balance was found. Senior leadership was positively associated with work-life balance ($a_5 = .25, p < .001$) but work-life balance was not significantly associated with patient satisfaction ($b_5 = .67, n.s.$).

Table 5.25 shows the effects of senior leadership and mediators in 2010 on patient satisfaction in 2011. No indirect effect of senior leadership on patient satisfaction through work-life balance was found. Senior leadership was positively associated with work-life balance ($a_5 = .24, p < .001$) but work-life balance was not significantly associated with patient satisfaction ($b_5 = -6.09, n.s.$).

Hypothesis 2e is not supported in any of the models tested suggesting that work-life balance does not mediate the relationship between senior leadership and patient satisfaction.

5.2.3.6 Total and direct effects

A significant total effect of senior leadership in predicting patient satisfaction was found across three of the five models tested. As ratings of senior leadership increased by one unit, patient satisfaction increased by $c = 8.50$ (95%CI[3.53, 13.47]) (Table 5.21), $c = 5.44$, (95%CI[.60, 10.28]) (Table 5.24), and $c = 6.20$ (95%CI[1.31, 11.09]) (Table 5.25).

In addition, no significant direct effects were found in any model, suggesting that the relationship between senior leadership and patient satisfaction was explained by the variables included in these models.

5.2.4 Stability

Hypothesis 4 stated that senior leadership would be positively associated with stability, mediated by job design (H4a), engagement (H4b), work life balance (H4c), opportunity for involvement (H4d) and work pressure (H4e). The results of these hypotheses testing are

described here, presented by mediator. The indirect effects will first be reported, followed by the total effect and direct effect. Stability was tested in acute trusts only and variables controlled for were supervisor support, London based, trust size, teaching status, doctors per bed, and specialist status. The number of trusts included in the final analysis was 160 in model 1, 164 in model 2, 162 in model 3, 164 in model 4, and 164 in model 5.

5.2.4.1 Job design

Table 5.26 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with stability in 2010. No indirect effect of senior leadership on stability through job design was found. Senior leadership was positively associated with job design ($a_1 = .18, p < .001$) but job design was not significantly associated with stability ($b_1 = 5.32, n.s$).

Table 5.26. 2008 senior leadership, 2009 mediators and 2010 stability multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Stability (Y)						Indirect effect			
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Senior Leadership)	a ₁	.18	.04	<.001	.10	.26	c	.08	1.50	.96	-2.88	3.04				
	a ₂	.16	.05	<.005	.05	.26	c'	-2.02	1.56	.20	-5.10	1.07				
	a ₃	-.43	.08	<.001	-.58	-.28										
	a ₄	.09	.03	<.001	.04	.14										
	a ₅	.30	.06	<.001	.18	.42					Total	2.09	1.21	.11	4.98	
M ₁	--	--	--	--	--	b ₁	5.32	4.49	.24	-3.55	14.2	a ₁ b ₁	.94	.67	-.22	2.46
M ₂	--	--	--	--	--	b ₂	-8.15	2.54	<.005	-13.2	-3.13	a ₂ b ₂	-1.28	.56	-2.67	-.39
M ₃	--	--	--	--	--	b ₃	-5.07	1.87	<.01	-8.76	-1.37	a ₃ b ₃	2.18	.89	.83	4.55
M ₄	--	--	--	--	--	b ₄	-8.06	5.45	.14	-18.8	2.72	a ₄ b ₄	-.72	.49	-1.98	.00
M ₅	--	--	--	--	--	b ₅	3.24	2.42	.18	-1.55	8.02	a ₅ b ₅	.98	.71	-.34	2.57

Covariates: Supervisor support, London status, trust size, teaching hospital status, doctors per bed, specialist trust status. N=160.

Table 5.27 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with stability in 2011. No indirect effect of senior leadership on stability through job design was found. Senior leadership was positively associated with job design ($a_1 = .19, p < .001$) but job design was not significantly associated with stability ($b_1 = 4.71, n.s$).

Table 5.27. 2009 senior leadership, 2010 mediators and 2011 stability multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Stability (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Senior Leadership)	a ₁	.19	.04	<.001	.11	.27	c	1.03	1.22	.40	-1.38	3.44				
	a ₂	.17	.05	<.001	.08	.27	c'	.07	1.27	.96	-2.43	2.57				
	a ₃	-.34	.07	<.001	-.49	-.20										
	a ₄	.09	.03	<.005	.03	.14										
	a ₅	.23	.07	<.005	.09	.36					Total	.96	.68	-.40	2.26	
M ₁	--	--	--	--	--	b ₁	4.71	3.51	.18	-2.23	11.65	a ₁ b ₁	.89	.67	-.12	2.60
M ₂	--	--	--	--	--	b ₂	-5.08	2.26	<.05	-9.55	-.62	a ₂ b ₂	-.87	.56	-2.27	-.06
M ₃	--	--	--	--	--	b ₃	-3.19	1.43	<.05	-6.02	-.36	a ₃ b ₃	1.09	.59	.10	2.41
M ₄	--	--	--	--	--	b ₄	-11.4	4.46	<.05	-20.2	-2.59	a ₄ b ₄	-1.01	.56	-2.56	-.20
M ₅	--	--	--	--	--	b ₅	3.80	1.83	<.05	.17	7.43	a ₅ b ₅	.86	.60	.02	2.35

Covariates: Supervisor support, London status, trust size, teaching hospital status, doctors per bed, specialist trust status. N=164.

Table 5.28 shows the effects of senior leadership and mediators in 2008 on stability in 2009. No indirect effect of senior leadership on stability through job design was found. Senior leadership was positively associated with job design ($a_1 = .21, p < .001$) but job design was not significantly associated with stability ($b_1 = -6.33, n.s$).

Table 5.28. 2008 senior leadership and mediators, stability 2009 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)					Stability (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Senior Leadership)	a ₁	.21	.12	<.001	.16	.27	c	1.23	1.91	.52	-2.54	5.00				
	a ₂	-.47	.07	<.001	-.60	-.34	c'	-1.68	2.35	.47	-6.32	2.96				
	a ₃	.05	.02	.06	-.00	.09										
	a ₄	.30	.05	<.001	.20	.39					Total	2.91	1.57	-.08	6.08	
M ₁	--	--	--	--	--	b ₁	-6.33	6.11	.30	-18.4	5.76	a ₁ b ₁	-1.35	1.30	-4.08	1.10
M ₂	--	--	--	--	--	b ₂	-8.08	2.49	<.005	-13.0	-3.15	a ₂ b ₂	3.77	1.22	1.67	6.54
M ₃	--	--	--	--	--	b ₃	-6.93	6.93	.32	-20.6	6.78	a ₃ b ₃	-.31	.43	-1.60	.25
M ₄	--	--	--	--	--	b ₄	2.72	3.23	.40	-3.65	9.10	a ₄ b ₄	.81	.93	-.87	2.85

Covariates: Supervisor support, London status, trust size, teaching hospital status, doctors per bed, specialist trust status. N=162.

Table 5.29 shows the effects of senior leadership and mediators in 2009 on stability in 10. An indirect effect of senior leadership on stability through job design was found ($a_1b_1 = 2.11, 95\%CI [.34, 4.64]$). Senior leadership was positively associated with job design ($a_1 = .23, p < .001$) although job design was not significantly associated with stability ($b_1 = 9.18, n.s$). The relationship between job design and stability produces a p value of 0.502, while the confidence interval marginally included zero (LLCI -.08, ULCI 18.45).

Table 5.29. 2009 senior leadership and mediators, stability 2010 multiple mediation model

Antecedent	Consequent												Indirect effect			
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Stability (Y)									
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Senior Leadership)	a ₁	.23	.03	<.001	.18	.28	c	.02	1.43	.99	-2.81	2.86				
	a ₂	.18	.05	<.001	.09	.27	c'	-4.51	1.83	<.05	-8.14	-.89				
	a ₃	-.49	.06	<.001	-.61	-.37										
	a ₄	.07	.02	<.001	.03	.12										
	a ₅	.26	.04	<.001	.18	.33							Total	4.54	2.10	1.20
M ₁	--	--	--	--	--	b ₁	9.18	4.69	.05	-.08	18.45	a ₁ b ₁	2.11	1.07	.34	4.64
M ₂	--	--	--	--	--	b ₂	-7.16	2.48	<.005	-12.1	-2.26	a ₂ b ₂	-1.31	.55	-2.53	-.36
M ₃	--	--	--	--	--	b ₃	-5.88	1.87	<.005	-9.59	-2.18	a ₃ b ₃	2.88	.99	1.28	5.18
M ₄	--	--	--	--	--	b ₄	-6.38	5.50	.25	-17.2	4.49	a ₄ b ₄	-.48	.41	-1.57	.15
M ₅	--	--	--	--	--	b ₅	5.19	2.74	.06	-.23	10.61	a ₅ b ₅	1.33	.81	.01	3.27

Covariates: Supervisor support, London status, trust size, teaching hospital status, doctors per bed, specialist trust status. N=164.

Table 5.30 shows the effects of senior leadership and mediators in 2009 on stability in 10. No indirect effect of senior leadership on stability through job design was found ($a_1b_1 = .62, n.s$). Senior leadership was positively associated with job design ($a_1 = .17, p < .001$) but job design was not significantly associated with stability ($b_1 = 3.75, n.s$).

Table 5.30. 2010 senior leadership and mediators, stability 2011 multiple mediation model

Antecedent	Consequent												Indirect effect			
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Stability (Y)									
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Senior Leadership)	a ₁	.17	.02	<.001	.12	.21	c	.56	1.14	.63	-1.70	2.82				
	a ₂	.19	.04	<.001	.12	.27	c'	-.24	1.44	.87	-3.09	2.61				
	a ₃	-.45	.06	<.001	-.58	-.33										
	a ₄	.09	.02	<.001	.05	.13										
	a ₅	.25	.04	<.001	.17	.33							Total	.80	1.06	-1.30
M ₁	--	--	--	--	--	b ₁	3.75	3.19	.34	-3.98	11.48	a ₁ b ₁	.62	.70	-.56	2.25
M ₂	--	--	--	--	--	b ₂	-5.10	2.30	<.05	-9.65	-.55	a ₂ b ₂	-.99	.54	-2.22	-.03
M ₃	--	--	--	--	--	b ₃	-3.31	1.50	<.05	-6.27	-.35	a ₃ b ₃	1.50	.73	.21	3.13
M ₄	--	--	--	--	--	b ₄	-11.8	4.64	<.05	-20.9	-2.36	a ₄ b ₄	-1.10	.58	-2.50	-.21
M ₅	--	--	--	--	--	b ₅	3.08	2.14	.15	-1.15	7.31	a ₅ b ₅	.76	.65	-.33	2.22

Covariates: Supervisor support, London status, trust size, teaching hospital status, doctors per bed, specialist trust status. N=164.

Hypothesis 4a was supported in only one of the five models tested, and this model's results gave a marginally indirect effect, with a marginally non-significant second stage of the mediation. Overall these provide scant support for Hypothesis 1a. The positive relationship between senior leadership and stability may be mediated by the positive effect senior leaders have on job design.

5.2.4.2 Engagement

Table 5.26 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with stability in 2010. An indirect effect of senior leadership on stability through engagement was found ($a_2b_2 = -1.28$, 95%CI[-2.67, -.39]). Senior leadership was positively associated with engagement ($a_2 = .16$, $p < .005$) and engagement was negatively associated with stability ($b_2 = -8.15$, $p < .005$).

Table 5.27 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with stability in 2011. An indirect effect of senior leadership on stability through engagement was found ($a_2b_2 = -.87$, 95%CI[-2.27, -.06]). Senior leadership was positively associated with engagement ($a_2 = .19$, $p < .001$) and engagement was negatively associated with stability ($b_2 = -5.08$, $p < .05$).

Engagement was not measured in 2008 and as such is not included in the model described by Table 5.28. Table 5.29 shows the effects of senior leadership and mediators in 2009 on stability in 2010. An indirect effect of senior leadership on stability through engagement was found ($a_2b_2 = -1.31$, 95%CI[-2.53, -.36]). Senior leadership was positively associated with engagement ($a_2 = .18$, $p < .001$) and engagement was negatively associated with stability ($b_2 = -7.16$, $p < .005$).

Table 5.30 shows the effects of senior leadership and mediators in 2010 on stability in 2011. An indirect effect of senior leadership on stability through engagement was found ($a_2b_2 = -.99$, 95%CI[-2.22, -.03]). Senior leadership was positively associated with engagement ($a_2 = .19$, $p < .001$) and engagement was negatively associated with stability ($b_2 = -5.10$, $p < .05$).

These results do not support hypothesis 4b. However in each model tested an indirect effect was found, but the direction of this effect was not expected. Senior leadership was positively associated with engagement, but engagement was negatively associated with stability. Therefore senior leadership indirectly reduced stability by increasing engagement.

5.2.4.3 Work pressure

Table 5.26 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with stability in 2010. An indirect effect of senior leadership on stability through work pressure was found ($a_3b_3 = 2.18$ 95%CI[.83, 4.55]). Senior leadership was negatively associated with work pressure ($a_3 = -.43$, $p < .001$) and work pressure was negatively associated with stability ($b_3 = -5.07$, $p < .01$).

Table 5.27 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with stability in 2011. An indirect effect of senior leadership on

stability through work pressure was found ($a_3b_3= 1.09$, 95%CI[.10, 2.41]). Senior leadership was negatively associated with work pressure ($a_3 = -.34$, $p<.001$) and work pressure was negatively associated with stability ($b_3 = -3.19$, $p<.05$).

Table 5.28 shows the effects of senior leadership and mediators in 2008 on stability in 2009. An indirect effect of senior leadership on stability through work pressure was found ($a_2b_2= 3.77$, 95%CI[1.67, 6.54]). Senior leadership was negatively associated with work pressure ($a_2 = -.47$, $p<.001$) while work pressure was negatively associated with stability ($b_2= -8.08$, $p<.005$).

Table 5.29 shows the effects of senior leadership and mediators in 2009 on stability in 2010. An indirect effect of senior leadership on stability through work pressure was found ($a_3b_3= 2.88$, 95%CI[1.28, 5.18]). Senior leadership was negatively associated with work pressure ($a_3 = -.49$, $p<.001$) while work pressure was negatively associated with stability ($b_3 = -5.88$, $p<.005$).

Table 5.30 shows the effects of senior leadership and mediators in 2010 on stability in 2011. An indirect effect of senior leadership on stability through work pressure was found ($a_3b_3= 1.50$, 95%CI[.21, 3.13]). Senior leadership was negatively associated with work pressure ($a_3 = -.45$, $p<.001$) while work pressure was negatively associated with stability ($b_3 = -3.31$, $p<.05$).

Hypothesis 4c is supported in every model tested providing strong support that work pressure mediates the relationship between senior leadership and stability. The indirect effect suggests that senior leadership increases stability by reducing work pressure.

5.2.4.4 Opportunity for involvement

Table 5.26 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with stability in 2010. No indirect effect of senior leadership on stability through opportunity for involvement was found. Senior leadership was positively associated with opportunity for involvement ($a_4= .09$, $p<.001$) while opportunity for involvement was not significantly associated with stability ($b_4= -8.06$, *n.s.*).

Table 5.27 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with stability in 2011. An indirect effect of senior leadership on stability through opportunity for involvement was found ($a_4b_4= -1.01$, 95%CI[-2.56, -.20]). Senior leadership was positively associated with opportunity for involvement ($a_4= .09$, $p<.005$) and opportunity for involvement was negatively associated with stability ($b_4= -11.4$, $p<.05$).

Table 5.28 shows the effects of senior leadership and mediators in 2008 on stability in 2009. No significant negative indirect effect of senior leadership on stability through opportunity for involvement was found. Senior leadership was not significantly associated with opportunity for involvement ($a_3 = .05, n.s$) and opportunity for involvement was not significantly associated with stability ($b_3 = -6.93, n.s$).

Table 5.29 shows the effects of senior leadership and mediators in 2009 on stability in 2010. No indirect effect of senior leadership on stability through opportunity for involvement was found. Senior leadership was positively associated with opportunity for involvement ($a_4 = .07, p < .001$) while opportunity for involvement was not significantly associated with stability ($b_4 = -6.38, n.s$).

Table 5.30 shows the effects of senior leadership and mediators in 2010 on stability in 2011. A significant negative indirect effect of senior leadership on stability through opportunity for involvement was found ($a_4 b_4 = -1.10, 95\%CI[-2.50, -.21]$). Senior leadership was positively associated with opportunity for involvement ($a_4 = .09, p < .001$) while opportunity for involvement was negatively associated with stability ($b_4 = -11.8, p < .05$).

These results do not Hypothesis 4d. However, in two of the five models tested an indirect effect was found that was not expected. In these models, as expected, senior leadership was positively associated with opportunity for involvement. Unexpectedly, opportunity for involvement was negatively related to stability. This result suggests that senior leadership reduces stability by increasing opportunity for involvement.

5.2.4.5 Work-life balance

Table 5.26 shows the effects of senior leadership in 2008 on mediating variables in 2009, and their relationship with stability in 2010. No indirect effect of senior leadership on stability through work-life balance was found. Senior leadership was positively associated with work-life balance ($a_5 = .30, p < .001$) but work-life balance was not significantly associated with stability ($b_5 = 3.24, n.s$).

Table 5.27 shows the effects of senior leadership in 2009 on mediating variables in 2010, and their relationship with stability in 2011. An indirect effect of senior leadership on stability through work-life balance was found ($a_5 b_5 = .86, 95\%CI[.02, 2.35]$). Senior leadership was positively associated with work-life balance ($a_5 = .23, p < .005$) and work-life balance was positively associated with stability ($b_5 = 3.850, p < .05$).

Table 5.28 shows the effects of senior leadership and mediators in 2008 on stability in 2009. No indirect effect of senior leadership on stability through work-life balance was found.

Senior leadership was positively associated with work-life balance ($a_4 = .30$, $p < .001$) but work-life balance was not significantly associated with stability ($b_4 = 2.72$, $n.s.$).

Table 5.29 shows the effects of senior leadership and mediators in 2009 on stability in 2010. An indirect effect of senior leadership on stability through work-life balance was found ($a_5 b_5 = 1.33$, 95%CI[.01, 3.27]). Senior leadership was positively associated with work-life balance ($a_5 = .26$, $p < .001$) although work-life balance was not significantly associated with stability ($b_5 = 5.19$, $n.s.$). The second stage of the indirect effect between work-life balance and stability was marginally non-significant with a p value of .06 while the indirect effect confidence interval marginally excluded zero.

Table 5.30 shows the effects of senior leadership and mediators in 2010 on stability in 2011. No indirect effect of senior leadership on stability through work-life balance was found. Senior leadership was positively associated with work-life balance ($a_5 = .25$, $p < .001$) but work-life balance was not significantly associated with stability ($b_5 = 3.08$, $n.s.$).

Hypothesis 4e is supported in two of the five models tested providing limited support that work-life balance mediates the relationship between senior leadership and stability. However, the second stage of the indirect effect between work-life balance and stability was not significant in one of these models.

5.2.4.6 Total and direct effects

No significant total effects of senior leadership on stability were found in any model. A direct effect was found only in one model (Table 5.29) $c' = -4.51$, 95%CI[-8.14, -.89]) suggesting that there may be further mediators operating between the senior leadership – stability relationship.

5.3 Summary of senior leadership analysis

In order to summarise the results of the hypotheses tests relating to senior leadership, the indirect effects figures are reported in the tables below. These tables help to visualise the significant paths the relationships between senior leadership and outcomes.

Table 5.31 shows the indirect effects between senior leadership and job satisfaction. It is possible to see that work-life balance is the most consistent variable mediating this relationship. The relationship exists in both the cross sectional and longitudinal analysis suggesting that senior leaders increase job satisfaction by increasing work-life balance. Job design, work-pressure and opportunity for involvement were all described by only one indirect effect across all models tested and cannot be taken as a consistent finding. Engagement was significant in every model tested for the longitudinal analyses only. This suggests that senior

leadership's positive influence on engagement may produce a positive distal effect on job satisfaction.

Table 5.31: Job satisfaction, indirect effects of senior leadership

Mediator	Cross Sectional			Longitudinal		
	2008	2009	2010	1	2	3
Job design	--	--	--	.05	--	--
Engagement	Not measured	--	--	.02	Not measured	.02
Work pressure	.05	--	--	--	--	--
Opportunity for involvement	.03	--	--	--	--	--
Work-life balance	.04	--	.04	.03	--	.04

Table 5.32 shows the indirect effects between senior leadership and absenteeism. Consistent, significant effects can be seen through work pressure and opportunity for involvement. For both mediators the effect is present in both the cross sectional and longitudinal analyses. For work pressure, the effect is positive suggesting that work pressure decreases absenteeism, therefore as senior leaders negatively influence work pressure they indirectly increase absenteeism. For opportunity for improvement, the effect is negative suggesting that senior leaders increase opportunity for improvement which indirectly reduces absenteeism. Only one model tested found an indirect effect through job design and is therefore not a consistent finding. No model found any effect through work-life balance.

Table 5.32: Absenteeism, indirect effects of senior leadership.

Mediator	Cross sectional			Longitudinal				
	2008	2009	2010	1	2	3	4	5
Job design	--	--	.004	--	--	--	--	--
Engagement	Not measured	--	--	--	--	Not measured	--	--
Work pressure	.01	.01	--	.001	--	.01	.01	--
Opportunity for involvement	-.01	-.01	-.01	--	-.01	-.003	--	-.01
Work-life balance	--	--	--	--	--	--	--	--

Table 5.33 shows the indirect effects between senior leadership and patient satisfaction. An effect was found through work pressure for every model tested, suggesting this is a highly consistent finding. From the detailed model analysis detailed in the previous sections it was found that senior leadership negatively influenced work pressure and that work pressure negatively influenced patient satisfaction. Therefore, senior leadership positively influences

patient satisfaction by reducing work pressure. This is shown for cross sectional and longitudinal analyses. Opportunity for involvement was the next most consistent finding, with three of the five longitudinal models describing an indirect effect through this variable. In addition, this relationship was also found for one of the three cross sectional models, suggesting that this may be more of a long-term effect, but still has contemporary implications. In this relationship, senior leaders increase opportunity for involvement and an increase in opportunity for involvement leads to an increase in patient satisfaction. For job design, three of the eight models described a negative relationship on patient satisfaction. This was found in one of the three cross sectional models and two of the five longitudinal models. The infrequency of this result suggests that this is not a consistent relationship. Work life balance was a mediating factor in only one of the eight models tested while engagement was not a significant factor in any model. Consequently, neither work-life balance nor engagement can be taken to be consistent mediating variables between senior leadership and patient satisfaction.

Table 5.33: Patient Satisfaction, indirect effects of senior leadership.

Mediator	Cross sectional			Longitudinal				
	2008	2009	2010	1	2	3	4	5
Job design	--	--	-3.39	--	--	-4.95	--	-2.66
Engagement	Not measured	--	--	--	--	Not measured	--	--
Work pressure	3.66	4.30	4.63	3.66	3.70	9.83	4.68	4.99
Opportunity for involvement	--	--	2.09	2.27	1.62	--	2.03	--
Work-life balance	2.95	--	--	--	--	--	--	--

Table 5.34 shows the indirect effects between senior leadership and patient stability. Work pressure was found to be a positive indirect effect in every model suggesting a highly consistent finding. Senior leadership is negatively associated with work pressure while work pressure is negatively associated with stability. As such, senior leadership increases stability by reducing work pressure. Engagement was also a consistent mediating variable although this consistency was only found for the longitudinal analyses. Engagement was not a significant mediating variable in the cross sectional models. In addition, the effect through engagement was negative which was unexpected. This relationship suggests that senior leadership positively influences engagement, and that this then negatively influences stability. This effect seems to happen over time only. Opportunity for involvement was a negative mediating variable in two of the five longitudinal analyses, which does not suggest a consistent result. Work-life balance was also a mediating variable in two of the five longitudinal analyses but described a positive effect on stability. Neither opportunity for involvement nor work-life balance produced

significant results in the cross sectional analyses. The effect through job design was significant for only one of the eight models tested, suggesting that this is not a consistent mediating variable.

Table 5.34: Stability, indirect effects of senior leadership.

Mediator	Cross sectional			Longitudinal				
	2008	2009	2010	1	2	3	4	5
Job design	--	--	--	--	--	--	2.11	--
Engagement	Not measured	--	--	-1.28	-.87	Not measured	-1.31	-.99
Work pressure	3.25	3.90	3.79	2.18	1.09	3.77	2.88	1.50
Opportunity for involvement	--	--	--	--	-1.01	--	--	-1.10
Work-life balance	--	--	--	--	.86	--	1.33	--

Table 5.35 presents the significant relationships senior leadership had with the mediating variables. Effect sizes are not included in this table as these varied across each model, although this variation was small - i.e. the size of the effect was relatively consistent for each mediator. Individual effect sizes are reported in the tables throughout the main section of the results. The results indicate that senior leadership significantly and positively predicted all mediating variables across all models except for work pressure, which was significantly and negatively predicted. These relationships show that the variation in the indirect effects are due to the second stage effect between the mediator and the outcome variable.

Table 5.35: Significant relationships between senior leadership with mediator variables

Mediator	Cross sectional			Longitudinal				
	2008	2009	2010	1	2	3	4	5
Job design	X	X	X	X	X	X	X	X
Engagement	Not measured	X	X	X	X	X	X	X
Work pressure	-X	-X	-X	-X	-X	-X	-X	-X
Opportunity for involvement	X	X	X	X	X	X	X	X
Work-life balance	X	X	X	X	X	X	X	X

Finally, a summary of total and indirect effects is presented in Table 5.36. Total and direct effects are present in all job satisfaction models, as well as the majority of absenteeism models. Where direct effects are not present, it can be established that any effect of senior

leadership is not independent of the mediating variables. Where a direct effect is present it is possible that further mediators are in operation. Direct effects are less apparent in the stability and patient satisfaction models, suggesting that the effect of senior leadership on these outcomes is not independent of its effect through the mediating variables.

Table 5.36: Summary of all total and direct effects for senior leadership models

	Cross sectional			Longitudinal				
	2008	2009	2010	1	2	3	4	5
Job satisfaction								
C	X	X	X	X	X	X		
C'	X	X	X	X	X	X	No models tested	
Absenteeism								
C	-X	--	--	-X	-X	-X	--	-X
C'	-X	-X	-X	-X	--	-X	-X	-X
Patient Satisfaction								
C	--	--	X	X	--	--	X	X
C'	--	--	--	--	--	--	--	--
Stability								
C	X	--	--	--	--	--	--	--
C'	--	-X	--	--	--	--	-X	--

6 Effects of supervisor support

This chapter will present the findings of the supervisor support analyses. The presentation will follow the same structure as that of the previous senior leadership chapter. Each hypothesis is presented, separated by outcome. Because the hypotheses relating to job satisfaction (H5) and absenteeism (H7) were tested on all trusts, they will be presented first, followed by hypotheses 6 (patient satisfaction) and 8 (stability), which were tested on acute trusts only. Within each outcome sub-section, the cross sectional data analysis is presented first, with each mediator tested systematically. Following this, the longitudinal analysis will then be presented, obeying the same structure as the cross sectional analysis.

At the end of this chapter a summary of all analyses is provided, including significant, consistent indirect effects (both cross section and longitudinal).

6.1 Study 3: Supervisor support cross sectional analysis

The first study examined the relationship between supervisor support and outcome variables contemporaneously, testing for any effects through mediating variables. Cross sectional analyses only assess associations and cannot infer directionality of any relationships, but should increase my confidence in proposing the directionality in the hypotheses.

6.1.1 Job satisfaction

Hypothesis 5 stated that supervisor support would be positively associated with job satisfaction, mediated by job design (H5a), engagement (H5b), work life balance (H5c), opportunity for involvement (H5d) and work pressure (H5e). The indirect effects will first be reported, followed by total direct effects. Job satisfaction was tested across the whole sample and variables that were controlled for were senior leadership, London based, trust size, and trust type. The number of trusts included in the final analysis was 385 in 2008, 389 in 2009, and 356 in 2010.

6.1.1.1 Job design

Table 6.1 shows no indirect effect of supervisor support on job satisfaction through job design for 2008. The first stage of the indirect path was significant ($a_1=.32, p<.001$) indicating a significant relationship between supervisor support and job design, while the second step was not significant ($b_1= -.02, n.s$).

Table 6.1: 2008 supervisor support and job satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)					Job satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.32	.03	<.001	.25	.38	c	.15	.05	<.005	.06	.24				
	a ₂	-.08	.06	.19	-.21	.04	c'	-.00	.06	.97	-.11	.11				
	a ₃	.17	.02	<.001	.12	.22										
	a ₄	.59	.05	<.001	.49	.69					Total	.15	.04	.08	.23	
M ₁	--	--	--			b ₁	-.02	.08	.82	-.17	.13	a ₁ b ₁	-.01	.03	-.06	.05
M ₂	--	--	--			b ₂	-.10	.04	<.01	-.17	-.02	a ₂ b ₂	.01	.01	-.001	.03
M ₃	--	--	--			b ₃	.28	.10	<.01	.08	.47	a ₃ b ₃	.05	.02	.02	.09
M ₄	--	--	--			b ₄	.17	.05	<.001	.08	.26	a ₄ b ₄	.10	.03	.04	.17

Covariates: Senior leadership, London based, trust size, trust type. N=385.

Table 6.2 shows no indirect effect of supervisor support on job satisfaction through job design for 2009. The first stage of the indirect path was significant ($a_1=.34, p<.001$) indicating a significant relationship between supervisor support and job design, while the second step was not significant ($b_1=.03, n.s$).

Table 6.2: 2009 supervisor support and job satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Job satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.34	.03	<.001	.28	.41	c	.17	.04	<.001	.08	.25				
	a ₂	.15	.05	<.001	.06	.25	c'	.07	.06	.22	-.04	.19				
	a ₃	-.09	.06	.18	-.21	.04										
	a ₄	.17	.03	<.001	.12	.22										
	a ₅	.64	.05	<.001	.55	.73					Total	.10	.05	.00	.19	
M ₁	--	--	--			b ₁	.03	.07	.66	-.11	.18	a ₁ b ₁	.01	.03	-.04	.07
M ₂	--	--	--			b ₂	.09	.05	.06	-.00	.19	a ₂ b ₂	.01	.01	-.001	.04
M ₃	--	--	--			b ₃	-.05	.04	.17	-.12	.02	a ₃ b ₃	.00	.01	-.001	.02
M ₄	--	--	--			b ₄	.07	.09	.43	-.11	.25	a ₄ b ₄	.01	.02	-.02	.05
M ₅	--	--	--			b ₅	.08	.05	.10	-.02	.18	a ₅ b ₅	.05	.04	-.01	.13

Covariates: Senior leadership, London based, trust size, trust type. N=389.

Table 6.3 shows no indirect effect of supervisor support on job satisfaction through job design for 2010. The first stage of the indirect path was significant ($a_1=.43, p<.001$) indicating a significant relationship between supervisor support and job design, while the second step was not significant ($b_1=.08, n.s$).

Table 6.3: 2010 supervisor support and job satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Job satisfaction (Y)						Indirect effect			
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.43	.03	<.001	.37	.49	c	.23	.05	<.001	.14	.32				
	a ₂	.28	.05	<.001	.18	.38	c'	.09	.07	.17	-.04	.22				
	a ₃	-.09	.07	.18	-.22	.04										
	a ₄	.19	.02	<.001	.15	.23										
	a ₅	.64	.05	<.001	.55	.74										
											Total	.14	.05	.04	.23	
M ₁	--	--	--			b ₁	.08	.09	.37	-.10	.26	a ₁ b ₁	.04	.04	-.04	.11
M ₂	--	--	--			b ₂	.01	.05	.83	-.09	.11	a ₂ b ₂	.00	.01	-.03	.03
M ₃	--	--	--			b ₃	-.02	.04	.53	-.10	.05	a ₃ b ₃	.00	.01	-.001	.02
M ₄	--	--	--			b ₄	.04	.11	.71	-.18	.26	a ₄ b ₄	.01	.02	-.03	.05
M ₅	--	--	--			b ₅	.14	.05	<.005	.05	.24	a ₅ b ₅	.09	.03	.03	.16

Covariates: Senior leadership, London based, trust size, trust type. N=356.

These findings do not provide support for hypothesis 5a, suggesting that the relationship between supervisor support and job satisfaction is not mediated by job design.

6.1.1.2 Engagement

Engagement was not measured in 2008. Table 6.2 no indirect effect of supervisor support on job satisfaction through engagement for 2009. The first stage of the indirect path was significant ($a_2=.15, p<.001$) indicating a significant relationship between supervisor support and engagement, while the second step was not significant ($b_2=.09 n.s$). It is worth noting that the 95%CI confidence interval value falls just short of statistical significance with the lower bound confidence interval at -.001 with the upper bound interval being .04. As this interval includes zero it is not significant, however the interval lies just short of remaining outside of zero.

Table 6.3 no indirect effect of supervisor support on job satisfaction through engagement for 2010. The first stage of the indirect path was significant ($a_2=.28, p<.001$) indicating a significant relationship between supervisor support and engagement, while the second step was not significant ($b_2=.01, n.s$).

These findings do not provide support for hypothesis 5b, suggesting that the relationship between supervisor support and job satisfaction is not mediated by engagement.

6.1.1.3 Work pressure

Table 6.1 shows no indirect effect of supervisor support on job satisfaction through work pressure for 2008. The first stage of the indirect path was not significant suggesting that supervisor support and work pressure are not related ($a_2= -.08, n.s$), while the second

component was significant ($b_2 = -.10$, $p < .01$) suggesting a significant relationship between work pressure and job satisfaction.

Table 6.2 shows no indirect effect of supervisor support on job satisfaction through work pressure for 2009. Neither the first nor second components of the indirect path were significant ($a_3 = -.09$, *n.s.*; $b_3 = -.05$, *n.s.*).

Table 6.3 shows no indirect effect of supervisor support on job satisfaction through work pressure for 2010. Neither the first nor second components of the indirect path were significant ($a_3 = -.09$, *n.s.*; $b_3 = -.02$, *n.s.*).

These findings do not provide support for hypothesis 5c, suggesting that the relationship between supervisor support and job satisfaction is not mediated by work pressure.

6.1.1.4 Opportunity for involvement

Table 6.1 shows an indirect effect of supervisor support on job satisfaction through opportunity for involvement for 2008, supporting hypothesis 5d ($a_3b_3 = .05$, (95%CI [.02, .09]). Those who reported higher levels of supervisor support also reported significantly more opportunity for involvement ($a_3 = .17$, $p < .001$) and in turn more opportunity for involvement was associated with higher levels of job satisfaction ($b_3 = .28$, $p < .01$).

Table 6.2 shows no indirect effect of supervisor support on job satisfaction through opportunity for involvement for 2009. The first stage of the indirect path was significant ($a_4 = .17$, $p < .001$) indicating a significant relationship between supervisor support and opportunity for involvement, while the second step was not significant ($b_4 = .07$, *n.s.*).

Table 6.3 shows no indirect effect of supervisor support on job satisfaction through opportunity for involvement for 2010. The first stage of the indirect path was significant ($a_4 = .19$, $p < .001$) indicating a significant relationship between supervisor support and opportunity for involvement, while the second step was not significant ($b_4 = .04$, *n.s.*).

These results provide some limited support for hypothesis 5d, but this relationship was only found in 2008. The significant finding suggests that opportunity for involvement mediates the relationship between supervisor support and job satisfaction. People who rate their senior leaders more highly are more likely to report increased opportunity for involvement, which leads to an increase in job satisfaction. As this is not repeated in any other year, caution should be used before making any generalisation about this finding.

6.1.1.5 Work-life balance

Table 6.1 shows an indirect effect of supervisor support on job satisfaction through work-life balance for 2008, supporting hypothesis 5e ($a_4b_4 = .10$, (95%CI [.04, .17])). Those who reported higher levels of supervisor support also reported significantly better work-life balance ($a_4 = .59$) and in turn better work life balance was associated with higher levels of job satisfaction ($b_4 = .17$, $p < .001$).

Table 6.2 shows no indirect effect of supervisor support on job satisfaction through work-life balance for 2009. The first stage of the indirect path was significant ($a_5 = .64$, $p < .001$) indicating a significant relationship between supervisor support and work-life balance, while the second step was not significant ($b_5 = .08$, *n.s.*).

Table 6.3 shows an indirect effect of supervisor support on job satisfaction through work-life balance for 2010, supporting hypothesis 5e ($a_5b_5 = .09$, (95%CI [.03, .16])). Those who reported higher levels of supervisor support also reported significantly better work-life balance ($a_5 = .64$, $p < .001$) and in turn better work life balance was associated with higher levels of job satisfaction ($b_5 = .14$, $p < .005$).

Support for hypothesis 5e was found in 2008 and in 2010, suggesting that work-life balance mediates the relationship between supervisor support and job satisfaction. People who rate their senior leaders more highly are more likely to report better work-life balance, which leads to an increase in job satisfaction. This finding was not replicated in 2009.

6.1.1.6 Total and direct effects

A significant total effect of supervisor support in predicting job satisfaction was found for all years. As ratings of supervisor support increased by one unit, job satisfaction increased by $c = .15$ (95%CI [.06, .24]) in 2008, $c = .17$ (95%CI [.08, .25]) in 2009, and $c = .23$ (95%CI [.14, .32]) in 2010.

No significant direct effects were found for any year suggesting that the model adequately accounted for the relationship between supervisor support and job satisfaction.

6.1.2 Absenteeism

Hypothesis 7 stated that supervisor support would be negatively associated with absenteeism, mediated by job design (H7a), engagement (H7b), work life balance (H7c), opportunity for involvement (H7d) and work pressure (H7e). The indirect effects will first be reported, followed by the total effect and direct effect. Absenteeism was tested across the whole sample and variables that were controlled for were senior leadership, London based, trust size,

teaching status, and trust type. The number of trusts included in the final analysis was 310 in 2008, 384 in 2009, and 379 in 2010.

6.1.2.1 Job design:

Table 6.4 shows no indirect effects of supervisor support were found on absenteeism through job design for 2008. The first stage of the indirect path was significant ($a_1=.33$, $p<.001$) indicating a significant relationship between supervisor support and job design, while the second step was not significant ($b_1= -.00$, $n.s$).

Table 6.4: 2008 supervisor support and absenteeism multiple mediation model

Antecedent	Consequent											Indirect effect				
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)						Absenteeism (Y)									
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.33	.03	<.001	.26	.39	c	-.01	.01	.12	-.02	.00				
	a ₂	-.21	.08	<.01	-.36	-.06	c'	-.00	.01	.65	-.02	.01				
	a ₃	.22	.03	<.001	.17	.27										
	a ₄	.72	.06	<.001	.60	.84							Total	-.01	.01	-.02
M ₁	--	--	--			b ₁	-.00	.01	.64	-.03	.02	a ₁ b ₁	-.00	.00	-.01	.01
M ₂	--	--	--			b ₂	-.02	.00	<.001	-.02	-.01	a ₂ b ₂	.003	.002	.001	.01
M ₃	--	--	--			b ₃	-.04	.01	<.01	-.07	-.01	a ₃ b ₃	-.01	.003	-.02	-.001
M ₄	--	--	--			b ₄	.00	.01	.79	-.01	.01	a ₄ b ₄	.00	.00	-.01	.01

Covariates: senior leadership, London based, trust size, trust type. N=310.

Table 6.5 shows no indirect effect of supervisor support were found on absenteeism through job design for 2009. The first stage of the indirect path was significant ($a_1=.35$, $p<.001$) indicating a significant relationship between supervisor support and job design, while the second step was not significant ($b_1= .01$, $n.s$).

Table 6.5: 2009 supervisor support and absenteeism multiple mediation model

Antecedent	Consequent											Indirect effect					
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Absenteeism (Y)										
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI			
X (Supervisor support)	a ₁	.35	.03	<.001	.29	.41	c	-.01	.01	<.05	-.02	-.001					
	a ₂	.13	.05	<.01	.03	.22	c'	-.01	.01	.14	-.02	.00					
	a ₃	-.06	.07	.44	-.20	.08											
	a ₄	.20	.02	<.001	.15	.24							Total	-.00	.01	-.01	.01
	a ₅	.68	.05	<.001	.59	.78											
M ₁	--	--	--			b ₁	.01	.01	.28	-.01	.03	a ₁ b ₁	.00	.00	-.001	.01	
M ₂	--	--	--			b ₂	-.01	.01	.22	-.02	.00	a ₂ b ₂	-.00	.00	-.00	.00	
M ₃	--	--	--			b ₃	-.01	.00	<.005	-.02	-.00	a ₃ b ₃	.00	.00	-.00	.00	
M ₄	--	--	--			b ₄	-.04	.01	<.001	-.06	.02	a ₄ b ₄	-.01	.00	-.01	-.001	
M ₅	--	--	--			b ₅	.01	.01	.31	-.01	.02	a ₅ b ₅	.00	.00	-.00	.01	

Covariates: senior leadership, London based, trust size, trust type. N=384.

Table 6.6 shows an indirect effect of supervisor support on absenteeism through job design for 2010 ($a_1b_1 = .01$ (95%CI [.001, .02])). This suggests that senior leaders indirectly increase absenteeism through their influence on job design. Those who reported higher levels of supervisor support also reported higher levels of job design ($a_1 = .44$, $p < .001$) while job design was associated with increased absenteeism ($b_1 = .02$, $p < .05$).

Table 6.6: 2010 supervisor support and absenteeism multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂), Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Absenteeism (Y)						Indirect effect			
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.44	.03	<.001	.38	.50	c	-.00	.00	.74	-.01	.01				
	a ₂	.16	.05	<.005	.05	.26	c'	-.01	.01	.36	-.02	.01				
	a ₃	-.16	.07	<.05	-.29	-.02										
	a ₄	.18	.02	<.001	.14	.22										
	a ₅	.69	.05	<.001	.60	.79					Total	.00	.01	-.01	.02	
M ₁	--	--	--			b ₁	.02	.01	<.05	.00	.04	a ₁ b ₁	.01	.00	.001	.02
M ₂	--	--	--			b ₂	.00	.00	.33	-.00	.01	a ₂ b ₂	.00	.00	-.00	.00
M ₃	--	--	--			b ₃	-.01	.00	.11	-.00	.00	a ₃ b ₃	.00	.00	-.00	.00
M ₄	--	--	--			b ₄	-.03	.01	<.005	-.05	-.01	a ₄ b ₄	-.01	.00	-.01	-.001
M ₅	--	--	--			b ₅	.00	.01	.89	-.01	.01	a ₅ b ₅	.00	.00	-.01	.01

Covariates: senior leadership, London based, trust size, trust type. N=379.

These results do not provide support for hypothesis 7a. However, the opposite was found for one year where an increase in supervisor support ratings was indirectly associated with an increase in absenteeism through job design. This effect is small however and is not consistent across all years, therefore caution should be used before making assumptions regarding generalisation.

6.1.2.2 Engagement

Engagement was not measured in 2008. Table 6.5 shows no indirect effect of supervisor support on absenteeism through engagement for 2009. The first stage of the indirect path was significant ($a_2 = .13$, $p < .01$) indicating a significant relationship between supervisor support and engagement, while the second step was not significant ($b_2 = -.01$ *n.s.*).

Table 6.6 shows no indirect effect of supervisor support on absenteeism through engagement for 2010. The first stage of the indirect path was significant ($a_2 = .16$, $p < .005$) indicating a significant relationship between supervisor support and engagement, while the second step was not significant ($b_2 = .00$, *n.s.*).

These findings do not provide support for hypothesis 7b, suggesting that the relationship between supervisor support and absenteeism is not mediated by engagement.

6.1.2.3 Work pressure

Table 6.4 shows an indirect effect of supervisor support on absenteeism through work pressure for 2008 ($a_2b_2 = .003$, (95%CI [.001, .01])). Those who reported higher levels of supervisor support also reported significantly lower levels of work pressure ($a_2 = -.21$, $p < .01$) and in turn higher levels of work pressure were associated with lower levels of absenteeism ($b_2 = -.02$, $p < .001$).

Table 6.5 shows no indirect effect of supervisor support on absenteeism through work pressure for 2009. Supervisor support was not significantly related with work pressure ($a_3 = -.06$, *n.s.*) although work pressure was negatively associated with absenteeism ($b_3 = -.01$, $p < .005$).

Table 6.6 shows no indirect effect of supervisor support on absenteeism through work pressure for 2010. The first stage of the indirect path was significant ($a_3 = -.16$, $p < .001$) indicating a significant negative relationship between supervisor support and work pressure, while the second step was not significant ($b_3 = -.01$, *n.s.*).

These results do not support hypothesis 7c. However, in 2008 an indirect effect was found but the nature of this relationship was not expected. Supervisor support was negatively related with work pressure, but work pressure was negatively related with absenteeism.

6.1.2.4 Opportunity for involvement

Table 6.4 shows an indirect effect of supervisor support on absenteeism through opportunity for involvement for 2008 ($a_3b_3 = -.01$, (95%CI [-.02, -.001])). Those who reported higher levels of supervisor support also reported significantly more opportunity for involvement ($a_3 = .22$, $p < .001$) and in turn more opportunity for involvement was associated with lower levels of absenteeism ($b_3 = -.04$, $p < .01$).

Table 6.5 shows an indirect effect of supervisor support on absenteeism through opportunity for involvement for 2009 ($a_4b_4 = -.01$, (95%CI [-.01, -.001])). Those who reported higher levels of supervisor support also reported significantly more opportunity for involvement ($a_4 = .20$, $p < .001$) and in turn more opportunity for involvement was associated with lower levels of absenteeism ($b_4 = -.04$, $p < .001$).

Table 6.6 shows an indirect effect of supervisor support on absenteeism through opportunity for involvement for 2010 ($a_4b_4 = -.01$, (95%CI [-.01, -.001])). Those who reported higher levels of supervisor support also reported significantly more opportunity for involvement ($a_4 = .18$, $p < .001$) and in turn more opportunity for involvement was associated with lower levels of absenteeism ($b_4 = -.03$, $p < .01$).

These results provide support for hypothesis 7d across all years. People who give higher ratings of supervisor support are more likely to report increased opportunity for involvement, which is associated with a decrease in absenteeism. It is worth noting that the size of the indirect effect in all years is relatively small.

6.1.2.5 Work-life balance

Table 6.4 shows no indirect effect of supervisor support on absenteeism through work pressure for 2008. The relationship between supervisor support and work-life balance was significant ($a_4=.72, p<.001$) but the relationship between work life balance and absenteeism was not significant ($b_4= .00, n.s$).

Table 6.5 shows no indirect effect of supervisor support on absenteeism through work pressure for 2009. The relationship between supervisor support and work-life balance was significant ($a_5=.68, p<.001$) but the relationship between work life balance and absenteeism was not significant ($b_5= .01, n.s$).

Table 6.6 shows no indirect effect of supervisor support on absenteeism through work pressure for 2010. The relationship between supervisor support and work-life balance was significant ($a_5=.69, p<.001$) but the relationship between work life balance and absenteeism was not significant ($b_5= .00, n.s$).

Support for hypothesis 7e was not found in these analyses suggesting that work-life balance does not mediate the relationship between supervisor support and absenteeism.

6.1.2.6 Total, direct and total indirect effects

A significant total effect was found between supervisor support and absenteeism in 2009 only $c= -.01, (95\%CI[-.02, -.001])$. No significant total effect was found for any other years. Additionally, no significant direct effect was found for any year.

6.1.3 Patient Satisfaction

Hypothesis 6 stated that supervisor support would be positively associated with patient satisfaction, mediated by job design (H6a), engagement (H6b), work life balance (H6c), opportunity for involvement (H6d) and work pressure (H6e). The indirect effects will first be reported, followed by the total effect and direct effect. Patient satisfaction was tested in acute trusts only and variables that were controlled for were senior leadership, London based, trust size, teaching status, doctors per bed, and specialist status. The number of trusts included in the final analysis was 155 in 2008, 159 in 2009, and 158 in 2010.

6.1.3.1 Job design:

Table 6.7 shows no indirect effect of supervisor support on patient satisfaction through job design for 2008. The first stage of the indirect path was significant ($a_1=.35, p<.001$) indicating a significant relationship between supervisor support and job design but the second step was not significant between job design and patient satisfaction ($b_1= -16.06, n.s$).

Table 6.7: 2008 supervisor support and patient satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)						Patient satisfaction (Y)				Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.35	.04	<.001	.26	.43	c	-2.0	4.40	.96	-8.89	8.48				
	a ₂	-.08	.11	.48	-.29	.13	c'	-3.61	5.57	.52	-14.6	7.40				
	a ₃	.28	.04	<.001	.21	.35										
	a ₄	.53	.08	<.001	.37	.69					Total	3.41	3.97	-4.18	11.62	
M ₁	--	--	--			b ₁	-16.1	9.17	.08	-34.2	2.06	a ₁ b ₁	-5.56	3.56	-13.4	.76
M ₂	--	--	--			b ₂	-8.31	3.53	<.05	-15.3	-1.34	a ₂ b ₂	.63	.89	-.74	2.96
M ₃	--	--	--			b ₃	10.74	10.27	.30	-9.55	31.04	a ₃ b ₃	3.00	3.29	-2.67	10.56
M ₄	--	--	--			b ₄	10.13	4.70	<.05	.85	19.41	a ₄ b ₄	5.34	2.77	.25	11.21

Covariates: senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=155.

Table 6.8 shows no indirect effect of supervisor support on patient satisfaction through job design for 2009. The first stage of the indirect path was significant ($a_1=.35, p<.001$) indicating a significant relationship between supervisor support and job design, while the second step was not significant ($b_1= -11.69, n.s$).

Table 6.8: 2009 supervisor support and patient satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Patient satisfaction (Y)				Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.35	.04	<.001	.26	.43	c	4.99	3.85	.20	-2.62	12.59				
	a ₂	.19	.07	<.01	.05	.34	c'	4.09	5.56	.46	-6.90	15.08				
	a ₃	-.13	.10	.20	-.33	.07										
	a ₄	.23	.03	<.001	.17	.30										
	a ₅	.64	.06	<.001	.51	.76					Total	.90	4.87	-9.03	10.28	
M ₁	--	--	--			b ₁	-11.7	8.20	.16	-27.9	4.52	a ₁ b ₁	-4.03	3.07	-10.0	1.98
M ₂	--	--	--			b ₂	-5.49	4.44	.22	-14.3	3.28	a ₂ b ₂	-1.06	1.02	-3.68	.50
M ₃	--	--	--			b ₃	-8.84	3.28	<.01	-15.3	-2.37	a ₃ b ₃	1.14	1.6	-.50	3.79
M ₄	--	--	--			b ₄	16.89	10.04	.09	-2.96	36.73	a ₄ b ₄	3.96	2.65	-1.04	9.21
M ₅	--	--	--			b ₅	1.40	4.91	.78	-8.31	11.10	a ₅ b ₅	.89	3.35	-5.83	7.34

Covariates: senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=159.

Table 6.9 shows an indirect effect of supervisor support on patient satisfaction through job design for 2010 ($a_1b_1= -8.90$ (95%CI[-16.08, -2.04])). This suggests that supervisor support

indirectly decreases patient satisfaction through its positive influence on job design. Those who reported higher levels of supervisor support also reported higher levels of job design ($a_1=.44$, $p<.001$). In turn higher levels of job design was associated with lower levels of patient satisfaction ($b_1= -20.18$, $p<.05$).

Table 6.9: 2010 supervisor support and patient satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Patient satisfaction (Y)						Indirect effect			
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.44	.04	<.001	.36	.52	c	-.54	3.75	.89	-7.96	6.87				
	a ₂	.23	.07	<.001	.10	.36	c'	7.57	5.56	.18	-3.43	18.57				
	a ₃	-.13	.10	.22	-.33	.08										
	a ₄	.21	.03	<.001	.15	.28										
	a ₅	.73	.07	<.001	.59	.87					Total	-8.11	4.24	-16.6	.16	
M ₁	--	--	--			b ₁	-20.2	7.79	<.05	-35.6	-4.79	a ₁ b ₁	-8.90	3.60	-16.1	-2.04
M ₂	--	--	--			b ₂	-5.88	4.60	.20	-15.0	3.22	a ₂ b ₂	-1.36	1.10	-4.30	.32
M ₃	--	--	--			b ₃	-10.4	2.99	<.001	-16.3	-4.52	a ₃ b ₃	1.33	1.30	-.62	4.93
M ₄	--	--	--			b ₄	22.02	9.19	<.05	3.86	40.18	a ₄ b ₄	4.70	2.28	.67	4.93
M ₅	--	--	--			b ₅	-5.35	4.30	.22	-13.8	3.16	a ₅ b ₅	-3.88	2.96	-10.3	1.36

Covariates: senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=158.

These findings do not provide support for hypothesis 6a suggesting that supervisor support does not increase patient satisfaction through job design. On the contrary, in 2010 the opposite was found with an increase in supervisor support being associated with higher levels of job design but this was in turn associated with lower levels of patient satisfaction. This relationship was only found in one year and as such caution should be used before generalising from this result.

6.1.3.2 Engagement

Engagement was not measured in 2008. Table 6.8 shows no indirect effect of supervisor support on patient satisfaction through engagement for 2009. The first stage of the indirect path was significant ($a_2=.19$, $p<.001$) indicating a significant relationship between supervisor support and engagement, while the second step was not significant ($b_2= -5.49$ *n.s*).

Table 6.9 shows no indirect effect of supervisor support on patient satisfaction through engagement for 2010. The first stage of the indirect path was significant ($a_2=.23$, $p<.001$) indicating a significant relationship between supervisor support and engagement, while the second step was not significant ($b_2= -5.88$, *n.s*).

These findings do not provide support for hypothesis 6b, suggesting that the relationship between supervisor support and patient satisfaction is not mediated by engagement, although supervisor support was significantly associated with engagement across all years.

6.1.3.3 Work pressure

Table 6.7 shows no indirect effect of supervisor support on patient satisfaction through work pressure for 2008. Supervisor support was not significantly related to work pressure ($a_2 = -.08$, *n.s.*) although work pressure was negatively associated with patient satisfaction ($b_2 = -8.31$, $p < .05$).

Table 6.8 shows no indirect effect of supervisor support on patient satisfaction through work pressure for 2009. Supervisor support was not associated with work pressure ($a_3 = -.13$, *n.s.*) although work pressure was negatively associated patient satisfaction ($b_3 = -8.84$, $p < .01$).

Table 6.9 shows no indirect effect of supervisor support on patient satisfaction through work pressure for 2010. Supervisor support was not associated with work pressure ($a_3 = -.13$, *n.s.*) although work pressure was negatively associated patient satisfaction ($b_3 = -10.43$, $p < .001$).

These results do not provide support for hypothesis 6c. This suggests that work pressure does not mediate the relationship between supervisor support and patient satisfaction.

6.1.3.4 Opportunity for involvement

Table 6.7 shows no indirect effect of supervisor support on patient satisfaction through opportunity for involvement for 2008. Supervisor support was significantly associated with opportunity for involvement at the first stage ($a_3 = .28$, $p < .001$) but opportunity for involvement did not significantly predict patient satisfaction at the second stage ($b_3 = 10.74$, *n.s.*).

Table 6.8 shows no indirect effect of supervisor support on patient satisfaction through opportunity for involvement for 2009. Supervisor support was significantly associated with opportunity for involvement at the first stage ($a_4 = .23$, $p < .001$) but opportunity for involvement did not significantly predict patient satisfaction at the second stage ($b_4 = 16.89$, *n.s.*).

Table 6.9 shows an indirect effect of supervisor support on patient satisfaction through opportunity for involvement for 2010 ($a_4 b_4 = 4.70$ (95%CI [.67, 4.93]). Supervisor support was significantly associated with opportunity for involvement at the first stage ($a_4 = .21$, $p < .001$).

and opportunity for involvement significantly predicted patient satisfaction at the second stage ($b_4 = 22.02, p < .05$).

Support for hypothesis 6d was found only in 2010 providing some limited support that opportunity for involvement mediates the relationship between supervisor support and patient satisfaction. People who rate their senior leaders more highly are more likely to report increased opportunity for involvement, which may lead to an increase in patient satisfaction.

6.1.3.5 Work-life balance

Table 6.7 shows an indirect effect of supervisor support on patient satisfaction through work-life balance for 2008 ($a_4b_4 = 5.34$ (95%CI [.25, 11.21]). Supervisor support was significantly associated with work-life balance at the first stage ($a_4 = .53, p < .001$) and in turn, work-life balance significantly predicted patient satisfaction at the second stage ($b_4 = 10.13, p < .05$).

Table 6.8 shows no indirect effect of supervisor support on patient satisfaction through work pressure for 2009. The relationship between supervisor support and work-life balance was significant ($a_5 = .64, p < .001$) but the relationship between work life balance and patient satisfaction was not significant ($b_5 = 1.40, n.s$).

Table 6.9 shows no indirect effect of supervisor support on patient satisfaction through work pressure for 2010. The relationship between supervisor support and work-life balance was significant ($a_5 = .73, p < .001$) but the relationship between work life balance and patient satisfaction was not significant ($b_5 = -5.35, n.s$).

Support for hypothesis 6e was found only in 2008 providing some limited support that work-life balance mediates the relationship between supervisor support and patient satisfaction. People who rate their supervisors higher are more likely to report increased opportunity for involvement, which is associated with an increase in patient satisfaction (in 2008).

6.1.3.6 Total and direct effects

No significant total or direct effects were found for any year.

6.1.4 Stability

Hypothesis 8 stated that supervisor support would be positively associated with stability, mediated by job design (H8a), engagement (H8b), work life balance (H8c), opportunity for involvement (H8d) and work pressure (H8e). The indirect effects will first be reported, followed by the total effect and direct effect. Stability was tested in acute trusts only and variables that were controlled for were senior leadership, London based, trust size, teaching

status, doctors per bed, and specialist status. The number of trusts included in the final analysis was 160 in 2008, 162 in 2009, and 162 in 2010.

6.1.4.1 Job design:

Table 6.10 shows no indirect effect of supervisor support on job satisfaction through job design for 2008. The first stage of the indirect path was significant ($a_1=.34, p<.001$) indicating a significant relationship between supervisor support and job design, while the second step was not significant ($b_1=-4.80, n.s$).

Table 6.10: 2008 supervisor support and stability multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)						Stability (Y)				Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.34	.04	<.001	.25	.42	c	-3.96	2.93	.18	-9.76	1.84				
	a ₂	-.08	.10	.43	-.29	.12	c'	-1.58	3.72	.67	-8.92	5.76				
	a ₃	.28	.04	<.001	.21	.36										
	a ₄	.51	.08	<.001	.35	.67					Total	-2.38	2.65	-7.83	2.62	
M ₁	--	--	--			b ₁	-4.80	5.96	4.22	-16.6	6.98	a ₁ b ₁	-1.62	2.09	-5.84	2.42
M ₂	--	--	--			b ₂	-6.96	2.43	<.005	-11.8	-2.16	a ₂ b ₂	.58	.75	-.60	2.54
M ₃	--	--	--			b ₃	-8.42	6.76	.21	-21.8	4.93	a ₃ b ₃	-2.38	1.89	-6.33	1.13
M ₄	--	--	--			b ₄	2.04	3.14	.51	-4.17	8.25	a ₄ b ₄	1.04	1.52	-1.95	4.19

Covariates: senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=160.

Table 6.11 shows no indirect effect of supervisor support on job satisfaction through job design for 2009. The first stage of the indirect path was significant ($a_1=.33, p<.001$) indicating a significant relationship between supervisor support and job design, while the second step was not significant ($b_1= 4.53, n.s$).

Table 6.11: 2009 supervisor support and stability multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Stability (Y)				Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.33	.04	<.001	.25	.42	c	1.50	3.01	.62	-4.45	7.45				
	a ₂	.22	.07	<.005	.07	.36	c'	-.48	4.15	.91	-8.67	7.71				
	a ₃	-.15	.10	.15	-.34	.05										
	a ₄	.23	.03	<.001	.16	.30										
	a ₅	.61	.07	<.001	.49	.74					Total	1.97	3.10	-4.26	7.91	
M ₁	--	--	--			b ₁	4.53	6.26	.47	-7.83	16.89	a ₁ b ₁	1.51	2.19	-2.76	5.78
M ₂	--	--	--			b ₂	-2.74	3.31	.41	-9.29	3.81	a ₂ b ₂	-.59	.75	-2.30	.71
M ₃	--	--	--			b ₃	-7.97	2.50	<.005	-12.9	-3.01	a ₃ b ₃	1.16	.96	-.54	3.37
M ₄	--	--	--			b ₄	-10.5	7.34	.15	-25.0	3.96	a ₄ b ₄	-2.42	1.70	-6.37	.56
M ₅	--	--	--			b ₅	3.77	3.66	.31	-3.47	10.10	a ₅ b ₅	2.31	2.12	-1.90	6.42

Covariates: senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=162.

Table 6.12 shows no indirect effect of supervisor support on job satisfaction through job design for 2010. The first stage of the indirect path was significant ($a_1=.44$, $p<.001$) indicating a significant relationship between supervisor support and job design, while the second step was not significant ($b_1=.27$, $n.s$).

Table 6.12: 2010 supervisor support and stability multiple mediation model

Antecedent	Consequent												Indirect effect			
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Stability (Y)									
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.44	.04	<.001	.36	.52	c	-1.13	2.20	.61	-5.48	3.21				
	a ₂	.24	.06	<.001	.12	.37	c'	-3.46	3.13	.27	-9.65	2.73				
	a ₃	-.11	.10	.27	-.31	.09										
	a ₄	.22	.03	<.001	.15	.28										
	a ₅	.69	.07	<.001	.55	.83										
												Total	2.32	3.14	-3.46	9.02
M ₁	--	--	--			b ₁	.27	4.44	.95	-8.50	9.04	a ₁ b ₁	.12	1.90	-3.77	3.73
M ₂	--	--	--			b ₂	-3.52	2.63	.18	-8.71	1.67	a ₂ b ₂	-.86	.74	-2.71	.31
M ₃	--	--	--			b ₃	-8.34	1.70	<.001	-11.7	-4.99	a ₃ b ₃	.93	.97	-.74	3.07
M ₄	--	--	--			b ₄	-2.73	5.25	.60	-13.1	7.64	a ₄ b ₄	-.59	.97	-.74	3.07
M ₅	--	--	--			b ₅	3.95	2.46	.11	-.92	8.82	a ₅ b ₅	2.73	1.89	-.74	6.63

Covariates: senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=162.

These findings do not support for hypothesis 8a, suggesting that the relationship between supervisor support and stability is not mediated by job design.

6.1.4.2 Engagement

Engagement was not measured in 2008. Table 6.11 shows no indirect effect of supervisor support on job satisfaction through engagement for 2008. The first stage of the indirect path was significant ($a_2=.22$, $p<.005$) indicating a significant relationship between supervisor support and engagement, while the second step was not significant ($b_2=-2.74$, $n.s$).

Table 6.12 shows no indirect effect of supervisor support on job satisfaction through engagement for 2010. The first stage of the indirect path was significant ($a_2=.24$, $p<.001$) indicating a significant relationship between supervisor support and engagement, while the second step was not significant ($b_2=-3.52$, $n.s$).

These findings do not provide support for hypothesis 8b, suggesting that the relationship between supervisor support and stability is not mediated by engagement, although supervisor support was significantly associated with engagement across all years.

6.1.4.3 Work pressure

Table 6.10 shows no indirect effect of supervisor support on job satisfaction through work pressure for 2008. Supervisor support was not significantly related to work pressure ($a_2 = -.08$, *n.s.*) although work pressure was negatively associated with stability ($b_2 = -6.96$, $p < .005$).

Table 6.11 shows no indirect effect of supervisor support on job satisfaction through work pressure for 2009. Supervisor support was not significantly related to work pressure ($a_3 = .15$, *n.s.*) although work pressure was negatively associated with stability ($b_3 = -7.97$, $p < .005$).

Table 6.12 shows no indirect effect of supervisor support on job satisfaction through work pressure for 2010. Supervisor support was not significantly related to work pressure ($a_3 = .11$, *n.s.*) although work pressure was negatively associated with stability ($b_3 = -8.34$, $p < .001$).

These results do not provide support for hypothesis 8c, suggesting that work pressure does not mediate the relationship between supervisor support and stability.

6.1.4.4 Opportunity for involvement

Table 6.10 shows no indirect effect of supervisor support on job satisfaction through opportunity for involvement for 2008. Supervisor support was significantly associated with opportunity for involvement at the first stage ($a_3 = .28$, $p < .001$), but opportunity for involvement did not significantly predict stability at the second stage ($b_3 = -8.42$, *n.s.*).

Table 6.11 shows no indirect effect of supervisor support on job satisfaction through opportunity for involvement for 2009. Supervisor support was not significantly associated with opportunity for involvement at the first stage ($a_4 = .23$, *n.s.*) but opportunity for involvement did not significantly predict stability at the second stage ($b_4 = -10.54$, *n.s.*).

Table 6.12 shows no indirect effect of supervisor support on job satisfaction through opportunity for involvement for 2010. Supervisor support was significantly associated with opportunity for involvement at the first stage ($a_4 = .22$, $p < .001$) but opportunity for involvement did not significantly predict stability at the second stage ($b_4 = -2.73$, *n.s.*).

Support for hypothesis 8d was not found, suggesting that opportunity for involvement does not mediate the relationship between supervisor support and stability, although supervisor support was positively associated with opportunity for involvement across all years.

6.1.4.5 Work-life balance

Table 6.10 shows no indirect effect of supervisor support on stability through work-life balance for 2008. The relationship between supervisor support and work-life balance was

significant ($a_4=.51, p<.001$) but the relationship between work life balance and stability was not significant ($b_4= 2.04, n.s$).

Table 6.11 shows no indirect effect of supervisor support on stability through work-life balance for 2009. The relationship between supervisor support and work-life balance was significant ($a_5=.61, p<.001$) but the relationship between work life balance and stability was not significant ($b_5= 3.77, n.s$).

Table 6.12 shows no indirect effect of supervisor support on stability through work-life balance for 2010. The relationship between supervisor support and work-life balance was significant ($a_5=.69, p<.001$) but the relationship between work life balance and stability was not significant ($b_5= 3.95, n.s$).

Support for hypothesis 8e was not found, suggesting that work-life balance does not mediate the relationship between supervisor support and stability.

6.1.4.6 Total, direct and total indirect effects

No significant total or direct effects were found in any years.

6.2 Study 4: Supervisor support longitudinal analysis

The second study looked to build on the relationships found in study three, further testing the hypotheses proposed between supervisor support and all outcome variables. The ability of supervisor support to predict the outcome variables in the subsequent year through contemporaneous mediating variables was assessed first, followed by an assessment of the extent to which supervisor support predicts mediating variables in the following year and their effects on outcome variables the year after. This study will be presented in the same way as the previous study, with the results structured around the outcome variables.

6.2.1 Job satisfaction

Hypothesis 5 stated that supervisor support would be positively associated with job satisfaction, mediated by job design (H5a), engagement (H5b), work life balance (H5c), opportunity for involvement (H5d) and work pressure (H5e). The indirect effects will first be reported, followed by the total effect and direct effect. Job satisfaction was tested across the whole sample and variables that were controlled for were senior leadership, London based, trust size, and trust type. The number of trusts included in the final analysis was 380 in the first model and 385 for the second and 384 for the third.

6.2.1.1 Job design

Table 6.13 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with job satisfaction in 2010. A significant, positive indirect effect of supervisor support on job satisfaction through job design was found $a_1b_1 = .04$ (95%CI [.01, .09]) suggesting that supervisor support in 2008 is positively associated with job satisfaction in 2010 and that this relationship is mediated by the effect supervisor support has on job design in 2009. Supervisor support in 2008 was positively associated with job design in 2009 ($a_1 = .20$, $p < .001$) and job design in 2009 was positively associated with job satisfaction in 2010 ($b_1 = .21$, $p < .05$).

Table 6.13: 2008 supervisor support, 2009 mediators and 2010 job satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Job satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Supervisor support)	a ₁	.20	.04	<.001	.12	.29	c	.09	.05	.09	-.02	.20				
	a ₂	.02	.05	.73	-.08	.12	c'	-.03	.06	.63	-.13	.08				
	a ₃	-.02	.08	.82	-.17	.14										
	a ₄	.15	.03	<.001	.09	.20										
	a ₅	.46	.06	<.001	.34	.59						Total	.12	.03	.05	.19
M ₁	--	--	--	--	--	b ₁	.21	.08	<.05	.04	.37	a ₁ b ₁	.04	.02	.01	.09
M ₂	--	--	--	--	--	b ₂	.15	.06	<.05	.04	.26	a ₂ b ₂	.003	.01	-.01	.02
M ₃	--	--	--	--	--	b ₃	-.03	.04	.44	-.11	.05	a ₃ b ₃	.001	.004	-.01	.01
M ₄	--	--	--	--	--	b ₄	-.04	.11	.70	-.27	.18	a ₄ b ₄	-.01	.02	-.04	.03
M ₅	--	--	--	--	--	b ₅	.17	.05	<.001	.07	.27	a ₅ b ₅	.08	.03	.03	.13

Covariates: Senior leadership, London based, trust size, trust type. N=380.

Table 6.14 shows the effects of supervisor support and mediators in 2008 on job satisfaction in 2009. No indirect effects of supervisor support were found on job satisfaction through job design for this year. The first stage of the indirect path was significant ($a_1 = .33$, $p < .001$) indicating a significant relationship between supervisor support and job design in 2008, but job design in 2008 was not related to job satisfaction in 2009 ($b_1 = .11$, *n.s.*).

Table 6.14: 2008 supervisor support and mediators, job satisfaction 2009 multiple mediation model

Antecedent	Consequent												Indirect effect			
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)						Job satisfaction (Y)									
	Coeff.	SE	p	LLCI	ULCI		Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI	
X (Supervisor support)	a ₁	.33	.03	<.001	.27	.38	c	.22	.04	<.001	.14	.31				
	a ₂	-.13	.07	.06	-.27	.01	c'	.15	.06	<.05	.04	.27				
	a ₃	.24	.02	<.001	.19	.28										
	a ₄	.68	.05	<.001	.58	.79						Total	.07	.04	-.01	.15
M ₁	--	--	--	--	--	b ₁	.11	.08	.21	-.06	.28	a ₁ b ₁	.03	.03	-.02	.10
M ₂	--	--	--	--	--	b ₂	-.03	.04	.40	-.10	.04	a ₂ b ₂	.003	.01	-.003	.02
M ₃	--	--	--	--	--	b ₃	.12	.11	.28	-.10	.34	a ₃ b ₃	.03	.03	-.02	.08
M ₄	--	--	--	--	--	b ₄	.003	.05	.95	-.09	.09	a ₄ b ₄	.002	.03	-.07	.07

Covariates: Senior leadership, London based, trust size, trust type. N=385.

Table 6.15 shows the effects of supervisor support and mediators in 2009 on job satisfaction in 2010. No indirect effect was found through job design. Supervisor support in 2009 had a significant, positive effect on job design in 2009 at the first stage ($a_1 = .35, p < .001$) but the relationship between job design in 2009 and job satisfaction in 2010 was not significant ($b_1 = .18, n.s$). It is worth noting that the confidence interval for this relationship was only marginally non-significant. Whilst the interval did include zero, the lower bound interval was only $-.001$ while the upper bound interval was $.37$.

Table 6.15: 2009 supervisor support and mediators, job satisfaction 2010 multiple mediation model

Antecedent	Consequent												Indirect effect			
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)						Job satisfaction (Y)									
	Coeff.	SE	p	LLCI	ULCI		Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI	
X (Supervisor support)	a ₁	.35	.03	<.001	.29	.41	c	.17	.05	<.005	.06	.27				
	a ₂	.12	.05	<.05	.02	.22	c'	-.02	.07	.79	-.16	.12				
	a ₃	-.02	.07	.78	-.16	.12										
	a ₄	.19	.02	<.001	.14	.24										
	a ₅	.67	.05	<.001	.57	.77						Total	.18	.06	.07	-.30
M ₁	--	--	--	--	--	b ₁	.18	.10	.06	-.004	.37	a ₁ b ₁	.06	.04	-.01	.14
M ₂	--	--	--	--	--	b ₂	.13	.06	<.05	.01	.24	a ₂ b ₂	.02	.01	.001	.04
M ₃	--	--	--	--	--	b ₃	-.02	.04	.59	-.01	.06	a ₃ b ₃	.001	.001	-.01	.01
M ₄	--	--	--	--	--	b ₄	-.02	.11	.83	-.25	.20	a ₄ b ₄	-.005	.02	-.05	.04
M ₅	--	--	--	--	--	b ₅	.16	.06	<.05	.05	.27	a ₅ b ₅	.11	.04	.03	.19

Covariates: Senior leadership, London based, trust size, trust type. N=384.

Hypothesis 5a is supported in the first model, but support is limited here. The remaining models do not provide further support for this hypothesis. This suggests that there is some limited evidence that job design mediates the relationship between supervisor support and job satisfaction.

6.2.1.2 Engagement

Table 6.13 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with job satisfaction in 2010. No significant, positive indirect effect of supervisor support on job satisfaction through engagement was found. Supervisor support in 2008 was not related with engagement in 2009 ($a_2 = .02, n.s$) although engagement in 2009 was positively associated with job satisfaction in 2010 ($b_2 = .15, p < .05$).

Engagement was not measured in 2008 and as such is not included in the second longitudinal model analysis (Table 6.14). Table 6.15 shows the effects of supervisor support and mediators in 2009 on job satisfaction in 2010. A significant, positive indirect effect of supervisor support on job satisfaction through engagement was found $a_2b_2 = .02$ (95%CI [.001, .04]). Supervisor support was positively associated with engagement in 2009 ($a_2 = .15, p < .05$) engagement in 2009 was associated with job satisfaction in 2010 ($b_2 = .13, p < .05$).

These results provide some support for hypothesis 5b. Supervisor support had a positive effect on job satisfaction and this relationship was mediated by engagement. This finding was only present in one of the two models tested.

6.2.1.3 Work pressure

Table 6.13 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with job satisfaction in 2010. No indirect effects of supervisor support were found on job satisfaction through work pressure for this year. The relationship between supervisor support in 2008 and work pressure in 2009 was not significant ($a_3 = -.02, n.s$), as well as the relationship between work pressure in 2009 and job satisfaction in 2010 ($b_3 = -.03, n.s$).

Table 6.14 shows the effects of supervisor support and mediators in 2008 on job satisfaction in 2009. No indirect effects of supervisor support were found on job satisfaction through work pressure for this year. The relationship between supervisor support and work pressure in 2008 was not significant ($a_2 = -.13, n.s$) and neither was the relationship between work pressure in 2008 and job satisfaction in 2009 ($b_2 = -.03, n.s$).

Table 6.15 shows the effects of supervisor support and mediators in 2009 on job satisfaction in 2010. No indirect effect was found through work pressure. Supervisor support had no significant effect on work pressure at the first stage ($a_3 = -.02, n.s$) as well as the relationship between work pressure in 2009 and job satisfaction in 2010 being non-significant ($b_3 = -.02, n.s$).

These findings do not provide support for hypothesis 5c. This suggests that the relationship between supervisor support and job satisfaction is not mediated by work pressure.

6.2.1.4 Opportunity for involvement

Table 6.13 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with job satisfaction in 2010. No indirect effects of supervisor support in 2008 were found on job satisfaction in 2010 through opportunity for involvement for in 2009. The first stage of the indirect path was significant ($a_4 = .15, p < .001$) indicating a significant positive relationship between supervisor support in 2008 and opportunity for involvement in 2009, while the second step was not significant ($b_4 = -.04, n.s.$).

Table 6.14 shows the effects of supervisor support and mediators in 2008 on job satisfaction in 2009. No indirect effects of supervisor support in 2008 were found on job satisfaction in 2009 through opportunity for involvement in 2008. The first stage of the indirect path was significant ($a_3 = .24, p < .001$) indicating a significant positive relationship between supervisor support and opportunity for involvement in 2008, while opportunity for involvement in 2008 was not associated with job satisfaction in 2009 ($b_3 = .12, n.s.$).

Table 6.15 shows the effects of supervisor support and mediators in 2009 on job satisfaction in 2010. No indirect effect was found through opportunity for involvement. Supervisor support had a significant positive effect on opportunity for involvement in 2009 ($a_4 = .19, p < .001$) but the relationship between opportunity for involvement in 2009 and job satisfaction in 2010 was not significant ($b_4 = -.02, n.s.$).

These findings do not provide support for hypothesis 5d. This suggests that the relationship between supervisor support and job satisfaction is not mediated by opportunity for involvement.

6.2.1.5 Work-life balance

Table 6.13 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with job satisfaction in 2010. A significant, positive indirect effect of supervisor support on job satisfaction through work-life balance was found $a_5b_5 = .08$ (95%CI [.03, .13]). Supervisor support in 2008 was positively associated with work life balance in 2009 ($a_5 = .46, p < .001$), and work-life balance in 2009 was related to job satisfaction in 2010 ($b_5 = .17, p < .001$).

Table 6.14 shows the effects of supervisor support and mediators in 2008 on job satisfaction in 2009. No indirect effects of supervisor support in 2008 were found on job satisfaction in 2009 through work-life balance in 2008. The first stage of the indirect path was

significant ($a_4 = .68, p < .001$) indicating a significant positive relationship between supervisor support in 2008 and work-life balance in the same year, while work-life balance in 2008 was not associated with job satisfaction in 2009 ($b_4 = .00, n.s.$).

Table 6.15 shows the effects of supervisor support and mediators in 2009 on job satisfaction in 2010. A significant positive indirect effect was found through work-life balance ($a_5 b_5 = .11$ (95%CI [.03, .19]). Supervisor support was positively associated with work-life balance in 2009 ($a_5 = .67, p < .001$) and work life balance in 2009 was significantly associated with job satisfaction in 2010 ($b_5 = .16, p < .005$).

Hypothesis 5e was supported in the first and last models tested. Supervisor support in 2008 and in 2009 predicted job satisfaction in 2010 and this relationship was mediated by the positive effect supervisor support had on work-life balance. This relationship was not found in the second model.

6.2.1.6 Total and direct effects

A significant total effect of supervisor support in predicting job satisfaction was found in the second and third models. As ratings of supervisor support increased by one unit, job satisfaction increased by $c = .22$ (95%CI [.14, .31]) in the second model, and $c = .17$ (95%CI [.06, .27]) in the in the third.

A significant direct effect was found for the second model ($c' = .15$ (95%CI [.04, .27])). This suggests that when controlling for the mediators, supervisor support had a remaining effect on job satisfaction indicating that this relationship may be described further by more variables than contained within this model.

6.2.2 Absenteeism

Hypothesis 7 stated that supervisor support would be negatively associated with absenteeism, mediated by job design (H7a), engagement (H7b), work life balance (H7c), opportunity for involvement (H7d) and work pressure (H7e). The results of these hypotheses testing are described here, presented by mediator. The indirect effects will first be reported, followed by the total effect and direct effect. Absenteeism was tested across the whole sample and variables controlled for were senior leadership, London based, trust size, teaching status, and trust type. The number of trusts included in the final analysis was 376 in model 1, 376 in model 2, 380 in model 3, 376 in model 4, and 380 in model 5.

6.2.2.1 Job design

Table 6.16 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with absenteeism in 2010. No indirect effect of supervisor support

on absenteeism through job design was found. Supervisor support in 2008 was positively associated with job design in 2009 ($a_1 = .20, p < .001$) but job design in 2009 was not significantly associated with absenteeism in 2010 ($b_1 = -.00, n.s.$).

Table 6.16: 2008 supervisor support, 2009 mediators and 2010 absenteeism multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Absenteeism (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.20	.04	<.001	.12	.29	c	-.00	.01	.48	-.01	.01				
	a ₂	.03	.05	.59	-.07	.13	c'	-.00	.01	.50	-.01	.01				
	a ₃	-.03	.08	.73	-.19	.13										
	a ₄	.14	.03	<.001	.09	.20										
	a ₅	.46	.06	<.001	.34	.59						Total	.00	.00	-.01	.01
M ₁	--	--	--	--	--	b ₁	-.00	.01	.74	-.02	.01	a ₁ b ₁	-.00	.00	-.00	.00
M ₂	--	--	--	--	--	b ₂	-.01	.01	.16	-.02	.00	a ₂ b ₂	-.00	.00	-.00	.00
M ₃	--	--	--	--	--	b ₃	-.01	.00	<.01	-.02	-.00	a ₃ b ₃	.001	.00	.001	.001
M ₄	--	--	--	--	--	b ₄	-.02	.01	.11	-.04	.00	a ₄ b ₄	-.00	.00	-.01	.00
M ₅	--	--	--	--	--	b ₅	.01	.00	.15	-.00	.02	a ₅ b ₅	.00	.00	-.00	.01

Covariates: Senior leadership, London based, trust size, trust type. N=376.

Table 6.17 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with absenteeism in 2011. No indirect effect of supervisor support on absenteeism through job design was found. Supervisor support was positively associated with job design ($a_1 = .12, p < .05$) but job design was not significantly associated with absenteeism ($b_1 = .02, n.s.$).

Table 6.17: 2009 supervisor support, 2010 mediators and 2011 absenteeism multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Absenteeism (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.12	.05	<.05	.01	.22	c	.00	.01	.86	-.01	.01				
	a ₂	.04	.07	.57	-.09	.17	c'	.00	.01	.77	-.01	.01				
	a ₃	.10	.09	.26	-.08	.29										
	a ₄	.06	.03	.08	-.01	.12										
	a ₅	.28	.08	<.001	.12	.44						Total	-.00	.00	-.01	.00
M ₁	--	--	--	--	--	b ₁	.02	.01	.05	-.00	.03	a ₁ b ₁	.00	.00	-.00	.01
M ₂	--	--	--	--	--	b ₂	.01	.01	.26	-.00	.02	a ₂ b ₂	.00	.00	-.00	.00
M ₃	--	--	--	--	--	b ₃	.00	.00	.78	-.01	.01	a ₃ b ₃	.00	.00	-.00	.00
M ₄	--	--	--	--	--	b ₄	-.07	.01	<.001	-.09	-.05	a ₄ b ₄	-.00	.00	-.01	.00
M ₅	--	--	--	--	--	b ₅	.00	.00	.50	-.01	.01	a ₅ b ₅	.00	.00	-.00	.00

Covariates: Senior leadership, London based, trust size, trust type. N=376.

Table 6.18 shows the effects of supervisor support and mediators in 2008 on absenteeism in 2009. No indirect effect of supervisor support on absenteeism through job design was found. Supervisor support was positively associated with job design ($a_1 = .33$, $p < .001$) but job design was not significantly associated with absenteeism ($b_1 = -.00$, $n.s.$).

Table 6.18: 2008 supervisor support and mediators, absenteeism 2009 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)					Absenteeism (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.33	.03	<.001	.27	.38	c	.01	.01	.26	-.02	.00				
	a ₂	-.15	.07	<.05	-.29	-.02	c'	-.00	.01	.69	-.02	.01				
	a ₃	.24	.02	<.001	.19	.28										
	a ₄	.68	.05	<.001	.58	.79					Total	.00	.00	-.00	.01	
M ₁	--	--	--	--	--	b ₁	-.00	.01	.97	-.02	.02	a ₁ b ₁	-.00	.00	-.01	.01
M ₂	--	--	--	--	--	b ₂	-.02	.00	<.001	-.02	-.01	a ₂ b ₂	.003	.001	.001	.006
M ₃	--	--	--	--	--	b ₃	-.03	.01	<.01	-.06	-.01	a ₃ b ₃	-.01	.001	-.01	-.001
M ₄	--	--	--	--	--	b ₄	.00	.01	.44	-.01	.01	a ₄ b ₄	.00	.00	-.01	.01

Covariates: Senior leadership, London based, trust size, trust type. N=380.

Table 6.19 shows the effects of supervisor support and mediators in 2009 on absenteeism in 2010. No indirect effect of supervisor support on absenteeism through job design was found. Supervisor support was positively associated with job design ($a_1 = .35$, $p < .001$) but job design was not significantly associated with absenteeism ($b_1 = .00$, $n.s.$).

Table 6.19: 2009 supervisor support and mediators, absenteeism 2010 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Absenteeism (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.35	.03	<.001	.29	.41	c	-.01	.01	.26	-.02	.00				
	a ₂	.13	.05	<.01	.03	.23	c'	-.01	.01	.24	-.02	.01				
	a ₃	-.05	.07	.53	-.19	.10										
	a ₄	.19	.02	<.001	.14	.24										
	a ₅	.68	.05	<.001	.58	.78					Total	.00	.01	-.01	.01	
M ₁	--	--	--	--	--	b ₁	.00	.01	.28	-.02	.02	a ₁ b ₁	.00	.00	-.01	.01
M ₂	--	--	--	--	--	b ₂	-.01	.01	.28	-.02	.01	a ₂ b ₂	-.00	.00	-.00	.00
M ₃	--	--	--	--	--	b ₃	-.01	.00	<.05	-.02	-.00	a ₃ b ₃	.00	.00	-.00	.00
M ₄	--	--	--	--	--	b ₄	-.02	.01	.07	-.04	.00	a ₄ b ₄	-.00	.00	-.01	.00
M ₅	--	--	--	--	--	b ₅	.01	.01	.09	-.00	.02	a ₅ b ₅	.01	.00	-.00	.01

Covariates: Senior leadership, London based, trust size, trust type. N=367.

Table 6.20 shows the effects of supervisor support and mediators in 2009 on absenteeism in 2010. No indirect effect of supervisor support on absenteeism through job

design was found. Supervisor support was positively associated with job design ($a_1 = .45$, $p < .001$) and job design was also significantly associated with absenteeism ($b_1 = .02$, $p < .05$) but the indirect effect was not significant. It is worth noting that the size of the indirect effect was small which could account for the significant first and second path with a non-indirect effect.

Table 6.20: 2010 supervisor support and mediators, absenteeism 2011 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Absenteeism (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.45	.03	<.001	.39	.51	c	.00	.01	.86	-.01	.01				
	a ₂	.18	.06	<.005	.07	.29	c'	-.00	.01	.64	-.02	.01				
	a ₃	-.17	.07	<.05	-.31	-.02										
	a ₄	.18	.02	<.001	.14	.22										
	a ₅	.69	.05	<.001	.59	.79							Total	.00	.01	-.01
M ₁	--	--	--	--	--	b ₁	.02	.01	<.05	.00	.04	a ₁ b ₁	.01	.01	-.00	.02
M ₂	--	--	--	--	--	b ₂	.01	.01	.21	-.00	.02	a ₂ b ₂	.00	.00	-.00	.00
M ₃	--	--	--	--	--	b ₃	-.00	.00	.94	-.01	.01	a ₃ b ₃	.00	.00	-.00	.00
M ₄	--	--	--	--	--	b ₄	-.06	.01	<.001	-.09	-.04	a ₄ b ₄	-.01	.00	-.02	-.01
M ₅	--	--	--	--	--	b ₅	.01	.01	.22	-.00	.02	a ₅ b ₅	.00	.00	-.00	.01

Covariates: Senior leadership, London based, trust size, trust type. N=380.

These results do not support Hypothesis 7a suggesting that the relationship between supervisor support and absenteeism is not mediated by job design.

6.2.2.2 Engagement

Table 6.16 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with absenteeism in 2010. No indirect effect of supervisor support on absenteeism through engagement was found. Supervisor support was not associated with engagement ($a_2 = .03$, $n.s$) and engagement was not significantly associated with absenteeism ($b_2 = -.01$, $n.s$).

Table 6.17 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with absenteeism in 2011. No indirect effect of supervisor support on absenteeism through engagement was found. Supervisor support was not associated with engagement ($a_2 = .04$, $n.s$) and engagement was not significantly associated with absenteeism ($b_2 = .01$, $n.s$).

Engagement was not measured in 2008 and as such is not included in the model described by Table 6.18. Table 6.19 shows the effects of supervisor support and mediators in 2009 on absenteeism in 2010. No indirect effect of supervisor support on absenteeism through

engagement was found. Supervisor support was positively associated with engagement ($a_2 = .13, p < .01$) but engagement was not significantly associated with absenteeism ($b_2 = -.01, n.s.$).

Table 6.20 shows the effects of supervisor support and mediators in 2010 on absenteeism in 2011. No indirect effect of supervisor support on absenteeism through engagement was found. Supervisor support was positively associated with engagement ($a_2 = .18, p < .005$) but engagement was not significantly associated with absenteeism ($b_2 = .01, n.s.$).

These results do not support Hypothesis 7b suggesting that the relationship between supervisor support and absenteeism is not mediated by engagement. Furthermore, supervisor support was not significantly related with engagement across three of the five models tested.

6.2.2.3 Work pressure

Table 6.16 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with absenteeism in 2010. No indirect effect of supervisor support on absenteeism through work pressure was found. Supervisor support was not associated with work pressure ($a_3 = -.03, n.s.$) but work pressure was negatively associated with absenteeism ($b_3 = -.01, p < .01$).

Table 6.17 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with absenteeism in 2011. No indirect effect of supervisor support on absenteeism through work pressure was found. Supervisor support was not associated with work pressure ($a_3 = .10, n.s.$) and work pressure was not significantly associated with absenteeism ($b_3 = .00, n.s.$).

Table 6.18 shows the effects of supervisor support and mediators in 2008 on absenteeism in 2009. An indirect effect of supervisor support on absenteeism through work pressure was found ($a_2b_2 = .003, 95\%CI [.001, .006]$). Supervisor support was negatively associated with work pressure ($a_2 = -.15, p < .05$) while work pressure was negatively associated with absenteeism ($b_2 = -.02, p < .001$).

Table 6.19 shows the effects of supervisor support and mediators in 2009 on absenteeism in 2010. No indirect effect of supervisor support on absenteeism through work pressure was found. Supervisor support was not associated with work pressure ($a_3 = -.05, n.s.$) but work pressure was negatively associated with absenteeism ($b_3 = -.01, p < .05$).

Table 6.20 shows the effects of supervisor support and mediators in 2010 on absenteeism in 2011. No indirect effect of supervisor support on absenteeism through work pressure was found. Supervisor support was negatively associated with work pressure ($a_3 = -.17, p < .001$) but work pressure was not significantly associated with absenteeism ($b_3 = -.00, n.s.$).

These results do not provide support for hypothesis 7c. One of the five models tested showed an indirect effect of supervisor support on absenteeism through work pressure, but this relationship was in the opposite direction to that hypothesised. In that model, supervisor support was associated with lower work pressure, but work pressure was negatively associated with absenteeism. It is worth noting when describing this result that the effect sizes was small.

6.2.2.4 Opportunity for involvement

Table 6.16 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with absenteeism in 2010. No indirect effect of supervisor support on absenteeism through opportunity for involvement was found. Supervisor support was positively associated with opportunity for involvement ($a_4 = .14, p < .001$) but opportunity for involvement was not significantly associated with absenteeism ($b_4 = -.02, n.s.$).

Table 6.17 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with absenteeism in 2011. No indirect effect of supervisor support on absenteeism through opportunity for involvement was found. Supervisor support was not associated with opportunity for involvement ($a_4 = .04, n.s.$) and opportunity for involvement was not significantly associated with absenteeism ($b_4 = -.02, n.s.$).

Table 6.18 shows the effects of supervisor support and mediators in 2008 on absenteeism in 2009. A significant negative indirect effect of supervisor support on absenteeism through opportunity for involvement was found ($a_3b_3 = -.01, 95\%CI[-.01, -.001]$). Supervisor support was positively associated with opportunity for involvement ($a_3 = .24, p < .001$) while opportunity for involvement was negatively associated with absenteeism ($b_3 = -.03, p < .01$).

Table 6.19 shows the effects of supervisor support and mediators in 2009 on absenteeism in 2010. No indirect effect of supervisor support on absenteeism through opportunity for involvement was found. Supervisor support was positively associated with opportunity for involvement ($a_4 = .19, p < .001$) but opportunity for involvement was not significantly associated with absenteeism ($b_4 = -.02, n.s.$).

Table 6.20 shows the effects of supervisor support and mediators in 2010 on absenteeism in 2011. A significant negative indirect effect of supervisor support on absenteeism through opportunity for involvement was found ($a_4b_4 = -.01, 95\%CI[-.001, -.01]$). Supervisor support was positively associated with opportunity for involvement ($a_4 = .18, p < .001$) while opportunity for involvement was negatively associated with absenteeism ($b_4 = -.06, p < .001$).

Hypothesis 7d is supported in two of the five models tested providing some support that opportunity for involvement mediates the relationship between supervisor support and

absenteeism. Supervisor support was positively related to opportunity for involvement. In turn, opportunity for involvement was negatively related to absenteeism.

6.2.2.5 Work-life balance

Table 6.16 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with absenteeism in 2010. No indirect effect of supervisor support on absenteeism through work-life balance was found. Supervisor support was positively associated with work-life balance ($a_5 = .46, p < .001$) but work-life balance was not significantly associated with absenteeism ($b_5 = .01, n.s.$).

Table 6.17 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with absenteeism in 2011. No indirect effect of supervisor support on absenteeism through work-life balance was found. Supervisor support was positively associated with work-life balance ($a_5 = .28, p < .001$) but work-life balance was not significantly associated with absenteeism ($b_5 = .00, n.s.$).

Table 6.18 shows the effects of supervisor support and mediators in 2008 on absenteeism in 2009. No indirect effect of supervisor support on absenteeism through work-life balance was found. Supervisor support was positively associated with work-life balance ($a_4 = .68, p < .001$) but work-life balance was not significantly associated with absenteeism ($b_4 = .00, n.s.$).

Table 6.19 shows the effects of supervisor support and mediators in 2009 on absenteeism in 2010. No indirect effect of supervisor support on absenteeism through work-life balance was found. Supervisor support was positively associated with work-life balance ($a_5 = .68, p < .001$) but work-life balance was not significantly associated with absenteeism ($b_5 = .01, n.s.$).

Table 6.20 shows the effects of supervisor support and mediators in 2010 on absenteeism in 2011. No indirect effect of supervisor support on absenteeism through work-life balance was found. Supervisor support was positively associated with work-life balance ($a_5 = .69, p < .001$) but work-life balance was not significantly associated with absenteeism ($b_5 = .01, n.s.$).

Hypothesis 7e is not supported in any of the models tested suggesting that work-life balance does not mediate the relationship between supervisor support and absenteeism.

6.2.2.6 Total and direct effects

In all models tested, no significant total or direct effects were found.

6.2.3 Patient Satisfaction

Hypothesis 6 stated that supervisor support would be positively associated with patient satisfaction, mediated by job design (H6a), engagement (H6b), work life balance (H6c), opportunity for involvement (H6d) and work pressure (H6e). The results of these hypotheses testing are described here, presented by mediator. The indirect effects will first be reported, followed by the total effect and direct effect. Patient satisfaction was tested in acute trusts only and variables controlled for were senior leadership, London based, trust size, teaching status, doctors per bed, and specialist status. The number of trusts included in the final analysis was 156, 158, 157, 158 and 158 in the five models tested (respective to the order presented).

6.2.3.1 Job design

Table 6.21 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with patient satisfaction in 2010. No indirect effect of supervisor support on patient satisfaction through job design was found. Supervisor support was positively associated with job design ($a_1 = .21, p < .005$) but job design was not significantly associated with patient satisfaction ($b_1 = -11.5, n.s$).

Table 6.21: 2008 supervisor support, 2009 mediators and 2010 patient satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Patient satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.21	.07	<.005	.08	.34	c	-5.76	3.99	.15	-13.6	2.12				
	a ₂	.05	.08	.57	-.12	.21	c'	-5.37	4.15	.20	-13.6	2.84				
	a ₃	.06	.12	.66	-.19	.30										
	a ₄	.11	.04	<.01	.03	.20										
	a ₅	.27	.10	<.01	.08	.46					Total	-.39	2.02	-4.57	3.46	
M ₁	--	--	--	--	--	b ₁	-11.5	7.86	.14	-27.1	3.99	a ₁ b ₁	-2.44	1.99	-7.25	.59
M ₂	--	--	--	--	--	b ₂	-3.75	4.49	.41	-12.6	5.13	a ₂ b ₂	-.18	.56	-2.22	.39
M ₃	--	--	--	--	--	b ₃	-8.95	3.12	<.01	-15.3	-2.6	a ₃ b ₃	-.49	1.13	-3.21	1.37
M ₄	--	--	--	--	--	b ₄	22.8	9.89	<.05	3.25	42.35	a ₄ b ₄	2.59	1.68	.12	6.94
M ₅	--	--	--	--	--	b ₅	.49	4.30	.91	-8.01	8.98	a ₅ b ₅	.13	1.23	-2.24	2.80

Covariates: Senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=156.

Table 6.22 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with patient satisfaction in 2011. No indirect effect of supervisor support on patient satisfaction through job design was found. Supervisor support was positively associated with job design ($a_1 = .19, p < .01$) but job design was not significantly associated with patient satisfaction ($b_1 = -12.6, n.s$).

Table 6.22: 2009 supervisor support, 2010 mediators and 2011 patient satisfaction multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Patient satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Supervisor support)	a ₁	.19	.07	<.01	.05	.33	c	2.14	4.11	.60	-5.98	10.25				
	a ₂	.10	.08	.22	-.06	.26	c'	2.45	4.14	.55	-5.73	10.64				
	a ₃	-.19	.12	.11	-.43	.04										
	a ₄	.10	.04	<.05	.01	.19										
	a ₅	.42	.11	<.001	.20	.64					Total	-.32	2.05	-4.56	3.56	
M ₁	--	--	--	--	--	b ₁	-12.6	7.5	.09	-27.5	2.2	a ₁ b ₁	-2.40	1.76	-6.92	.09
M ₂	--	--	--	--	--	b ₂	-5.83	4.85	.23	-15.4	3.75	a ₂ b ₂	-.58	.84	-3.50	.30
M ₃	--	--	--	--	--	b ₃	-11.1	3.08	<.001	-17.1	-4.96	a ₃ b ₃	2.13	1.51	-.34	5.79
M ₄	--	--	--	--	--	b ₄	18.0	9.51	.06	-.78	36.8	a ₄ b ₄	1.85	1.25	.10	5.07
M ₅	--	--	--	--	--	b ₅	-3.14	3.92	.43	-10.9	4.62	a ₅ b ₅	-1.32	1.70	-5.81	1.29

Covariates: Senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=158.

Table 6.23 shows the effects of supervisor support and mediators in 2008 on patient satisfaction in 2009. An indirect effect of supervisor support on patient satisfaction through job design was found ($a_1b_1 = -7.65$, 95%CI[-14.61, -2.52]). Supervisor support was positively associated with job design ($a_1 = .35$, $p < .001$) and job design was significantly negatively associated with patient satisfaction ($b_1 = -22.2$, $p < .01$).

Table 6.23: 2008 supervisor support and mediators, patient satisfaction 2009 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)					Patient satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Supervisor support)	a ₁	.35	.04	<.001	.26	.43	c	-1.48	3.96	.71	-9.30	6.34				
	a ₂	-.08	.11	.47	-.28	.13	c'	-2.19	4.98	.66	-12.0	7.65				
	a ₃	.28	.04	<.001	.21	.35										
	a ₄	.53	.08	<.001	.37	.69					Total	.71	3.61	-6.56	7.82	
M ₁	--	--	--	--	--	b ₁	-22.2	8.14	<.01	-38.3	-6.09	a ₁ b ₁	-7.65	3.03	-14.6	-2.52
M ₂	--	--	--	--	--	b ₂	-8.70	3.16	<.01	-14.9	-2.47	a ₂ b ₂	.66	.94	-.69	3.35
M ₃	--	--	--	--	--	b ₃	15.32	9.14	.10	-2.74	33.38	a ₃ b ₃	4.28	2.80	-.89	10.10
M ₄	--	--	--	--	--	b ₄	6.49	4.20	.12	-1.81	14.79	a ₄ b ₄	3.42	2.19	-.72	7.86

Covariates: Senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=157.

Table 6.24 shows the effects of supervisor support and mediators in 2009 on patient satisfaction in 10. No indirect effect of supervisor support on patient satisfaction through job design was found. Supervisor support was positively associated with job design ($a_1 = .35$, $p < .001$) but job design was not significantly associated with patient satisfaction ($b_1 = -14.1$, *n.s.*).

Table 6.24: 2009 supervisor support and mediators, patient satisfaction 2010 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Patient satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Supervisor support)	a ₁	.35	.04	<.001	.26	.43	c	.62	3.93	.87	-7.13	8.38				
	a ₂	.19	.07	<.01	.05	.34	c'	-1.24	5.65	.83	-12.4	9.92				
	a ₃	-.13	.10	.20	-.33	.07										
	a ₄	.24	.03	<.001	.17	.30										
	a ₅	.63	.06	<.001	.51	.76					Total	1.87	4.37	-7.40	10.06	
M ₁	--	--	--	--	--	b ₁	-14.1	8.33	.09	-30.5	2.42	a ₁ b ₁	-4.86	2.86	-10.8	.39
M ₂	--	--	--	--	--	b ₂	-3.31	4.51	.46	-12.2	5.60	a ₂ b ₂	-.64	.97	-2.93	1.05
M ₃	--	--	--	--	--	b ₃	-9.63	3.33	<.005	-16.2	-3.05	a ₃ b ₃	1.24	1.13	-.54	4.03
M ₄	--	--	--	--	--	b ₄	24.19	10.21	<.05	3.98	44.40	a ₄ b ₄	5.70	2.71	.53	11.23
M ₅	--	--	--	--	--	b ₅	.67	5.00	.89	-9.21	10.55	a ₅ b ₅	.42	3.42	-6.72	6.66

Covariates: Senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=158.

Table 6.25 shows the effects of supervisor support and mediators in 2009 on patient satisfaction in 10. An indirect effect of supervisor support on patient satisfaction through job design was found ($a_1b_1 = -7.15$, 95%CI[-14.22, -2.88]). Supervisor support was positively associated with job design ($a_1 = .44$, $p < .001$) although job design was not significantly associated with patient satisfaction ($b_1 = -16.1$, $n.s$). The relationship between job design and patient satisfaction produces a p value of 0.54, while bias corrected bootstrap interval marginally included zero.

Table 6.25: 2010 supervisor support and mediators, patient satisfaction 2011 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Patient satisfaction (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	UCLI		
X (Supervisor support)	a ₁	.44	.04	<.001	.36	.53	c	-3.10	3.94	.43	-10.9	4.69				
	a ₂	.23	.07	<.001	.10	.36	c'	5.66	5.95	.34	-6.10	17.43				
	a ₃	-.12	.10	.24	-.32	.08										
	a ₄	.22	.03	<.001	.15	.28										
	a ₅	.72	.07	<.001	.59	.86					Total	-8.76	4.48	-18.2	-4.8	
M ₁	--	--	--	--	--	b ₁	-16.1	8.27	.054	-32.4	.28	a ₁ b ₁	-7.15	3.60	-14.2	-2.8
M ₂	--	--	--	--	--	b ₂	-7.28	4.92	.14	-17.0	2.45	a ₂ b ₂	-1.68	1.24	-4.97	.11
M ₃	--	--	--	--	--	b ₃	-11.2	3.19	<.005	-17.5	-4.91	a ₃ b ₃	1.36	1.42	-.97	4.80
M ₄	--	--	--	--	--	b ₄	14.32	9.82	.15	-5.09	33.74	a ₄ b ₄	3.11	2.52	-.99	7.68
M ₅	--	--	--	--	--	b ₅	-6.09	4.60	.19	-15.2	3.01	a ₅ b ₅	-4.41	3.02	-10.7	1.04

Covariates: Senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=158.

Hypothesis 6a was supported not supported in these modes. On the contrary, in 2 of the five models tested a relationship between supervisor support and patient satisfaction was mediated by job design, but the direction of this relationship was opposite to that expected.

Supervisor support was associated with an increase job design but job design was associated with a decrease in patient satisfaction. It is worth noting that for one of the significant models, the second step of the indirect effect was not statistically significant and due to the limited consistency of this finding, caution should be taken before generalising.

6.2.3.2 Engagement

Table 6.21 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with patient satisfaction in 2010. No indirect effect of supervisor support on patient satisfaction through engagement was found. Supervisor support was not associated with engagement ($a_2 = .05, n.s$) and engagement was not significantly associated with patient satisfaction ($b_2 = -3.75, n.s$).

Table 6.22 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with patient satisfaction in 2011. No indirect effect of supervisor support on patient satisfaction through engagement was found. Supervisor support was not associated with engagement ($a_2 = .10, n.s$) and engagement was not significantly associated with patient satisfaction ($b_2 = -5.83, n.s$).

Engagement was not measured in 2008 and as such is not included in the model described by Table 6.23. Table 6.24 shows the effects of supervisor support and mediators in 2009 on patient satisfaction in 2010. No indirect effect of supervisor support on patient satisfaction through engagement was found. Supervisor support was positively associated with engagement ($a_2 = .19, p < .01$) but engagement was not significantly associated with patient satisfaction ($b_2 = -3.31, n.s$).

Table 6.25 shows the effects of supervisor support and mediators in 2010 on patient satisfaction in 2011. No indirect effect of supervisor support on patient satisfaction through engagement was found. Supervisor support was positively associated with engagement ($a_2 = .23, p < .001$) but engagement was not significantly associated with patient satisfaction ($b_2 = -7.28, n.s$).

These results do not support Hypothesis 6b suggesting that the relationship between supervisor support and patient satisfaction is not mediated by engagement.

6.2.3.3 Work pressure

Table 6.21 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with patient satisfaction in 2010. No indirect effect of supervisor support on patient satisfaction through work pressure was found. Supervisor support was not

associated with work pressure ($a_3 = .06$, *n.s*) but work pressure was negatively associated with patient satisfaction ($b_3 = -8.95$, $p < .01$).

Table 6.22 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with patient satisfaction in 2011. No indirect effect of supervisor support on patient satisfaction through work pressure was found. Supervisor support was not associated with work pressure ($a_3 = -.19$, *n.s*) but work pressure was negatively associated with patient satisfaction ($b_3 = -11.10$, $p < .01$).

Table 6.23 shows the effects of supervisor support and mediators in 2008 on patient satisfaction in 2009. No indirect effect of supervisor support on patient satisfaction through work pressure was found. Supervisor support was not associated with work pressure ($a_2 = -.08$, *n.s*) but work pressure was negatively associated with patient satisfaction ($b_2 = -8.70$, $p < .01$).

Table 6.24 shows the effects of supervisor support and mediators in 2009 on patient satisfaction in 2010. No indirect effect of supervisor support on patient satisfaction through work pressure was found. Supervisor support was not associated with work pressure ($a_3 = -.13$, *n.s*) but work pressure was negatively associated with patient satisfaction ($b_3 = -9.63$, $p < .005$).

Table 6.25 shows the effects of supervisor support and mediators in 2010 on patient satisfaction in 2011. No indirect effect of supervisor support on patient satisfaction through work pressure was found. Supervisor support was not associated with work pressure ($a_3 = -.12$, *n.s*) but work pressure was negatively associated with patient satisfaction ($b_3 = -11.2$, $p < .005$).

These results do not support Hypothesis 6c suggesting that the relationship between supervisor support and patient satisfaction is not mediated by work pressure.

6.2.3.4 Opportunity for involvement

Table 6.21 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with patient satisfaction in 2010. An indirect effect of supervisor support on patient satisfaction through opportunity for involvement was found ($a_4b_4 = 2.59$, 95%CI[.12, 6.94]). Supervisor support was positively associated with opportunity for involvement ($a_4 = .11$, $p < .01$) while opportunity for involvement was positively associated with patient satisfaction ($b_4 = 22.8$, $p < .05$).

Table 6.22 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with patient satisfaction in 2011. An indirect effect of supervisor support on patient satisfaction through opportunity for involvement was found ($a_4b_4 = 1.85$, 95%CI[.10, 5.07]). Supervisor support was positively associated with opportunity for involvement ($a_4 = .10$, $p < .05$) and although opportunity for involvement was not significantly

associated with patient satisfaction ($b_4 = 18.0$, *n.s.*), the p value was .06 with the confidence interval marginally including zero (LLCI = -78, ULCI = 36.8).

Table 6.23 shows the effects of supervisor support and mediators in 2008 on patient satisfaction in 2009. No significant negative indirect effect of supervisor support on patient satisfaction through opportunity for involvement was found. Supervisor support was positively associated with opportunity for involvement ($a_3 = .28$, $p < .001$) while opportunity for involvement was not significantly associated with patient satisfaction ($b_3 = 15.32$, *n.s.*).

Table 6.24 shows the effects of supervisor support and mediators in 2009 on patient satisfaction in 2010. An indirect effect of supervisor support on patient satisfaction through opportunity for involvement was found ($a_4 b_4 = 5.70$, 95%CI [.53, 11.23]). Supervisor support was positively associated with opportunity for involvement ($a_4 = .24$, $p < .001$) while opportunity for involvement was positively associated with patient satisfaction ($b_4 = 24.19$, $p < .05$).

Table 6.25 shows the effects of supervisor support and mediators in 2010 on patient satisfaction in 2011. No significant negative indirect effect of supervisor support on patient satisfaction through opportunity for involvement was found. Supervisor support was positively associated with opportunity for involvement ($a_4 = .22$, $p < .001$) while opportunity for involvement was positively associated with patient satisfaction ($b_4 = 14.32$, *n.s.*).

Hypothesis 6d is supported in three of the five models tested providing some support that opportunity for involvement mediates the relationship between supervisor support and patient satisfaction. Supervisor support was positively related to opportunity for involvement. In turn, opportunity for involvement was positively related to patient satisfaction. Therefore supervisor support increases patient satisfaction through its influence on opportunity for involvement.

6.2.3.5 Work-life balance

Table 6.21 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with patient satisfaction in 2010. No indirect effect of supervisor support on patient satisfaction through work-life balance was found. Supervisor support was positively associated with work-life balance ($a_5 = .27$, $p < .01$) but work-life balance was not significantly associated with patient satisfaction ($b_5 = .49$, *n.s.*).

Table 6.22 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with patient satisfaction in 2011. No indirect effect of supervisor support on patient satisfaction through work-life balance was found. Supervisor support was

positively associated with work-life balance ($a_5 = .42, p < .001$) but work-life balance was not significantly associated with patient satisfaction ($b_5 = -3.14, n.s.$).

Table 6.23 shows the effects of supervisor support and mediators in 2008 on patient satisfaction in 2009. No indirect effect of supervisor support on patient satisfaction through work-life balance was found. Supervisor support was positively associated with work-life balance ($a_4 = .53, p < .001$) but work-life balance was not significantly associated with patient satisfaction ($b_4 = 6.49, n.s.$).

Table 6.24 shows the effects of supervisor support and mediators in 2009 on patient satisfaction in 2010. No indirect effect of supervisor support on patient satisfaction through work-life balance was found. Supervisor support was positively associated with work-life balance ($a_5 = .63, p < .001$) but work-life balance was not significantly associated with patient satisfaction ($b_5 = .67, n.s.$).

Table 6.25 shows the effects of supervisor support and mediators in 2010 on patient satisfaction in 2011. No indirect effect of supervisor support on patient satisfaction through work-life balance was found. Supervisor support was positively associated with work-life balance ($a_5 = .72, p < .001$) but work-life balance was not significantly associated with patient satisfaction ($b_5 = -6.09, n.s.$).

Hypothesis 6e is not supported in any of the models tested suggesting that work-life balance does not mediate the relationship between supervisor support and patient satisfaction.

6.2.3.6 Total and direct effects

For all models tested, no significant total or direct effects were found.

6.2.4 Stability

Hypothesis 8 stated that supervisor support would be positively associated with stability, mediated by job design (H8a), engagement (H8b), work life balance (H8c), opportunity for involvement (H8d) and work pressure (H8e). The results of these hypotheses testing are described here, presented by mediator. The indirect effects will first be reported, followed by the total effect and direct effect. Stability was tested in acute trusts only and variables controlled for were senior leadership, London based, trust size, teaching status, doctors per bed, and specialist status. The number of trusts included in the five models included in the final analysis was 160, 163, 160, 162 and 163 (respective to the order presented).

6.2.4.1 Job design

Table 6.26 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with stability in 2010. No indirect effect of supervisor support on stability through job design was found. Supervisor support was positively associated with job design ($a_1 = .20, p < .005$) but job design was not significantly associated with stability ($b_1 = 5.32, n.s.$).

Table 6.26: 2008 supervisor support, 2009 mediators and 2010 stability multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Stability (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.20	.07	<.005	.07	.33	c	-.80	2.39	.74	-5.52	3.92				
	a ₂	.07	.08	.41	-.10	.24	c'	-1.08	2.34	.64	-5.71	3.55				
	a ₃	.04	.12	.74	-.20	.28										
	a ₄	.11	.04	<.01	.03	.19										
	a ₅	.26	.09	<.01	.07	.45										
											Total	.29	1.24	-2.17	2.75	
M ₁	--	--	--	--	--	b ₁	5.32	4.49	.24	-3.55	14.2	a ₁ b ₁	1.08	.87	-.13	3.49
M ₂	--	--	--	--	--	b ₂	-8.15	2.54	<.005	-13.2	-3.13	a ₂ b ₂	-.56	.73	-2.31	.71
M ₃	--	--	--	--	--	b ₃	-5.07	1.87	<.01	-8.76	-1.37	a ₃ b ₃	-.20	.67	-1.70	1.06
M ₄	--	--	--	--	--	b ₄	-8.06	5.45	.14	-18.8	2.72	a ₄ b ₄	-.88	.64	-2.59	.02
M ₅	--	--	--	--	--	b ₅	3.24	2.42	.18	-1.55	8.02	a ₅ b ₅	.84	.68	-.17	2.58

Covariates: Senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status N=160.

Table 6.27 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with stability in 2011. No indirect effect of supervisor support on stability through job design was found. Supervisor support was positively associated with job design ($a_1 = .19, p < .01$) but job design was not significantly associated with stability ($b_1 = 4.71, n.s.$).

Table 6.27: 2009 supervisor support, 2010 mediators and 2011 stability multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Stability (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.19	.07	<.01	.06	.32	c	-.13	1.98	.95	-4.03	3.77				
	a ₂	.10	.08	.20	-.05	.26	c'	-1.50	1.96	.44	-5.36	2.37				
	a ₃	-.19	.12	.11	-.42	.05										
	a ₄	.11	.04	<.05	.02	.19										
	a ₅	.42	.11	<.001	.20	.63										
												Total	1.37	1.00	-.47	3.49
M ₁	--	--	--	--	--	b ₁	4.71	3.51	.18	-2.23	11.65	a ₁ b ₁	.90	.71	-.08	2.84
M ₂	--	--	--	--	--	b ₂	-5.08	2.26	<.05	-9.55	-.62	a ₂ b ₂	-.52	.51	-2.15	.12
M ₃	--	--	--	--	--	b ₃	-3.19	1.43	<.05	-6.02	-.36	a ₃ b ₃	.60	.47	-.02	2.06
M ₄	--	--	--	--	--	b ₄	-11.4	4.46	<.05	-20.2	-2.59	a ₄ b ₄	-1.20	.71	-3.14	-.19
M ₅	--	--	--	--	--	b ₅	3.80	1.83	<.05	.17	7.43	a ₅ b ₅	1.59	1.08	.06	4.40

Covariates: Senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=163.

Table 6.28 shows the effects of supervisor support and mediators in 2008 on stability in 2009. No indirect effect of supervisor support on stability through job design was found. Supervisor support was positively associated with job design ($a_1 = .34, p < .001$) but job design was not significantly associated with stability ($b_1 = -6.33, n.s$).

Table 6.28: 2008 supervisor support and mediators, stability 2009 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Work pressure (M ₂), Involvement (M ₃), Work-life balance (M ₄)					Stability (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.34	.04	<.001	.25	.42	c	-1.17	3.04	.70	-7.17	4.83				
	a ₂	-.08	.10	.43	-.29	.12	c'	.86	3.81	.82	-6.67	8.40				
	a ₃	.28	.04	<.001	.20	.36										
	a ₄	.51	.08	<.001	.35	.67							Total	-2.04	2.46	-7.09
M ₁	--	--	--	--	--	b ₁	-6.33	6.11	.30	-18.4	5.76	a ₁ b ₁	-2.13	1.98	-6.22	1.60
M ₂	--	--	--	--	--	b ₂	-8.08	2.49	<.005	-13.0	-3.15	a ₂ b ₂	.67	.84	-.76	2.55
M ₃	--	--	--	--	--	b ₃	-6.93	6.93	.32	-20.6	6.78	a ₃ b ₃	-1.96	2.18	-6.63	2.09
M ₄	--	--	--	--	--	b ₄	2.72	3.23	.40	-3.65	9.10	a ₄ b ₄	1.39	1.51	-1.51	4.51

Covariates: Senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=160.

Table 6.29 shows the effects of supervisor support and mediators in 2009 on stability in 10. An indirect effect of supervisor support on stability through job design was found ($a_1b_1 = 3.07, 95\%CI [.67, 6.49]$). Supervisor support was positively associated with job design ($a_1 = .33, p < .001$) although job design was not significantly associated with stability ($b_1 = 9.18, n.s$). The relationship between job design and stability produces a p value of 0.502, while the bias corrected bootstrap confidence interval marginally included zero (LLCI -.08, ULCI 18.45).

Table 6.29: 2009 supervisor support and mediators, stability 2010 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Stability (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.33	.04	<.001	.25	.42	c	.48	2.36	.84	-4.17	5.13				
	a ₂	.22	.07	<.005	.07	.36	c'	-3.61	3.11	.25	-9.75	2.53				
	a ₃	-.15	.10	.15	-.34	.05										
	a ₄	.23	.03	<.001	.16	.30										
	a ₅	.61	.07	<.001	.49	.74					Total	4.09	3.11	-1.28	11.06	
M ₁	--	--	--	--	--	b ₁	9.18	4.69	.05	-.08	18.45	a ₁ b ₁	3.07	1.44	.67	6.49
M ₂	--	--	--	--	--	b ₂	-7.16	2.48	<.005	-12.1	-2.26	a ₂ b ₂	-1.55	.76	-3.53	-.37
M ₃	--	--	--	--	--	b ₃	-5.88	1.87	<.005	-9.59	-2.18	a ₃ b ₃	.85	.75	-.43	2.61
M ₄	--	--	--	--	--	b ₄	-6.38	5.50	.25	-17.2	4.49	a ₄ b ₄	-1.46	1.09	-3.71	.63
M ₅	--	--	--	--	--	b ₅	5.19	2.74	.06	-.23	10.61	a ₅ b ₅	3.19	1.96	-.02	7.70

Covariates: Senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=162.

Table 6.30 shows the effects of supervisor support and mediators in 2009 on stability in 10. No indirect effect of supervisor support on stability through job design was found. Supervisor support was positively associated with job design ($a_1 = .44, p < .001$) but job design was not significantly associated with stability ($b_1 = 3.75, n.s.$).

Table 6.30: 2010 supervisor support and mediators, stability 2011 multiple mediation model

Antecedent	Consequent															
	Job design (M ₁), Engagement (M ₂) Work pressure (M ₃), Involvement (M ₄), Work-life balance (M ₅)					Stability (Y)					Indirect effect					
	Coeff.	SE	p	LLCI	ULCI	Coeff.	SE	p	LLCI	ULCI	ab	SE	LLCI	ULCI		
X (Supervisor support)	a ₁	.44	.05	<.001	.36	.52	c	1.55	1.86	.41	-2.13	5.22				
	a ₂	.24	.06	<.001	.11	.36	c'	1.14	2.76	.68	-4.32	6.60				
	a ₃	-.11	.10	.27	-.31	.09										
	a ₄	.22	.03	<.001	.15	.28										
	a ₅	.71	.07	<.001	.57	.84					Total	.41	2.89	-4.76	6.72	
M ₁	--	--	--	--	--	b ₁	3.75	3.19	.34	-3.98	11.48	a ₁ b ₁	1.66	1.79	-1.63	5.41
M ₂	--	--	--	--	--	b ₂	-5.10	2.30	<.05	-9.65	-.55	a ₂ b ₂	-1.21	.74	-3.21	-.14
M ₃	--	--	--	--	--	b ₃	-3.31	1.50	<.05	-6.27	-.35	a ₃ b ₃	.36	.41	-.20	1.60
M ₄	--	--	--	--	--	b ₄	-11.8	4.64	<.05	-20.9	-2.36	a ₄ b ₄	-2.58	1.23	-5.34	-.40
M ₅	--	--	--	--	--	b ₅	3.08	2.14	.15	-1.15	7.31	a ₅ b ₅	2.18	1.85	-1.03	6.25

Covariates: Senior leadership, London based, trust size, teaching hospital status, doctors per bed, specialist status. N=163.

Hypothesis 8a was supported in only one of the five models tested, and this model's results gave a marginally indirect effect, with a marginally non-significant second stage of the mediation. Overall these provide very limited support for Hypothesis 8a suggesting that the relationship between supervisor support and stability may be mediated by job design.

6.2.4.2 Engagement

Table 6.26 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with stability in 2010. No indirect effect of supervisor support on stability through engagement was found. Supervisor support was not associated with engagement ($a_2 = .07$, *n.s*) and engagement was negatively associated with stability ($b_2 = -8.15$, $p < .005$).

Table 6.27 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with stability in 2011. No indirect effect of supervisor support on stability through engagement was found. Supervisor support was not associated with engagement ($a_2 = .10$, *n.s*) and engagement was negatively associated with stability ($b_2 = -5.08$, $p < .05$).

Engagement was not measured in 2008 and as such is not included in the model described by Table 6.28. Table 6.29 shows the effects of supervisor support and mediators in 2009 on stability in 2010. An indirect effect of supervisor support on stability through engagement was found ($a_2b_2 = -1.55$, 95%CI[-3.53, -.37]). Supervisor support was positively associated with engagement ($a_2 = .22$, $p < .005$) and engagement was negatively associated with stability ($b_2 = -7.16$, $p < .005$).

Table 6.30 shows the effects of supervisor support and mediators in 2010 on stability in 2011. An indirect effect of supervisor support on stability through engagement was found ($a_2b_2 = -1.21$, 95%CI[-3.21, -.14]). Supervisor support was positively associated with engagement ($a_2 = .24$, $p < .001$) and engagement was negatively associated with stability ($b_2 = -5.10$, $p < .05$).

These results do not support hypothesis 8b. Conversely, in two of the four models tested an indirect effect was found, but the direction of this effect was opposite to that proposed. Supervisor support was positively associated with engagement, but engagement was negatively associated with stability. Therefore supervisor support indirectly reduced stability by increasing engagement.

6.2.4.3 Work pressure

Table 6.26 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with stability in 2010. No indirect effect of supervisor support on stability through work pressure was found. Supervisor support was not associated with work pressure ($a_3 = .04$, *n.s*) but work pressure was negatively associated with stability ($b_3 = -5.07$, $p < .01$).

Table 6.27 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with stability in 2011. No indirect effect of supervisor support on stability through work pressure was found. Supervisor support was not associated with work pressure ($a_3 = -.19$, *n.s*) but work pressure was negatively associated with stability ($b_3 = -3.19$, $p < .05$).

Table 6.28 shows the effects of supervisor support and mediators in 2008 on stability in 2009. No indirect effect of supervisor support on stability through work pressure was found. Supervisor support was not associated with work pressure ($a_2 = -.08$, *n.s*) but work pressure was negatively associated with stability ($b_2 = -8.08$, $p < .005$).

Table 6.29 shows the effects of supervisor support and mediators in 2009 on stability in 2010. No indirect effect of supervisor support on stability through work pressure was found. Supervisor support was not associated with work pressure ($a_3 = -.15$, *n.s*) but work pressure was negatively associated with stability ($b_3 = -5.88$, $p < .005$).

Table 6.30 shows the effects of supervisor support and mediators in 2010 on stability in 2011. No indirect effect of supervisor support on stability through work pressure was found. Supervisor support was not associated with work pressure ($a_3 = -.11$, *n.s*) but work pressure was negatively associated with stability ($b_3 = -3.31$, $p < .05$).

These results do not support hypothesis 8c suggesting that work pressure does not mediate the relationship between supervisor support and stability.

6.2.4.4 Opportunity for involvement

Table 6.26 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with stability in 2010. No indirect effect of supervisor support on stability through opportunity for involvement was found. Supervisor support was positively associated with opportunity for involvement ($a_4 = .11$, $p < .01$) while opportunity for involvement was not significantly associated with stability ($b_4 = -8.06$, *n.s*).

Table 6.27 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with stability in 2011. An indirect effect of supervisor support on stability through opportunity for involvement was found ($a_4 b_4 = -1.20$, 95%CI[-3.14, -.19]). Supervisor support was positively associated with opportunity for involvement ($a_4 = .11$, $p < .05$) and opportunity for involvement was negatively associated with stability ($b_4 = -11.4$, $p < .05$).

Table 6.28 shows the effects of supervisor support and mediators in 2008 on stability in 2009. No significant negative indirect effect of supervisor support on stability through

opportunity for involvement was found. Supervisor support was significantly associated with opportunity for involvement ($a_3 = .28, p < .001$) but opportunity for involvement was not significantly associated with stability ($b_3 = -6.93, n.s.$).

Table 6.29 shows the effects of supervisor support and mediators in 2009 on stability in 2010. No indirect effect of supervisor support on stability through opportunity for involvement was found. Supervisor support was positively associated with opportunity for involvement ($a_4 = .23, p < .001$) while opportunity for involvement was not significantly associated with stability ($b_4 = -6.38, n.s.$).

Table 6.30 shows the effects of supervisor support and mediators in 2010 on stability in 2011. A significant negative indirect effect of supervisor support on stability through opportunity for involvement was found ($a_4 b_4 = -2.58, 95\%CI[-5.34, -.40]$). Supervisor support was positively associated with opportunity for involvement ($a_4 = .22, p < .001$) while opportunity for involvement was negatively associated with stability ($b_4 = -11.8, p < .05$).

These results do not support hypothesis 8d. Conversely in two of the five models tested opportunity for involvement was found to mediate the relationship between supervisor support and stability. However, the direction of this relationship was not expected. Supervisor support was positively related to opportunity for involvement. Unexpectedly, opportunity for involvement was negatively related to stability. This result indicates that supervisor support may decrease stability through its positive influence on opportunity for involvement.

6.2.4.5 Work-life balance

Table 6.26 shows the effects of supervisor support in 2008 on mediating variables in 2009, and their relationship with stability in 2010. No indirect effect of supervisor support on stability through work-life balance was found. Supervisor support was positively associated with work-life balance ($a_5 = .26, p < .01$) but work-life balance was not significantly associated with stability ($b_5 = 3.24, n.s.$).

Table 6.27 shows the effects of supervisor support in 2009 on mediating variables in 2010, and their relationship with stability in 2011. An indirect effect of supervisor support on stability through work-life balance was found ($a_5 b_5 = 1.59, 95\%CI[.06, 4.40]$). Supervisor support was positively associated with work-life balance ($a_5 = .42, p < .001$) and work-life balance was positively associated with stability ($b_5 = 3.850, p < .05$).

Table 6.28 shows the effects of supervisor support and mediators in 2008 on stability in 2009. No indirect effect of supervisor support on stability through work-life balance was found.

Supervisor support was positively associated with work-life balance ($a_4 = .51, p < .001$) but work-life balance was not significantly associated with stability ($b_4 = 2.72, n.s.$).

Table 6.29 shows the effects of supervisor support and mediators in 2009 on stability in 2010. No indirect effect of supervisor support on stability through work-life balance was found. Supervisor support was positively associated with work-life balance ($a_5 = .61, p < .001$) but work-life balance was not significantly associated with stability ($b_5 = 5.19, n.s.$).

Table 6.30 shows the effects of supervisor support and mediators in 2010 on stability in 2011. No indirect effect of supervisor support on stability through work-life balance was found. Supervisor support was positively associated with work-life balance ($a_5 = .71, p < .001$) but work-life balance was not significantly associated with stability ($b_5 = 3.08, n.s.$).

These results provide very limited support for hypothesis 8e as only one of the five models tested showed an indirect effect of work-life balance between supervisor support and stability. In this model, supervisor support positively predicted work-life balance, and work-life balance was positively associated with stability. Therefore supervisor support indirectly increased stability by improving work-life balance.

6.2.4.6 Total and direct effects

No significant total or direct effects of supervisor support on stability were found in any model.

6.3 Summary of supervisor support analysis

In order to summarise the results of the hypotheses tests relating to supervisor support, the indirect effects figures are reported in the tables below. These tables help to visualise the significant paths the relationships between supervisor support and outcomes.

Table 6.31 shows the indirect effects between supervisor support and job satisfaction. It is possible to see that work-life balance is the most consistent variable mediating this relationship. The relationship exists in both cross sectional and longitudinal analysis suggesting that supervisor support increases job satisfaction by increasing work-life balance. Job design, engagement and opportunity for involvement were all described by only one indirect effect across all models tested and should not be taken as consistent findings. Work pressure was not significant in any model.

Table 6.31: Job satisfaction, indirect effects of supervisor support

Mediator	Cross sectional			Longitudinal		
	2008	2009	2010	1	2	3
Job design	--	--	--	.04	--	--
Engagement	Not measured	--	--	--	Not measured	.02
Work pressure	--	--	--	--	--	--
Opportunity for involvement	.05	--	--	--	--	--
Work-life balance	.10	--	.09	.08	--	.11

Table 6.32 shows the indirect effects between supervisor support and absenteeism. Consistent, significant effects can be seen through opportunity for involvement. The effect is present for each cross sectional analysis but only in two of the five longitudinal analyses. Supervisor support predicted opportunity for involvement, and opportunity for involvement negatively predicted absenteeism.

Table 6.32: Absenteeism, indirect effects of supervisor support

Mediator	Cross sectional			Longitudinal				
	2008	2009	2010	1	2	3	4	5
Job design	--	--	.01	--	--	--	--	--
Engagement	Not measured	--	--	--	--	Not measured	--	--
Work pressure	.003	--	--	--	--	.003	--	--
Opportunity for involvement	-.01	-.01	-.01	--	--	-.01	--	-.01
Work-life balance	--	--	--	--	--	--	--	--

Therefore supervisor support indirectly reduced absenteeism through its effect on opportunity for involvement. Two significant findings were shown for work pressure, one cross sectional and one longitudinal, while job design produced only one significant result. The inconsistency of these findings cast doubt on the generalisability of them. For both engagement and work-life balance, no indirect effect was found.

Table 6.33 shows the indirect effects between supervisor support and patient satisfaction. The most consistent effect was found through opportunity for involvement with three of the five longitudinal models and one of the three cross sectional models describing an indirect effect through this variable.

Table 6.33: Patient Satisfaction, indirect effects of supervisor support

Mediator	Cross sectional			Longitudinal				
	2008	2009	2010	1	2	3	4	5
Job design	--	--	-8.90	--	--	-7.65	--	-7.15
Engagement	Not measured	--	--	--	--	Not measured	--	--
Work pressure	--	--	--	--	--	--	--	--
Opportunity for involvement	--	--	3.96	2.59	1.85	--	5.70	--
Work-life balance	5.34	--	--	--	--	--	--	--

This suggests that this may be more of a long-term effect, but still has contemporary influence. In this relationship, supervisor support increases opportunity for involvement and an increase in opportunity for involvement leads to an increase in patient satisfaction. Therefore supervisor support indirectly increased patient satisfaction. The next most consistent finding is through job design. However only three of the eight models tested described a negative relationship on patient satisfaction. This was found in one of the three cross sectional models and two of the five longitudinal models. The infrequency of this result suggests that this is not a consistent relationship. Work life balance was a mediating factor in only one of the eight models tested while engagement and work pressure were not significant factors in any model. Consequently, neither work-life balance nor work pressure nor engagement can be taken to be consistent mediating variables between supervisor support and patient satisfaction.

Table 6.34 shows the indirect effects between supervisor support and patient stability. No mediator provided results that would suggest a consistent finding. The most consistent finding was through engagement, with two of the four longitudinal models resulting in an indirect effect. However this effect was not as expected where supervisor support indirectly reduced stability by increasing engagement. In the models described in the chapter above, engagement was negatively correlated with stability. Opportunity for involvement was found to be an indirect effect in two of the five longitudinal models, but again this relationship was not expected with senior leadership indirectly reducing stability by increasing opportunity for involvement. Opportunity for involvement was found to be negatively correlated with stability in the detailed models. Work-life balance was also found to be significant in two of the five longitudinal models. Supervisor support was found to indirectly increase stability by increasing work life balance. Job design was found to be significant in only one of the eight models tested while work pressure was not significant in any model.

Table 6.34: Stability, indirect effects of supervisor support

Mediator	Cross sectional			Longitudinal				
	2008	2009	2010	1	2	3	4	5
Job design	--	--	--	--	--	--	3.07	--
Engagement	Not measured	--	--	--	--	Not measured	-1.55	-1.21
Work pressure	--	--	--	--	--	--	--	--
Opportunity for involvement	--	--	--	--	-1.20	--	--	-2.58
Work-life balance	--	--	--	--	1.59	--	3.19	--

Table 6.35 presents the significant relationships supervisor support had with the mediating variables. Effect sizes are not included in this table as these varied across each model, although this variation was small - i.e. the size of the effect was relatively consistent for each mediator. Individual effect sizes are reported in the tables throughout the main section of the results. The results indicate that supervisor support significantly and positively predicted all mediating variables other than work pressure, which it was not related to. Also, for two of the longitudinal model types, supervisor support did not predict engagement. These relationships show that the variation in the indirect effects is due to the second stage effect between the mediator and the outcome variable.

Table 6.35: Significant relationships between supervisor support with mediator variables

Mediator	Cross sectional			Longitudinal				
	2008	2009	2010	1	2	3	4	5
Job design	X	X	X	X	X	X	X	X
Engagement	Not measured	X	X	--	--	Not measured	X	X
Work pressure	--	--	--	--	--	--	--	--
Opportunity for involvement	X	X	X	X	X	X	X	X
Work-life balance	X	X	X	X	X	X	X	X

Finally, a summary of total and direct effects is presented in Table 6.36. Total effects are present in most job satisfaction models, although a direct effect is only evident in one model. This suggests that the influence of supervisor support is not independent of its effect through mediating variables. The remaining models contain no total or direct effects (other than one total effect in the absenteeism models).

Table 6.36: Summary of all total and direct effects for supervisor support models

	Cross sectional			Longitudinal				
	2008	2009	2010	1	2	3	4	5
Job satisfaction								
C	X	X	X	--	X	X		
C'	--	--	--	--	X	--	No models tested	
Absenteeism								
C	--	-X	--	--	--	--	--	--
C'	--	--	--	--	--	--	--	--
Patient Satisfaction								
C	--	--	--	--	--	--	--	--
C'	--	--	--	--	--	--	--	--
Stability								
C	-	--	--	--	--	--	--	--
C'	--	--	--	--	--	--	--	--

7 Relative weight analysis

7.1 Study 5

In order to further understand the effect that senior leadership relative to supervisor support had on the various outcomes, relative weight analysis was performed. PROCESS uses unstandardised regression coefficients which makes interpreting the indirect effect sizes difficult. Relative weight analysis (RWA) initially calculates the raw relative weight (RRW) which is given as a score from 0 to 1 and this is then used to account for the percentage of the model's R^2 the predictor explains. Additionally, RWA allows for a comparison of individual predictor weights and a calculation to understand if one predictor's weight is significantly different from another (Johnson, 2004). The analysis performed here will test for the raw relative weight of both senior leadership and supervisor support, and the proportion of variance each explains in the overall model. Additionally, the weights of each will be compared in order to test if they are significantly different from one another. If the confidence interval does not include zero, the weights are statistically different from one another. The mediators will not be included in the analysis as the RWA accounts for the direct effects of each predictor variable separated from other predictor variables. As senior leadership and supervisor support operate through mediating variables, these are not included so the overall effect senior leadership and supervisor support have on the outcome variables can be considered. The control variables included in multiple mediation path analyses will be replicated however, in order to maintain consistency.

Table 7.1: Senior leadership – supervisor support relative weight analysis on job satisfaction

	Cross sectional models			Longitudinal models		
	2008	2009	2010	1	2	3
R^2	.91	.91	.89	.65	.76	.65
Senior leadership						
RRW	.33	.33	.31	.20	.25	.20
RRW as % of R^2	35.91	36.14	35.04	30.05	32.94	30.47
Supervisor support						
RRW	.33	.33	.34	.17	.23	.17
RRW as % of R^2	36.59	36.52	38.24	25.59	30.79	25.59
Confidence interval	[-.03, .04]	[-.04, .05]	[-.16, .08]	[-.08, .01]	[-.06, .03]	[-.07, .01]

Table 7.1 shows the RWA of senior leadership and supervisor support on job satisfaction. The R^2 figures show that these models account for 89 – 91 % of the overall variance in job satisfaction for cross sectional models, and between 65 – 76 % of the overall variance for the longitudinal models.

Senior leadership accounts for between 30.05% and 36.14% of the total variance explained in all models while supervisor support accounts for between 25.59% and 38.24%. Senior leadership accounts for slightly more of the variance explained than supervisor support

in all longitudinal models while supervisor support accounts for slightly more in the cross sectional models. However, the comparison of weights showed that the confidence interval included zero and as such are not statistically different from one another.

Table 7.2: Senior leadership – supervisor support relative weight analysis on patient satisfaction

	Cross sectional models			Longitudinal models				
	2008	2009	2010	1	2	3	4	5
R ²	.58	.58	.61	.62	.61	.57	.61	.61
Senior leadership								
RRW	.03	.03	.06	.06	.05	.04	.05	.06
RRW as % of R ²	4.62	5.57	10.58	9.81	7.66	6.34	8.52	9.62
Supervisor support								
RRW	.02	.03	.02	.02	.03	.02	.03	.01
RRW as % of R ²	2.97	5.89	2.55	2.98	4.96	3.07	4.65	1.67
Confidence interval	[-.05, .02]	[-.04, .04]	[-.10, -.01]*	[-.09, -.01]	[-.06, .03]	[-.06, .02]	[-.07, .01]	[-.10, -.03]

Table 7.2 shows the RWA of senior leadership and supervisor support on patient satisfaction. The R² figures show that these models account for 58 – 61 % of the overall variance in patient satisfaction for cross sectional models, and between 57 – 62 % of the overall variance for the longitudinal models.

Senior leadership accounts for between 4.62% and 10.58% of the total variance explained in all models while supervisor support accounts for between 1.67% and 5.89%. Senior leadership accounts for more of the variance explained than supervisor support in all models other than for the 2009 cross sectional model where supervisor support accounts for slightly more. A comparison of each predictor’s weight showed that the confidence interval included zero and as such are not statistically different from one another in all models other than for the 2010 cross sectional model in which senior leadership was significantly more important than supervisor support in predicting patient satisfaction.

Table 7.3: Senior leadership – supervisor support relative weight analysis on absenteeism

	Cross sectional models			Longitudinal models				
	2008	2009	2010	1	2	3	4	5
R ²	.42	.44	.47	.48	.42	.44	.47	.43
Senior leadership								
RRW	.06	0.05	.05	.07	.07	.05	.05	.08
RRW as % of R ²	15.26	10.60	10.38	13.80	16.86	12.23	10.58	18.28
Supervisor support								
RRW	.03	.02	.02	.03	.03	.02	.02	.03
RRW as % of R ²	6.23	5.38	4.04	5.56	6.86	5.03	5.09	6.50
Confidence interval	[-.08, .01]	[-.08, .01]	[-.06, -.01]*	[-.07, -.02]*	[-.08, -.02]*	[-.06, -.01]*	[-.06, -.00]*	[-.09, -.02]*

Table 7.3 shows the RWA of senior leadership and supervisor support on absenteeism. The R² figures show that these models account for 42 – 47 % of the overall variance in absenteeism for cross sectional models, and between 42 – 48 % of the overall variance for the longitudinal models.

Senior leadership accounts for between 10.38% and 18.28% of the total variance explained in all models while supervisor support accounts for between 4.04% and 6.86%. Senior leadership accounts for more of the variance explained than supervisor support in all models and a comparison of each predictor's weight showed that the confidence interval did not include zero for any longitudinal model as well as the 2010 cross sectional model, with senior leadership being significantly more important than supervisor support in predicting absenteeism.

Table 7.4: Senior leadership – supervisor support relative weight analysis on stability

	Cross sectional models			Longitudinal models				
	2008	2009	2010	1	2	3	4	5
R ²	.52	.46	.36	.35	.36	.45	.36	.35
Senior leadership								
RRW	.01	.01	.01	.01	.002	.01	.01	.003
RRW as % of R ²	1.40	1.75	1.42	2.37	.67	1.41	1.68	.89
Supervisor support								
RRW	.001	.002	.002	.002	.001	.001	.002	.003
RRW as % of R ²	0.34	0.55	0.74	.52	0.24	.27	.48	.88
Confidence interval	[-.02, .01]	[-.04, .01]	[-.01, .02]	[-.03, .00]	[-.01, .02]	[-.05, .01]	[-.03, .01]	[-.01, .03]

Table 7.4 shows the RWA of senior leadership and supervisor support on stability. The R² figures show that these models account for 36 – 52 % of the overall variance in stability for cross sectional models, and between 35 – 42 % of the overall variance for the longitudinal models.

Senior leadership accounts for between 0.67% and 2.37% of the total variance explained in all models while supervisor support accounts for between 0.24% and 0.88%. However, in these models, supervisor support was not significantly predictive of stability while senior leadership was. Senior leadership accounts for more of the variance explained than supervisor support in all models although a comparison of each predictor's weight showed that the confidence interval included zero in all models and as such were not significantly different from one another.

This concludes the reporting of the results. A discussion of these results and what they mean with respect to theory and practice is presented in the following chapter.

8 Discussion

This chapter describes the results of the research and assesses the extent to which the hypotheses were supported. It also describes the main findings and explores the theoretical and practical implications. The main findings will be summarised and then discussed with respect to the theoretical model presented in chapter 3. Limitations of the research and potential future research which may address any limitations and/or advance theory will then be discussed before the main contributions of the thesis are described and a final conclusion is offered.

In order to summarise this research, the main findings will be presented here. As many models were tested I will not discuss each analysis and significant relationship as this approach would be unlikely to provide a coherent, theoretically driven account. Rather, it is methodologically more appropriate to present those results characterised by strong trends, since such results reveal consistent patterns and therefore suggest a reliable finding. Where inconsistent, albeit significant, effects were found, these may be attributed to type I errors (failure to reject the null hypothesis, and accepting a relationship where there is none) and are not discussed. First I summarise the results for senior leadership and then for supervisory leadership as predictors of outcomes, mediated by the variables derived from the JD-R model.

8.1 Senior leadership

Senior leadership predicted job satisfaction in all models, and this effect was mediated by work-life balance in four of the six models tested, supporting hypothesis 1e. The cross sectional models showed that for two of the three models tested, senior leadership had a positive relationship with work-life balance and that work-life balance in turn was related to higher levels of job satisfaction. Cross sectional models cannot offer confirmation of the direction of any relationships found, but the longitudinal models revealed that senior leadership in one year predicted outcomes in subsequent years. Senior leadership was shown to significantly predict job satisfaction in subsequent years for two of the three longitudinal models tested. Senior leadership in 2008 significantly predicted work-life balance in 2009 and in turn this significantly predicted job satisfaction in 2010. Moreover, senior leadership in 2009 significantly predicted work-life balance in 2009 and this predicted job satisfaction in 2010. The implication of this is that the way senior leadership affects work-life balance has both an immediate and a distal effect on employee job satisfaction.

The next most consistent indirect effect was the path through engagement which was present in all models in the longitudinal analysis but not for any of the cross sectional analyses. Senior leadership in 2008 significantly predicted engagement in 2009 which in turn significantly predicted job satisfaction in 2010. In 2009, senior leadership was related to

engagement and engagement significantly predicted job satisfaction in 2010. Engagement was not measured in 2008 so only two models were tested. The fact that cross sectional analyses did not show any indirect effect suggests that this relationship plays out mainly over time. Senior leadership behaviours appear to be associated with engagement immediately and for subsequent years, but the relationship between engagement and job satisfaction takes some time to appear. This supports hypothesis 1b and introduces a potential moderating variable of time. Hypotheses 1a, 1c and 1d (relationships mediated by opportunity for involvement, job design and opportunity for involvement) were not supported with the same degree of consistency, and consequently, they were rejected.

Overall in six of the eight models tested, senior leadership predicted absenteeism. This relationship was mediated by both work pressure in five models, and opportunity for involvement in six of the eight models tested. For work pressure, this included two of the three cross sectional models and three of the five longitudinal models, while for opportunity for involvement, all cross sectional models were significant as well as three of the five longitudinal. The results were consistent with hypothesis 3d, which predicted that opportunity for involvement would negatively mediate the relationship between senior leadership and absenteeism. This is indeed what was found where senior leadership was positively associated with opportunity for involvement while opportunity for involvement was associated with lower levels of absenteeism, therefore showing an indirect effect of senior leadership on absenteeism, mediated by opportunity for involvement.

An indirect effect through work pressure was found, but this effect did not support hypothesis 3c. Although the first path of the effect was consistent with the hypothesis, with senior leadership associated with lower levels of work pressure, the second path between work pressure and absenteeism was negatively correlated, contrary to the relationship hypothesised, showing that high work pressure was associated with low levels of absenteeism. This result suggests that senior leadership has a positive (statistical) effect on absenteeism in addition to the negative (statistical) effect it has through opportunity for involvement described in the previous paragraph. An important point to note in the absenteeism analyses is that all indirect effects found (across all mediators) were relatively small, and the effect of senior leadership was marginal. Hypothesis 3a (that senior leadership would indirectly predict absenteeism through job design) was not supported, as only one model from the eight showed an indirect effect, while hypotheses 3b (through engagement) and 3e (through work-life balance) were not supported in any models.

Patient satisfaction was examined just in the acute sector of the NHS because patient satisfaction data were only available for acute trusts. Overall, senior leadership predicted patient

satisfaction in four of the eight models tested. However, a main effect is not necessary before looking for an indirect effect using the PROCESS analysis (Hayes, 2013) so even though four models showed no overall effect of senior leadership on the outcome, an indirect effect of senior leadership on absenteeism was found and this was mediated by work pressure. Moreover, this effect was one of the most consistent findings across all models tested. In every model an indirect effect of senior leadership on patient satisfaction was found and this was mediated by work pressure. It is worthwhile noting that this effect would not have been found if the causal steps model (Baron & Kenny, 1986) had been used. Senior leadership was associated with low work pressure and in turn, low work pressure was associated with high levels of patient satisfaction. Therefore hypothesis 2c was supported, that higher levels of senior leadership are associated with higher levels of patient satisfaction and this association is mediated by the negative relationship between senior leadership and work pressure.

A less consistent pattern was found in relation to opportunity for involvement, but nevertheless this did show some consistency, providing support for hypothesis 2d (that senior leadership would have an indirect effect on patient satisfaction, mediated by opportunity for involvement). For the longitudinal analyses particularly, three of the five models tested showed an indirect effect where senior leadership in one year was related to high levels of opportunity for involvement the following year, and that opportunity for involvement in turn was related to high levels of patient satisfaction the following year. This pattern existed for both 'three year' models but in the 'two year' models (where senior leadership and the mediators were included for the same year, while the outcome was measured for the following year) only one model demonstrated an indirect effect. This suggests that there may be a distal effect more so than an immediate effect (although one cross sectional model did have an indirect effect) and that this distal effect is more pronounced after 2 years. Hypotheses 2a (through job design), 2b (through engagement) and 2e (through work-life balance) were not supported with any consistency.

Stability, defined as the percentage of staff that remained employed from the previous year, was also analysed on the acute trust data alone. This was due to the fact that there was extensive organisational change in the National Health Service during the time of data collection with many organisations undergoing significant restructure. Inclusion of all trust types in the analysis would reflect this politically influenced organisational change, and to separate the influence of leadership on organisational stability would be difficult. The acute trusts were least affected by these changes however, and so could be used in the models. Overall, senior leadership predicted stability in only one of the eight models tested. However, similar to patient satisfaction, an indirect effect through work pressure was found in every model tested. Again, this effect would not have been found using the causal steps method (Baron & Kenny, 1986). Senior leadership was associated with significantly lower levels of

work pressure, and high work pressure was associated with low levels of stability. Therefore, hypothesis 4c was supported. In summary, senior leadership was found to have an indirect effect on stability and this was mediated through work pressure.

The next most consistent effect was through engagement where an indirect effect was found for every longitudinal model, but was not found in the cross sectional models. The direction of this effect was unexpected, with senior leadership being associated with an increase in engagement, but engagement being negatively related to stability in all models. This does not support hypothesis 4b but shows a negative indirect effect of senior leadership on stability, mediated through engagement. Hypotheses 4a (through job design), 4d (through opportunity for involvement) and 4e (through work-life balance) were not supported with any consistency.

8.1.1.1 Overall findings for senior leadership

A summary of the senior leadership findings is useful at this point as the number of results presented may lead to confusion about the main findings. Overall then, senior leadership had a consistent, positive effect on *job satisfaction* through work-life balance, and engagement (longitudinally only); a consistent negative effect on *absenteeism* through opportunity for involvement and a consistent positive effect on *absenteeism* through work pressure; a consistent positive effect on *patient satisfaction* through work pressure, and opportunity for involvement; a consistent positive effect on *stability* through work pressure, and a consistent negative effect on *stability* through engagement (longitudinally only).

8.2 Supervisor support

Overall, supervisor support predicted job satisfaction in five of the six models tested. As with senior leadership, supervisor support had an indirect effect on job satisfaction mediated by work-life balance. This indirect effect was found in four of the six models tested; two of three cross sectional models and two of three longitudinal models. Supervisor support was significantly related with work-life balance, and work-life balance was significantly related with job satisfaction, supporting hypothesis 5e.

The analysis of the effects of supervisor support on absenteeism revealed that only one of the models tested indicated an overall effect of supervisor support on absenteeism, but a consistent indirect effect through opportunity for involvement was found. This was mainly apparent in the cross sectional models where for every year an indirect effect was found. In the longitudinal analyses only two of the five models showed this indirect effect. Supervisor support was associated with high opportunity for involvement and opportunity for involvement in turn was associated with lower levels of absenteeism. Therefore hypothesis 7d was supported. As the effect was more consistent in the cross sectional models this suggests a more

immediate relationship, although the presence of two longitudinal effects suggests that this may also operate over time, to a lesser extent. It is important to note that the size of the indirect effects was relatively small, as with senior leadership, and all indirect effects found were marginal. No other mediators showed consistent effects and work-life balance and engagement showed no effects at all. Therefore hypotheses 7a (through job design), 7b (through engagement), 7c (through work pressure) and 7e (through work-life balance) were not supported.

Overall supervisor support was not related to patient satisfaction in any model. However, in four of the eight models tested, supervisor support had an indirect effect on patient satisfaction mediated by opportunity for involvement. Three of these were from the five longitudinal analyses suggesting that this effect is stronger over time. Supervisor support was significantly related with opportunity for involvement, while opportunity for involvement was significantly related with patient satisfaction. Therefore support for hypothesis 6d was found, showing an indirect effect of supervisor support on patient satisfaction through opportunity for involvement. The path through job design only showed an effect in three of the eight models and work-life balance only showed one. Neither engagement nor work pressure showed any effect across any model. This indicates that hypotheses 6a (through job design), 6b (through engagement), 6c (through work pressure) and 6e (through work-life balance) were not supported.

The models testing the effects of supervisor support on stability showed the least consistent findings across all outcomes. No overall effect was found in any model, and no indirect effect of any mediator was found consistently (for at least half of the models tested). This suggests that no consistent relationship can be assumed. With engagement, two of the four longitudinal models tested showed an indirect effect, but this was not present in the cross sectional models, meaning that overall, only two of the six (engagement was not measured in 2008) models showed an effect. As this replicates the overall picture from senior leadership, albeit to a lesser extent, there may be some merit in assuming support for hypothesis 8b (supervisor support will have an indirect effect on stability mediated by engagement), although this should be interpreted cautiously given the inconsistency of the presence of an effect. No other mediation path produced consistent effects. This means hypothesis 8a (through job design), 8c (through work pressure), 8d (through opportunity for involvement) and 8e (through work-life balance) were not supported.

8.2.1.1 Overall findings for supervisor support

At this point a summary of the main supervisor support findings is useful, given the number of analyses presented. Overall then, supervisor support had a consistent, positive effect

on *job satisfaction* through work-life balance; a consistent negative effect on *absenteeism* through opportunity for involvement; and a consistent positive effect on *patient satisfaction* through opportunity for involvement.

8.3 Relative Weight Analysis

The results of the RWA (relative weight analysis) indicated that senior leadership generally accounted for more of the variance than supervisor support when predicting the outcome variables in each model.

For job satisfaction the models explained a large amount of the variance (between 65% and 91%) although the effect of senior leadership was not statistically greater than that of supervisor support. It is important to understand that with the RWA, if predictor 'A' accounts for more variance than predictor 'B', this does not suggest that predictor 'B' is unimportant. In fact, for the cross sectional models, supervisor support accounted for more of the variance than senior leadership, although the difference was not significant. This changed when looking at the longitudinal models where senior leadership accounted for more of the variance. This suggests that senior leadership may be more predictive over a longer period of time, whereas supervisor support may have immediate predictive ability. However, this conclusion must be interpreted with the understanding that the confidence intervals used to test for a difference between the relative weights of both predictors included zero, indicating that one was not significantly larger than another. This therefore shows that both senior leadership and supervisor support are important in predicting job satisfaction.

The models in the patient satisfaction analyses explained between 57% and 62% of the variance. These models showed no statistical difference between the relative importance of senior leadership and supervisor support in predicting patient satisfaction, except for the 2010 cross sectional analysis which showed that senior leadership accounted for statistically more of the variance than supervisor support. This suggests that both senior leadership and supervisor support are important in predicting patient satisfaction. Additionally, it is interesting to note that senior leadership was found to account for a greater percentage of the variance than supervisor support in all models, other than the 2009 cross sectional model, although the difference between the variance explained was not significant.

The relative weight analyses for absenteeism explained between 42% and 48% of the variance. Senior leadership was found to account for significantly more of the variance than supervisor support in six of the eight models tested. Only the 2008 and 2009 cross sectional models showed no statistical difference although senior leadership still accounted for a greater percentage of the model variance. This suggests that senior leadership is a more important

factor than supervisor support (overall) in predicting absenteeism. This is particularly salient over time, where every model showed senior leadership as significantly more important. Similarly to the conclusion from job satisfaction analyses, this suggests that senior leadership may be more predictive over a longer period of time, whereas supervisor support may have immediate predictive ability.

The relative weight analyses for the stability models explained between 35% and 52% of the variance in stability. The relative importance of senior leadership and supervisor support did not differ significantly, suggesting that both senior leadership and supervisor support are important in predicting stability.

8.4 Discussion of findings

We now turn to discuss the implications and possible explanations for the findings in this research. The theoretical implications will be addressed first, followed by the practical implications.

8.4.1 Theoretical implications

Theoretically, the results of the analysis on job satisfaction support the predictions made by the job demands-resources (JD-R) model. Broadly speaking, the JD-R model indicates that job demands can lead to stress but these demands can be mitigated by job resources. The finding that senior leadership had an indirect effect on job satisfaction through work-life balance and engagement supports the idea that work-life balance and job engagement are resources which may improve job satisfaction. This finding was replicated, to a lesser extent through supervisor support, where work-life balance was found to mediate the relationship with job satisfaction, further supporting the JD-R model.

In the absenteeism models, work pressure was found to mediate an indirect effect of senior leadership. Work pressure can be defined as a job demand within the JD-R framework and increased job demands are predicted to lead to work strain. High work pressure therefore is predicted to increase these job demands and this was predicted to be associated with an increase in absenteeism. This was not supported in these models however, where a decrease in work pressure was associated with an increase in absenteeism, although the size of the effect was small. The reason for this is unclear although it is possible that this is capturing an aspect of presenteeism rather than absenteeism.

Presenteeism describes a situation where staff attend work when it may be better for them to be absent, such as when they are ill (Johns, 2008). Johns (2008) suggests that certain work environments will encourage staff to attend work when ill, particularly environments

where people feel others depend on them at work. Indeed, Aronsson, Gustafsson, and Dallner (2000) found that people who work in environments with vulnerable clients, such as nurses or nursing home aides, are more likely to remain at work despite being ill. Black, (2012) notes that presenteeism in the NHS is an important issue, not least because the Boorman review (2009) suggested that presenteeism is greater in staff whose managers exert pressure on them to return from absence. The environment of hospital work is characterised by high demand and involves work with vulnerable clients (patients). Boorman (2009) notes that 71% of nurses and midwives reported presenteeism compared with 45% of comparable staff in corporate services. It is certainly possible that this finding therefore reflects presenteeism. If this is true, this would fit with the JD-R theory, as the job-demand pressure is likely to lead to the less desirable outcome of presenteeism. The important point to draw for theorising is to recognise that we should not automatically assume that the relationships between variables in our models will be the same across work environments. Although the relationship between work pressure and absenteeism is likely to be positive in most work environments, when people work in healthcare settings, perhaps motivated by compassion, when they see patients suffering and their colleagues under high work pressure, they may be more likely, rather than less likely, to attend work when they themselves are under pressure.

It may also be that certain variables moderate the relationships found in this study. With respect to the work pressure – absenteeism finding, it is possible that this relationship may be moderated by engagement. Engaged employees are likely to view work pressure as a challenge, while disengaged employees may view work pressure as a strain, the corollary of each is that work pressure reduces absenteeism among engaged employees but increases it among those who are disengaged.

Consistent with other outcomes, senior leadership was related to work pressure, while supervisor support was not. Poor senior leadership ratings were associated with high work pressure which may reflect the fact that (some) senior leaders make decisions about work demands and resources that are less informed by what is happening at the front line of their organisations. As a consequence, they may not realise that strategic decisions that they make and implement will be likely to have detrimental effects on their staff. Certainly in the context of health services in the NHS, there is a perception that senior leaders are under great pressure from politicians to improve productivity and reduce costs, but these efforts may come with the costs of high work pressure experienced by front line staff. This may well, in turn, translate into poorer patient care. Conversely, well-informed, compassionate senior leaders are likely to appreciate the impact of decisions they make at the strategic level, and take into consideration the effects of these decisions on the pressure placed on their staff. Theorising that takes into account the differential impacts of leadership at different organisational levels is therefore

important, and should be incorporated into future theory development in both the leadership and stress at work domains.

The variable ‘opportunity for involvement’ was also shown to mediate the relationship between senior leadership and absenteeism. Opportunity for involvement can be described as a resource within the JD-R framework, where an increase in the opportunity to influence one’s work can introduce greater potential to influence strategies for managing work demands in a productive way, thereby reducing potential strain. As opportunity for involvement was associated with a reduction in absenteeism, this supports this proposition of the JD-R model. Both senior leadership and supervisor support had an indirect effect on absenteeism through opportunity for involvement. I will return to this point when discussing the practical implications of this research.

The findings from this research in relation to the patient satisfaction models also theoretically supported the JD-R model. Work pressure was found to mediate an indirect effect of senior leadership, where work pressure was associated with lower levels of patient satisfaction. This is consistent with the theory, which defines work pressure as a job demand and predicts that this will be associated with low levels of patient satisfaction. The theory suggests that as work pressure increases, staff will have less time to devote to individual patient needs and consequently patient experience will be poorer. This proposition was supported in the current research, where low work pressure was associated with high levels of patient satisfaction, providing support for this theory. Supervisor support was not associated with work pressure however, consistent with other outcomes.

Opportunity for involvement is described as a resource within the JD-R framework and was also found to mediate the relationship between both senior leadership and supervisor support, and patient satisfaction. Based on the ‘job resource’ component of the JD-R model, opportunity for involvement is thought to provide an opportunity to influence one’s working practices and this is hypothesised to allow staff to manage workloads to increase effectiveness and meet patient needs, thereby ensuring a better quality patient experience. As opportunity for involvement was associated with high levels of patient satisfaction, this supports the JD-R model. Again, senior leadership was associated with work pressure while senior leadership and supervisor support were associated with opportunity for involvement, replicating the pattern found for absenteeism.

The models which tested the relationships between leadership and stability were perhaps the most interesting theoretically, as unexpected relationships were found. Senior leadership was found to have an indirect effect on stability through work pressure and engagement. According to the JD-R model, work pressure should act as a job demand and,

increases in this should be associated with less desirable outcomes such as a reduction in stability, while engagement would be seen as a job resource, and increases in job resources should be associated with more desirable outcomes. The job demand part of the theory was supported through work pressure. Senior leadership had an indirect effect and this effect was mediated through work pressure. Senior leadership was (as has been seen in other models) negatively related with work pressure, while work pressure was negatively related with stability. Therefore an increase in ratings of senior leadership was associated with a decrease in work pressure, which in turn was associated with an increase in stability. This was found for every model tested and produced a highly consistent finding, thereby supporting the JD-R model.

Senior leadership was also found to have an indirect effect on stability through engagement. However, the direction of this effect was opposite to that predicted. Senior leadership was positively associated with engagement (consistent with other models) but engagement was negatively associated with stability. The JD-R model views engagement as a resource, which has the potential to mitigate the negative effects of job strain. Where job demands are high, the potential for job strain is increased, but having a high level of job engagement is likely to lead to an increase in stability through intrinsic or extrinsic motivational processes. The intrinsic motivational processes of engagement are suggested to be those that foster individual growth, learning and development while extrinsic motivational processes enable employees to meet work goals (Schaufeli & Bakker, 2004).

Stability is the inverse of turnover. The literature on turnover suggests that a negative relationship between engagement and turnover (intentions) exists (e.g. Harter et al., 2002), opposite to that found here. One explanation for this is that engagement has more effects on stability or intention to leave than originally thought. While it is clear that in many cases work engagement is associated with a reduction in turnover it is also possible that work engagement can negatively influence stability. We know that one reason engagement is a valuable resource (as conceptualised by the JD-R model) is that staff who are highly engaged with their roles are likely to be intrinsically motivated to advance their individual growth, learning and development (Schaufeli & Bakker, 2004). This drive for self-improvement may lead people to seek career opportunities in other departments or organisations if they feel they have mastered their current role, or believe they can meet the job criteria of more advanced roles. This process would then be associated with a decrease in stability.

It is possible then, that engagement exerts both a positive and negative influence on turnover/stability. The emotional effect on the individual in both instances should be a positive one, and as we know, engagement is correlated with job satisfaction (e.g. Harter et al., 2002).

The fact that this relationship was found only for the longitudinal analyses further supports this explanation, as if this result is a consequence of growth, learning and development, then this effect would take time to materialise. Further research is needed to explore these relationships in more depth, particularly the use of qualitative studies of individuals' career paths over time and the reasons for transitions they make. The findings also have significant implications for theory, both in terms of the JD-R model and theories of engagement. It is important to consider in future development of theory in both these areas, how engagement may lead to dissatisfaction with one's current work role, if, as a result of the growth and development that is consequent on high levels of engagement, that role no longer satisfies the individual's needs for competence or autonomy (for example).

This interpretation is strengthened by findings in relation to opportunity for involvement. Opportunity for involvement was not found to mediate the effect of senior leadership on stability with any consistency; however in two of the longitudinal analyses an indirect effect was found. While this is insufficient on its own to enable us to conclude that this reflects a real phenomenon, coupled with the engagement data, it may add weight to this explanation. This is because the direction of the opportunity for involvement effect was also negative, where opportunity for involvement was associated with less stability. If high levels of engagement are associated with a desire to improve one's development, then an increase in opportunity to involve oneself in decisions about working practices, may lead to individuals shaping their work to allow them to develop. Such development may ultimately lead the individual to be dissatisfied with a role that has reached its limits in terms of what it can offer in meeting needs for mastery, competence and autonomy. That high opportunity for involvement was found to negatively mediate this relationship in the longitudinal models, lends supports to this interpretation, even though this finding was less consistent.

Supervisor support was not found to have any consistent influence on stability. No total effects were found in any model and no indirect effects were found which accounted for at least half of the models tested. However, there were two longitudinal models for which engagement was found to negatively mediate a relationship between supervisor support and stability, and two longitudinal models where opportunity for involvement also negatively mediated this relationship. This is consistent with the findings for senior leadership, albeit to a lesser extent. Taken on its own we could dismiss this as a chance finding, however taken with the findings from senior leadership, it suggests a reliable finding. The degree of consistency across the two levels of leadership and the fact that the relationships were opposite to the predicted directions, suggests a need to carefully consider the theoretical implications. This would clarify boundary conditions for the JD-R theory by specifying the conditions where job-resources act in a way that lead to outcomes which are traditionally thought of as less desirable for the organisation as

a whole (turnover). However, the model may need to take into account that turnover might be a positive move for an individual who seeks a role that better satisfies needs (for example) for mastery or autonomy. This finding therefore suggests the value of future research to further clarify how these findings might help to strengthen the JD-R theory.

A final point to make is that in some of the models, in particular the job satisfaction and absenteeism models, a direct effect of senior leadership was found although largely this was not present in the supervisor support models. It is possible that further mediators could account for this unexplained variance and that the way senior leadership operates is captured more completely by additional processes. It may also be that there are different conceptual frameworks which address this, for example the challenge-hindrance stress model (Cavanaugh, Boswell, Roehling, & Boudreau, 2000). In this model the individual's primary appraisal of stressors leads to conceptualisation as either challenges (engaging stimuli) or hindrances which lead to stress (Lepine, Podsakoff, & Lepine, 2005). This may also account for the unexpected work pressure – absenteeism finding, as discussed previously. In this case, senior leadership may influence employees' primary appraisal of stressors as 'challenges' or 'hindrances', thus leading to engagement or fatigue. The suggestion here then, is that it is possible that the while the JD-R model captures the relationships between leadership and outcomes it may be that senior leadership operates in a way which is better captured by other theoretical frameworks. Of course, it may be that the JD-R model is capable of incorporating the full spectrum of processes which underpin the leadership – outcome relationships, but consideration of both additional mediators as well as other theoretical frameworks merits attention.

We now turn to explore the practical implications of the findings.

8.4.2 Practical implications

As well as adding to the theoretical literature, important practical lessons can be drawn from this research. Leaders in healthcare organisations can use the results of this study to help them make decisions which may support their workforce, improving outcomes. In this section I describe key practical implications that can be drawn from these results.

The first of these implications concerns the relationship between senior leaders and employee work pressure. The findings suggest that senior leaders play a significant role in levels of work pressure for staff, much more so than do immediate supervisors. The means by which they affect work pressure are unclear, but it may well be that strategic decisions about staffing levels, work flow and targets, all play a role. The fact that senior leaders do appear to have such a significant influence on work pressure may be surprising to many leaders who assume that supervisors play the key role here because of their local knowledge and influence.

An important practical implication is that senior leaders should consider carefully the impact of their decisions on the work pressure likely to be experienced by front line staff. It may well be that, whatever the attempts of supervisors to ameliorate the detrimental effects of strategic decisions on front line staff, the impact of such decisions may be too great for them to substantially moderate them. This implication is particularly important, as we have seen the detrimental effects of work pressure on healthcare outcomes. High levels of work pressure were associated with lower patient satisfaction as well as an increase in turnover. This is very likely a result of high demands preventing adequate care and attention being delivered to patients. As discussed in the theoretical implications, the fact that absenteeism decreased rather than increased, as was hypothesised, is important. Staff working in a healthcare context may be motivated by compassion for their patients, as well as for their colleagues who are trying to deliver high quality care under high work pressure environments. By attending work rather than taking time off to recuperate when they themselves experience high strain, the sustained experience of strain will almost certainly have a much greater detrimental effect, which is highlighted by the increase in turnover. These outcomes are plausibly connected and have a critical message for senior leaders in healthcare; high work pressure leaves staff under resourced and unable to deliver high quality care, having a detrimental effect on patient satisfaction. Motivated by a desire to increase patient experience by delivering compassionate care and an understanding that colleagues are under resourced, staff do not feel able to take time off when needed. This sustained pressure ultimately leads to an increase in the number of staff leaving, very likely caused by a sustained high pressure environment. It is vitally important then, that senior leaders are made aware of the potential impact of their decisions, and act accordingly.

The findings also suggest that senior leaders significantly influence employee engagement. The processes by which they exert this influence are unclear, but work on engagement shows that employee motivation is influenced by a number of factors including psychological meaningfulness through job characteristics, rewards and recognition for the work people do, organisational support (including social and supervisor support), and organisational justice (Saks, 2006). The decisions senior leaders take relating to job characteristics, opportunities for learning, and organisational systems of support, may influence subsequent staff engagement. As with the findings relating to work pressure, the fact that senior leadership was shown to have such a significant influence on engagement may come as a surprise to many leaders, as often the consensus is that engagement is predominantly influenced by immediate supervisors (e.g. Bakker & Demerouti, 2007). Indeed, senior leadership was consistently related to engagement, while supervisor support occasionally was not. Again, it may be that the decisions taken by senior leaders can have such a significant impact on organisational systems,

that efforts by supervisors to alleviate the detrimental effects of these decisions are ineffective. The corollary is that effective strategies put in place by senior leaders enhance supervisor efforts to increase engagement. This suggests that senior leaders should be aware of the influence their decisions have on staff engagement through the systems they implement, but also through the way their decisions support supervisors and their subsequent influence on engagement. Additionally, the evidence presented in this research shows a longitudinal effect of engagement on both job satisfaction and turnover. This suggests that senior leaders should be concerned with a sustained focus on factors which increase employee engagement, rather than implementing any 'quick fix'. The effects of a prolonged focus on engagement have been seen at Wrightington, Wigan and Leigh NHS Foundation Trust where a vision for sustained staff engagement was implemented (NHS Employers, 2014). The results of the NHS staff survey (the same survey used for this research) were transformed from below average in 2011, to being vastly improved the following year and improved again the year after that. The improvements in the staff survey data corresponded with improvements in staff wellbeing outcomes, including reduced absenteeism as well as a reduction in temporary staffing needs. It is likely that the absenteeism reduction here is related to increased engagement rather than the increase in work pressure described above, although further research would be required to confirm this. It would be interesting to analyse the relationships between work pressure, engagement, absenteeism and turnover during this time in a similar manner to the research done for this thesis. The practical implication from this is that senior leaders should maintain a constant focus on factors which increase staff engagement.

Senior leaders should also be concerned with increasing the opportunities staff have to influence their own work, based on the results here. Lower absenteeism as well as better patient satisfaction was found where opportunity for involvement was high. Moreover, both senior leadership and supervisor support were found to have indirect effects on both outcomes through opportunity for involvement. The way in which senior leadership and supervisor support differentially influence opportunity for involvement is not clear from these results, but arguably they may be connected. Senior leaders should have an effect on opportunity for involvement by making decisions which affect organisational systems and structures, including job characteristics. By paying attention to staff who are at the front line of services, and allowing them the autonomy to make decisions they feel will help their work, improvement in the way patients are cared for can be made, improving patient experience, but also decreasing work demands by increasing work efficiency. This decrease in work demand as a result of being able to implement helpful work practices should lead to the reduction in absenteeism found here. Therefore, an important focus for senior leaders should be to concentrate on decisions which influence opportunity for (effective) involvement. Interestingly, in the case study described

above (Wrightington, Wigan & Leigh: (NHS Employers, 2014)) an important feature of the engagement strategy was bringing senior managers into contact with front line staff, which allowed staff to make recommendations for improvements in working practices.

In addition, supervisors should also be concerned with increasing opportunity for involvement. While senior leaders make decisions affecting organisational structures which allow autonomous decision making, supervisors are likely to have the local knowledge of their staff and systems that enables them to influence the way their team works as a whole. Moreover, it is likely that they will be in contact with both front line staff as well as with senior management, therefore playing an important communication role. Their influence on opportunity for involvement may be a result of both relaying workforce advice about potential innovations for senior management consideration, as well as encouraging 'buy in' among staff to new ways of working set from senior management decisions. Indeed, an effective supervisor in this position may have a positive spiralling effect on the communication between senior management and front line staff. What is clear is that both senior leaders and supervisors should focus on increasing staff opportunities for involvement.

The findings imply that senior leaders should also be aware that the decisions they make may affect staff work-life balance. Again, senior leaders as well as supervisors appeared to influence work-life balance, suggesting that both levels of leadership should pay attention to how their decisions and behaviours can affect this. With similar reasoning to that made regarding opportunity for involvement, the influence of senior leadership on work life balance is likely to stem from decisions they make affecting the organisational systems and structures, and how these support staff to balance demands from work and life outside of work. The proposal here again is that supervisors have a personal understanding of their staff, as well as the knowledge about systems of support available from senior leader decisions, therefore being able to support employees in their work-life balance. The effects of work-life balance on staff satisfaction were significant, which presents an important implication for leaders at all levels to take into consideration when making decisions.

A final, but perhaps most salient point to make, is that, based on these results, the impact senior leadership has on front line staff generally is much greater than estimated. The dominant discourse has been about the influence of immediate supervisors in healthcare, with critics arguing that the responsibilities of front line managers identify them as dominant in influencing organisational outcomes (Hutchinson & Purcell, 2010; Purcell & Hutchinson, 2007). Moreover, the influence of front line managers has been suggested as being the key component in delivering human resource policy and can shield staff from poor senior management decisions and organisational policy (Hutchinson & Purcell, 2010; Maertz,

Griffeth, Campbell, & Allen, 2007). The results presented here however do not support these arguments and suggest the contrary – that the impact of senior leadership on front line staff is equally, if not more important than the impact immediate supervisors have. Indeed, it may be that immediate supervisors are powerless to mitigate the detrimental effects of poor senior management decisions, although further research would be needed to tease out specific processes and relationships. That is not to say that supervisors are redundant in their role. The results clearly show the beneficial effect of positive supervisor support. However, a key message of this research is that senior leadership is vital to staff well-being and subsequent organisational performance in healthcare, and therefore should warrant (at least) the same level of attention that has been given to the role immediate managers play.

8.5 Limitations

It is important to acknowledge the limitations of this research. The NHS staff survey produces self-reported data and therefore the predictors, mediators and job satisfaction data are all subject to common method variance, and are consequently vulnerable to inflated relationships (Podsakoff et al., 2003). Job satisfaction was split into two data files for the cross sectional analyses in order to reduce the effect of this, and the inclusion of longitudinal analyses further reduced this effect. However, even though longitudinal analyses were performed, some respondents, inevitably, would have been the same across years.

In addition to splitting the job satisfaction data file and including longitudinal analyses, mediation analyses were performed which are less susceptible to common method biases therefore mitigating this issue to some extent. Moreover, relationships found with job satisfaction were generally consistent with those findings based on the more objective (different source) outcomes measures of absenteeism, stability and patient satisfaction.

Another limitation is that it is not possible to know whether differences in the strength of senior leadership and supervisory support variables with mediators and outcomes are due to measurement error. It could be that senior leadership emerged as a more powerful predictor because the measure was psychometrically more robust than the supervisor support measure. The fact that the supervisor support measure was drawn from an established scale (Haynes et al., 1999) whereas the senior leadership measure was developed from a combination of existing items in the national staff survey suggests this may not be the case. Nevertheless, it is difficult to discount entirely, that some findings might have been due to measurement artefacts.

The exclusive use of quantitative data in this research is also a limitation. Although the use of quantitative data from such a large data set allows for exploration of a substantial number of theoretically predicted relationships, in-depth analysis to understand the mechanisms

underpinning those relationships would be valuable. The different processes which may drive the relationships between senior leadership and engagement or supervisor support and engagement, for example, have been postulated, but qualitative data could help to explicate the processes and mechanisms involved

In addition to the use of exclusively quantitative methods, all the data was secondary rather than based on measures developed specifically to reflect the key theoretical constructs. The use of secondary data means that specific theoretical questions may be difficult to answer where relevant data is not available, or perhaps does not reflect the theoretical construct under investigation with the best possible fidelity. Although efforts were made to ensure the senior leadership scale had high levels of validity, for example, it is possible that some aspects of senior leadership were not faithfully captured. However, most of the scales used were based on previously tested and validated measures in the existing literature, and based on well-established theoretical constructs, as part of the JD-R model. As the scales were designed and developed in this way we can be more confident of their appropriateness. Nevertheless, some measures might have been better designed had this research not relied on secondary data.

The inclusion of an established leadership scale would have added to the robustness of the research. The Multifactor Leadership Questionnaire scale (Bass & Avolio, 1997), for example, is a well-established leadership scale, supported by a vast amount of research. Including this, or other established leadership scales in the research, would have allowed a comparison of the two leadership scales (senior leadership and supervisor support) with an established leadership scale. Given the size of the data set and its strengths in terms of links to outcomes, a small study investigating the correlations between these scales and more established scales might be useful in the future.

With these limitations noted, it is also useful to highlight some of the strengths of this work. The data and its analysis comprise a large scale study across many of the provider organisations that make up the English NHS. A large number of respondents are included each year (around 250,000), and the opportunity to draw data from so many respondents across so many organisations is rare. Using such a data set in this way, has provided a rich contribution to our understanding of whether and how senior leadership and supervisor support influence outcomes in health care organisations.

Additionally, the use of longitudinal data in studying leadership relationships with organisational outcomes is relatively rare, particularly with a data set as large and inclusive as this. Some studies in healthcare have investigated the relationships between leadership predictors and outcomes from data taken at a single point in time, but the inclusion of data collected over each of three consecutive years is unique in the healthcare domain. This is a

major strength of this research and has provided evidence of how senior leadership and supervisor support appear to have both immediate and distal temporal effects on employee well-being, organisational processes, and subsequent organisational outcomes.

Finally, the inclusion of objective data in the analysis is particularly valuable. In addition to self-reported data from NHS staff, the study employed more objective data on staff outcomes absenteeism and turnover, both of which have important relationships with financial performance of NHS organisations (Lord Carter of Coles, 2015). Furthermore, the inclusion of patient satisfaction data adds an important perspective from the service receiver.

8.6 Future research

This work offers important theoretical and practical insights. In order to build on these insights recommendations for future research are suggested.

The finding that engagement was negatively related with stability is interesting as it was not expected. Previous research suggests that engagement mediates the link between job resources and turnover intentions (e.g. Schaufeli & Bakker, 2004), but the research here shows a positive link between engagement and turnover. This relationship requires further investigation because it has significant theoretical implications. For example, I suggested earlier that high levels of engagement without the prospect of career progression within the organisation may result in staff seeking that progression elsewhere. Future research could investigate this and other factors which may account for the unexpected relationship between engagement and stability found here.

Likewise, the relationship between work pressure and absenteeism was unexpected and future research could seek to address any contextual factors which could account for this. An investigation into presenteeism in healthcare associated with work pressure may show if the discussion around compassionate health care workers under high stress environments, leading to an increase in presenteeism is valid. Furthermore, the link between presenteeism and stability could be assessed to see whether an increase in work pressure does in fact lead to an increase in presenteeism in the short term, but eventually to an increase in turnover, as suggested.

This study gives an insight into the mechanisms by which leaders influence organisational outcomes, but the mechanisms by which leaders influence the mediator variables (engagement, work pressure etc.) is also important to understand. As alluded to earlier, qualitative research might advance our understanding of how senior leaders influence those mediator variables. Moreover, it is probable that the mediating variables included here are not the only variables which leaders influence, and which affect these important outcomes, so it would be useful to explore other aspects of work (mediators with outcomes) that theory

suggests leaders might affect. Furthermore, the use of qualitative research would provide an opportunity to investigate further the differences between the effects of senior leadership and supervisor support, and the processes by which they influence organisational characteristics and employee well-being. Particularly relevant would be to understand how senior leaders influence work pressure, as the results suggested that senior leaders have more influence on this factor than do supervisors. Understanding how senior leaders affect pressure is a critical question requiring further study.

The relationships found here may also be influenced by moderating variables. The JD-R model proposes that job resources buffer the negative effects of job demands, and it is possible that this is caused by the moderating influence of other variables. For example, the relationship between work pressure and absenteeism may be moderated by engagement (as discussed in the theoretical implications). Work pressure may be perceived as a challenge to overcome by engaged employees, while disengaged employees may view work pressure as a strain. Absenteeism due to stress caused by work pressure would therefore be reduced in engaged employees but increased in disengaged workers. Further possible moderating variables may be in operation and future research could examine this possibility.

Another avenue for future research would be to look for possible curvilinear (quadratic) relationships. Taking the work pressure – absenteeism relationship example again, it is plausible that a certain level of work pressure is beneficial to the work force by providing challenges to address and subsequently increasing engagement, but once a critical level of pressure is experienced, the challenge may be too difficult to meet and result in an increase in stress. Again, a small amount of work pressure may decrease absenteeism by increasing engagement, while after a certain level, absenteeism may increase as a result of work-stress. A quadratic regression approach to explore curvilinear relationships could be taken in future research.

Additionally, the aggregation of all variables to the organisational level was theoretically justified to address the questions asked in this thesis. However, understanding the effect senior leadership has on individuals is also important. Senior leadership is easily conceptualised at the organisational level, but the effect of decisions senior leaders make on individuals, and subsequently on both individual and organisational level outcomes, could be an area for future investigation through multilevel analysis.

Other approaches to explore could re-examine the longitudinal relationships, but controlling for the level of the outcome variable in the model at the first stage as this may provide further insight into the extent to which senior leaders have an effect on organisational outcomes. This could also be done with high versus low performing hospitals, or to examine any patterns which emerge more generally as a result of making this distinction. It may be that

specific patterns are revealed in high versus low performing hospitals in relation to senior leadership and supervisor support and this would be an interesting avenue to explore in the future.

Finally, and based on the longitudinal findings presented here, future research could look at the strength of these relationships over time as a function of the stability of senior leaders. It is known that senior leaders on average, have a tenure of less than three years (Janjua, 2014). Given that senior leaders had an indirect effect on the outcomes used here over both one and two years, it is likely that senior leadership tenure will also moderate these relationships.

8.7 Main contributions

Overall this research contributes to theory and practice in a number of ways. The key research question was “to what extent and how does leadership influence organisational outcomes in healthcare?”, and this was investigated in a large, multi-organisation, longitudinal study. The size of the data set as well as the systematic analysis of the data offers some confidence in the results, and presents a thorough analysis of the research question. A key contribution therefore is the description of the links between leadership, potential mediating variables and outcomes in healthcare.

Additionally, the finding that senior leadership plays an important role and may, in fact, be more important than supervisor support in relation to key variables and associated outcomes, is important. Senior leadership has been neglected in the majority of the research looking at the relationship between leadership and outcomes in healthcare, and this research presents strong evidence that a large gap exists which warrants more attention. While the overall picture from this work is that both senior leadership and supervisor support have important roles to play in predicting work characteristics and outcomes, a key difference between senior leadership and supervisor support in NHS organisations is that senior leadership was significantly related to work pressure, while supervisor support was not. This indicates that the paths by which each level of leadership exerts influence on organisational factors may be different, further highlighting the need for the inclusion of different leadership levels in research designs. This has both important theoretical and practical implications.

A second contribution relates to the mechanisms which mediated the relationships as suggested by the JD-R model. This research suggested different mechanisms by which senior leadership and supervisor support affect outcomes, demonstrating that these relationships may be subject to important boundary conditions which should be incorporated into the JD-R theory. Specifically, job resources which increase engagement may lead to an increase in turnover and

associated financial costs, as well as loss of organisational knowledge, if sufficient opportunity for self or career progression is not in place. Furthermore, the negative demand of high work pressure may lead to perceived gains by reducing absenteeism when the work context is characterised by compassionate care for vulnerable clients. Longitudinal evidence is likely to show that any perceived gains of this kind are misinterpreted, and are likely due to presenteeism issues, eventually resulting in increased turnover, or long-term work absence. These are relevant contextual factors which can be incorporated into the JD-R theory.

As well as noting the importance of senior leadership, the demonstration that leadership behaviours are explicitly linked to the organisational outcomes of absenteeism, turnover and patient satisfaction in healthcare is important. Previous research has not demonstrated explicit links between senior leadership and these outcomes in healthcare, although there is some evidence that links between senior leaders and organisational outcomes exist in other work domains (Finkelstein & Hambrick, 1990, 1996; Hambrick et al., 2005). The research presented in this thesis shows clearly that the theoretical predictions of these links appear to be justified.

The research contributes constructive practical learning for healthcare organisations, and the way their leaders operate. By showing that the influence senior leadership and supervisor support have on engagement, work pressure, opportunity for involvement and work-life balance, and the subsequent influence these have on job satisfaction, patient satisfaction, absenteeism and turnover, leaders in healthcare can use this information to direct their managerial efforts towards making improvements in these factors. Moreover, they can see evidence that a sustained focus on these work factors may have long-term benefits, based on the longitudinal evidence presented.

8.8 Conclusion

The World Health Organisation Constitution states that the highest attainable standard of health is a fundamental right of every human being. This research set out to examine to what extent and how leadership influences organisational outcomes in healthcare. The answers to this question therefore have far reaching implications as healthcare is a fundamental function of a healthy society. As we have seen, the way leadership operates has important effects on organisational demands and the availability of resources with which to meet those demands. In turn, these relationships have meaningful effects on employee well-being which should be an organisational goal in its own right, but also because we know from other research that as a result of improvements in employee well-being, substantial improvements in organisational outcomes are observed. Good leadership that impacts positively on absenteeism and turnover rates, thereby improves financial performance. And the experience of healthcare staff at work directly predicts quality of care afforded to service users as well as their satisfaction with that

care. To the extent that this research has advanced our understanding of how leadership affects outcomes in health care, as well as the level of leadership involved, the research I hope will make an important difference to understanding and practice. At a time when health services around the world are facing dramatically increasing demands, research such as this can support their leaders in making informed decisions which help their organisations to deliver the highest attainable standard of health care for all.

9 References

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10 Appendices

10.1 Appendix A: 2010 National Staff Survey

10.2 Appendix B: Example Syntax

10.2.1 Longitudinal mediation analysis: Senior leadership in 2008 predicting job satisfaction in 2010, controlling for supervisor support in 2008, and control variables relating to acute trust models (trust size, location, doctors per bed, and specialist trust status) in 2009.

```
process vars=jobsat_1 senled_8 jobdes_9 engage_9 wkpres_9 improv_9 balanc_9 supsup_8
tstsz_8r London teaching drperbed TTASP_8/y=jobsat_1/x=senled_8/m=jobdes_9 engage_9
wkpres_9 improv_9 balanc_9
/total=1/boot=5000/conf=95/normal=1/effsize=1/contrast=1/model=4.
```

10.2.2 Correlational mediation analysis, 2010 example: Senior leadership predicting absenteeism for all trusts (controlling for supervisor support, trust size, location, trust type – dummy coded).

```
process vars=abs1011 senled_1 supsup_1 jobdes_1 engage_1 wkpres_1 improv_1 balanc_1
tstsz_1r London TTANS_1 TTASP_1 TTMH_1
TTAMB_1/y=abs1011/x=senled_1/m=jobdes_1 engage_1 wkpres_1 improv_1 balanc_1
/total=1/boot=5000/conf=95/normal=1/effsize=1/contrast=1/model=4.
```