Aston University
Birmingham

DOCTOR OF PHILOSOPHY

The complexity of leadership and organisations

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2012

Aston University

THE COMPLEXITY OF LEADERSHIP AND ORGANISATIONS

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ASTON UNIVERSITY

September 2011

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THESIS SUMMARY

The thesis contributes to the evolving process of moving the study of Complexity from the arena of metaphor to something real and operational. Acknowledging this phenomenon ultimately changes the underlying assumptions made about working environments and leadership; organisations are dynamic and so should their leaders be. Dynamic leaders are behaviourally complex. Behavioural Complexity is a product of behavioural repertoire - range of behaviours; and behavioural differentiation - where effective leaders apply appropriate behaviour to the demands of the situation. Behavioural Complexity was operationalised using the Competing Values Framework (CVF). The CVF is a measure that captures the extent to which leaders demonstrate four behaviours on four quadrants: Control, Compete, Collaborate and Create, which are argued to be critical to all types of organisational leadership. The results provide evidence to suggest Behavioural Complexity is an enabler of leadership effectiveness; Organisational Complexity (captured using a new measure developed in the thesis) moderates Behavioural Complexity and leadership effectiveness; and leadership training supports Behavioural Complexity in contributing to leadership effectiveness. Most definitions of leadership come down to changing people's behaviour. Such definitions have contributed to a popularity of focus in leadership research intent on exploring how to elicit change in others when maybe some of the popularity of attention should have been on eliciting change in the leader them self. It is hoped that this research will provoke interest into the factors that cause behavioural change in leaders that in turn enable leadership effectiveness and in doing so contribute to a better understanding of leadership in organisations.

Keywords: Leadership, Complexity Theory, Behavioural Complexity,

Organisational Complexity, Competing Values Framework, Training, Leadership Effectviness

PRESENTATIONS RESULTING FORM THIS WORK

McCarthy, I. (2012). *The Complexity of Leadership and Organisations*. Paper presented at the Division of Occupational Psychology Conference. Chester, England.

McCarthy, I. (2009). *Applying complexity theory to group dynamics and leadership*. Poster presentation at the 24th Annual conference for Industrail and Organizational Psychology, New Orleans, USA.

McCarthy, I. (2009). *Leader complexity: The impact of behavioural, social and cognitive complexity on workplace interaction amongst healthcare managers*. Poster presentation at the 14th European Congress of Work and Organizational Psychology, Santiago de Compostela, Spain.

ACKNOWLEDGEMENTS

I would like to offer my heart-filled thanks to the people that have made this possible.

To Dr Ann Davis, thank you for your help, patience, support and guidance in bringing the thesis to life. Thank-you for igniting my inspiration and for keeping me calm! I have learned so much from you and will be forever grateful.

I would also like to thank Dr Judy Scully for supporting me in accessing the organisation who took part in this project but mainly for making me the researcher that I am.

Thank you to the Economic and Social Research Council (ESRC) for funding this research and to the NHS staff who kindly took the time to participate.

To my work and student colleagues at Aston University - thank you for your moral support which has helped me throughout this whole project.

Finally, I would like to say a special thank-you to my family, especially to my mother Angela, this is dedicated to you! If your prayers and candles alone could have written this thesis then I wouldn't have had much writing to do. We don't do sentimentality well and I couldn't even begin to put into words how much you mean to me but thank you for always being there, for your support and unconditional love, for always being my source of confidence and contributing to all that I achieve.

This research was funded by the UK Economic and Social Research Council (ESRC).

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Chapter 1: Introduction

1.1 CHAPTER SUMMARY

This chapter provides an introduction which maps out the background, aims and overview of the thesis. The background section provides a synopsis of the general strengths and weaknesses of existing leadership research that prompt suggestions for future research in the area. Following this, the overall aims of the thesis are presented relating to the study of leadership and organisations from the perspective of Complexity Theory. A structural overview of the thesis is then presented in view of the content of each of the forthcoming chapters. The chapter closes with a conclusion.

1.2 BACKGROUND

Leadership is a topic that has long attracted interest. The word 'leader' summons images of powerful and dynamic individuals who achieve greatness. It is thought that leadership provokes such interest because of its ubiquity. Leadership raises many questions: Why do certain leaders inspire such dedication? Why and how do certain leaders achieve such greatness? Why do some leaders rise to positions of great power? And why do certain successful leaders then just fall out of favour? Questions surrounding leadership have long been a topic of speculation. However, scientific research on leadership did not begin until the twentieth century. Much of this research focused on the determinants of leadership effectiveness.

Hunt (1999) acknowledges that current leadership theory neglects the complexities of the context and nature of the leadership role because most definitions of leadership reflect the assumption that it involves a process whereby intentional influence is exerted by one person over another (Yukl, 2006). Put this way, much of what constitutes leadership is defined by a leader changing some aspect of a follower's behaviour, where leadership is mainly about interpersonal influence (Bass, 1985; Gardner & Avolio, 1998; Graen and Uhl-Bien, 1995; Katz and Kahn, 1978). Consequentially, much leadership research has focused primarily on leader attributes and follower emotions (Hollander, 1978; House, Spangler and Woyke, 1991). While certainly these are critical aspects of leadership they do not tell the full story and may be related to problems of reductionism, where leadership is studied in isolation of the context in which it occurs, and determinism, the belief events are caused by preceding events and by knowing enough about the preceding events one can predict the future with certainty

(Prigogine, 1997). To avoid the problems of reductionism and determinism Marion and Uhl-Bien (2001) recommend exploring leadership from the perspective of Complexity Theory

Complexity Theory is the study of complex and chaotic systems and how order, pattern, and structure can arise from them (Marion and Uhl-Bien, 2001). Complexity Theory has existed in the natural sciences for many years but has only recently surfaced as a metaphor for studying leadership and organisations within the social sciences. This research empirically tests leadership and organisations from the perspective of Complexity Theory by exploring the complex (and somewhat chaotic) contextual factors (termed Organisational Complexity) that organisational leaders face in practice. By exploring leadership and organisations through Complexity Theory this research contributes to the evolving process of moving the study of Complexity from the arena of metaphor to something real and operational.

The study of leadership and organisations from the perspective of Complexity Theory is about adaptation in response to uncertainty. This means leaders invoking versatile behaviours in response to the complex and diverse contexts faced in practice (Boal and Hooijberg, 2001). Lawrence, Lenk and Quinn (2009) maintain leaders with a large behavioural repertoire are more adaptable than those with a limited repertoire of behaviour. Behavioural differentiation, the capacity to apply appropriate behaviour as the situation dictates, is also important. Combined, throughout the course of the thesis, behavioural repertoire and behavioural differentiation are referred to as Behavioural Complexity. With that said, this research extends upon traditional definitions of leadership by proposing leadership is not just about changing the followers' behaviour, is also is about the leader changing their own behaviour.

1.3 RESEARCH AIMS

The aims of the thesis are three-fold:

1.3.1 To establish the extent to which Behavioural Complexity is an enabler of leadership effectiveness

In light of the conceptual propositions proposed by Hooijberg, Hunt and Dodge (1997) and Marion and Uhl Bien (2001) suggesting behaviourally complex leader are more effective, this study seeks to empirical test the relationship between Behavioural Complexity and leadership effectiveness. Behavioural Complexity is operationalised using Lawrence, Lenk and Quinn's (2009) Competing Values Framework. The Competing Values Framework is a measure that captures the extent to which leaders demonstrate four behaviours on four quadrants: Control, Compete, Collaborate and Create, which are argued to be critical to all types of organisational leadership. It is proposed that proficiency in any quadrant of the Competing Values Framework will be equally important in determining leadership effectiveness. Leadership effectiveness is defined in terms a leader's level of "Overall Performance", their "Ability to Lead Change" and their capability to "Influence". The link between Behavioural Complexity and leadership effectiveness, in terms of "Overall Performance" and "Ability to Lead Change" has been previously empirically tested by Lawrence, Lenk and Quinn (2009) who demonstrated, Overall Performance (defined as performance in relation to oneself, others and targets) was associated with high scores on each of the four quadrants of the Competing Values Framework. Lawrence et al also showed that people with an emphasis on the Create quadrant had higher scores for Ability to Lead Change (defined as conceiving and leading change that has impact). However, the link between Behavioural Complexity and Influence, although conceptually discussed, has not been empirically tested. A core contribution of the thesis is to empirically test the link between Behavioural Complexity and the leadership effectiveness outcome Influence, and in doing so gain evidence for practice where organisations can use the Competing Values Framework as a tool for identifying individuals with the potential to be effective as a leader.

1.3.2 To establish the extent to which Organisational Complexity moderates Behavioural Complexity and leadership effectiveness

Situational leadership theories such as those of Fielder, (1967) House, (1971) and Hersey and Blanchard, (1977) highlight the influence of contextual factors on leadership. Hooijberg, Hunt and Dodge (1997) recognise this by conceptually maintaining organisational contexts are dynamic, and that leaders who are most effective demonstrate Behavioural Complexity.

This research empirically tests the impact of contextual factors on Behavioural Complexity and leadership effectiveness by exploring Organisational Complexity (Damanpour, 1996) as a moderator of Behavioural Complexity. In doing so it develops a scale for capturing the degree of Organisational Complexity present within a given context. No previous scale exists that adequately captures this contextual factor other than scales of Perceived Environmental Uncertainty, many of which are outdated and do not adequately reflect today's working environments. By exploring Organisational Complexity we contribute to knowledge by identifying the contextual factors that moderate Behavioural Complexity and leadership effectiveness.

1.3.3 To establish the extent to which leadership training supports Behavioural Complexity in contributing to leadership effectiveness

In view of the anticipated benefits of leadership effectiveness associated with Behavioural Complexity the thesis examines whether Behavioural Complexity and leadership effectiveness can be advanced through training, as evidence for organisations to invest in programmes that develop their leaders, and in doing also contribute to knowledge as to whether leadership can be taught.

1.4 THESIS OVERVIEW

The thesis consists of nine chapters, the structure of which will now be briefly outlined.

Chapter One introduces the reader to the research.

Chapter Two provides an overview of how Complexity Theory can be applied to the study and practice of organisational leadership.

Chapter Three explores some of the contextual factors that can have implications for the behaviours adopted by individuals who lead.

Chapter Four brings together the development of the conceptual framework that guides this research. Hypotheses are drawn in this chapter that are tested later in the thesis.

Chapter Five presents the rationale for the methodological approach adopted. The chapter describes the methods used in the thesis to explore Behavioural Complexity. A detailed description of the sample characteristics, research design, instruments and the study procedure common to the three studies that form the research are presented.

Chapter Six outlines the process of scale refinement applied to the scales adopted in the thesis using exploratory and confirmatory factor analysis.

Chapter Seven explores Behavioural Complexity as an enabler for leadership effectiveness (Study 1, research aim 1.3.1) and also investigates whether Behavioural Complexity and

leadership effectiveness is altered by Organisational Complexity (Study 2, research aim 1.3.2).

Chapter Eight explores whether leadership training can support Behavioural Complexity in contributing to leadership effectiveness (Study 3, research aim 1.3.3)

Finally, Chapter Nine provides the reader with a concluding discussion.

1.5 CONCLUSION

This chapter has introduced the thesis, beginning with a background to the research, followed by an outline of the research aims and thesis overview. By exploring leadership and organisations from the perspective of Complexity Theory it is anticipated that this research will provoke interest into an areas of leadership that has received much conceptual discussion but limited empirical testing. By exploring leadership and organisations from this perspective it is hoped that the thesis will encourage future research that adds depth to the field.

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Chapter 2: Leader Complexity

2.1 CHAPTER SUMMARY

The purpose of this chapter is to provide an overview of how Complexity Theory can be applied to the study of leadership and organisations. The chapter begins with a discussion that identifies the problems associated with the current study of leadership, leading into suggestions as to how Complexity Theory can help address some of the problems of the past. A more specific discussion of leadership from the perspective of Complexity Theory is then presented in view of the Leaderplex model which captures the cognitive, social and behavioural aspects of leadership. From there, the behavioural aspect of the Leaderplex model, (Behavioural Complexity) is discussed at length, in terms of measurement, associated outcomes of leader effectiveness and lastly development.

2.2 THE STUDY OF LEADERSHIP

The sheer volume of the theory and research devoted to the study of leadership is a testimony to its prominence in our efforts to understand and improve organisations. Hunt (1999) acknowledged this by exploring the progression of leadership theory and research, over the later half of the twentieth century, and in doing so identified a number of issues. Hunt referred to a time in leadership research which he calls the 'doom and gloom' period (1970s to 1980s). During this time, the study of leadership became overstated and bound up in opinions that leadership could explain the otherwise unexplainable (Meindl, Erlich and Dukerich, 1985). The 'doom and gloom' period exaggerates the significance of leadership, attributing much of the phenomenon of leadership to the individual, whilst neglecting to consider occasions where the individual 'in charge' did not have ultimate control. The 'doom and gloom' period ended with the arrival of the 'new leadership school' (a phase coined by Bryman, 1992), which transformed leadership research (Hunt, 1999). The 'new leadership school' was influenced by the early works of Weber (1947) to include a visionary, transformational and charismatic approach to the study of leadership. Visionary leadership (Burns, 1978) focuses on the person-specific characteristics of the leader (traits), as well as what a leader does (behaviours) to unite people behind a vision of something currently out of reach. Transformational leadership (Burns, 1978) is described as a leadership approach that causes changes within individuals. Similar to visionary leadership, research into transformational leadership is concerned with the person-specific characteristics of the leader that creates valuable and positive change in the followers. Transformational leadership

enhances the motivation, morale and performance of followers through a variety of mechanisms, these include being an inspirational role model for the followers; challenging followers to take greater ownership for their work, and understanding the strengths of followers, so the leader can align followers with tasks that optimise their performance (Bass, 1985). Charismatic leadership occurs when followers attribute a leader's behaviour to extraordinary qualities they believe the leader possesses (Conger and Kanungo, 1988). Charismatic leadership builds upon visionary and transformational theories, by exploring the factors that evoke an emotional response that leads to change or action within the follower.

Marion and Uhl-Bien (2001) agreed with Hunt (1999) that the 'new leadership school' transformed the field of leadership research. However, they also believed that, with some exceptions, existing approaches to the study of leadership were still heavily grounded within the 'new leadership school' by assuming that leadership is interpersonal influence (Bass, 1985; Gardner and Avolio, 1998; Graen and Uhl-Bien, 1995; Katz and Kahn, 1978) focused primarily on leader attributes and follower emotions (Hollander, 1978; House, Spangler and Woyke, 1991). While this is certainly a critical aspect of leadership, it does not tell the full story. Moreover, this emphasis may be related to problems of reductionism - where leadership is studied in isolation of the context where it exists; and determinism - the belief, events are caused by preceding events and by knowing enough about the preceding events one can predict the future with certainty (Prigogine, 1997). To avoid these problems of reductionism and determinism Marion and Uhl-Bien (2001) recommended exploring leadership from the perspective of Complexity Theory, as the proceeding section will now discuss.

2.3 INTEGRATING COMPLEXITY THEORY AND LEADERSHIP RESEARCH

Complexity Theory is the study of complex and chaotic systems and how order, pattern, and structure can arise from them (Marion and Uhl-Bien, 2001). Complexity Theory is often used as metaphor for organisational life; specifically, organisations are complex and chaotic systems, out of which order, pattern and structure arise. Organisations are dynamic and complex settings, because of continuous restructuring activities, increasing global competition, demand, demographic changes in the workforce and rapid technological innovations (Hooijberg, Hunt and Dodge, 1997), where leaders are required to respond to the many roles and constituencies that they encounter because of this (Hooijberg, Hunt, and Dodge, 1997; Mintzberg, 1975; Tsui, 1984). Leadership, from the perspective of Complexity Theory, recognises leaders cannot control the future (e.g. determinism) because in complex

systems such as organisations, unpredictable and sometimes unexplainable factors will determine future conditions.

Boal and Hooijberg (2001) acknowledge that leadership from the perspective of Complexity Theory confirms what we intuitively know (but typically ignore in practice) leaders cannot always predict the future, or closely control the future with deliberate interventions. Accordingly, leadership effectiveness cannot be built exclusively around controlling for the future (Marion and Uhl-Bien, 2001). Instead, being what Zaccaro (1996) calls a 'Complex Leader' is a more advantageous strategy. Complex Leaders possess a strong sense of Cognitive, Social, and Behavioural Complexity that contribute to their effectiveness (Zaccaro, 1996). Hooijberg, Hunt and Dodge (1997) elaborate on this idea by presenting a conceptual framework called the Leaderplex model. The Leaderplex model integrates the cognitive, social and behavioural elements that underlie Complex Leadership. The framework proposes that Cognitive and Social Complexity is a precursor to Behavioural Complexity, and Behavioural Complexity a precursor to leader effectiveness, as the proceeding section will now discuss.

2.4 COMPLEX LEADERS AND THE LEADERPLEX

Hooijberg, Hunt and Dodge (1997) consider the cognitive, social and behavioural aspects of Complex Leadership, with reference to a framework called the Leaderplex model which helps explain how leaders can be versatile and responsive to the demands and responsibilities of their role, the people they lead and the environment in which they operate. Each of these elements will now be discussed in more detail.

2.4.1 Cognitive Complexity

Streufert and Streufert (1978) describe Cognitive Complexity as the capacity of the individual to base their decisions on multiple categories and dimensions that allows them to see commonality and differentiation amongst the various scenarios they encounter. Cognitive Complexity relates to the way in which individuals construct meanings to the scenarios they meet, in terms of how they are thinking. Streufert and Streufert attribute this to the extent to which incoming information is differentiated and integrated. Goldstein and Blackman (1978) describe differentiation as the number of categories (within different dimensions) an individual uses to perceive their environment. It is the process of differentiation that allows individuals to perceive how seemingly similar situations can be fundamentally different, require totally different levels of understanding and ways of behaving, in terms of what is acceptable and appropriate, in order to be effective. Integration on the other hand refers to the extent to which an individual can relate categories to different dimensions and apply the

appropriate behaviour accordingly (Streufert and Nogami, 1989). Hooijberg, Hunt and Dodge (1997) propose the underlying assumption is that Cognitively Complex individuals can perform certain tasks better than those less Cognitively Complex. Individual differences will result in such persons processing information differently, depending upon the situation.

2.4.2 Social Complexity

Hooijberg, Hunt and Dodge (1997) characterise Social Complexity as the appropriate application of interpersonal leadership skills, such as empathy, motivation and communication, based upon an understanding of ones social setting through social differentiation and integration.

Hooijberg and colleagues define social differentiation as the ability of a leader to discriminate and recognise the various aspects of the social situation, in terms of social relationships, emotions and interdependence. Social integration involves the synthesis of the various components of the social situation, and selecting the appropriate emotional response accordingly (Clarke, Pataki and Carver, 1996). Social differentiation and integration has not been discussed in the leadership literature as Social Complexity per-se; more often, it is referred to as social intelligence (Zaccaro, Gilbert, Thor and Mumford, 1991).

2.4.3 Behavioural Complexity

The Leaderplex model proposes that Cognitive and Social Complexity underlie Behavioural Complexity (Hooijberg, Hunt and Dodge, 1997). Behavioural Complexity is an individual's capacity to exhibit a broad array of behaviours (Hooijberg and Quinn, 1992). Having a large behavioural repertoire is important since behaviours act as contingencies within the increasingly complex and fast moving contexts that face most leaders (Hunt, 2004). Hooijberg and Quinn (1992) associate having a large behavioural repertoire with the success of an individual to assume multiple leadership roles, by broadening their capacity to implement complementary and contrasting behaviours in response to the demands such individuals face within their role. Kenny and Zaccaro (1983) maintain not only should we concern ourselves with the study of leader behavioural repertoire, but also consider how leaders achieve effective functioning across a variety of situations. That is, perceiving the needs and goals of the situation but also adjusting one's personal approach to action accordingly.

Behavioural Complexity is not just about thinking in complex ways, it is about acting and implementing complex behaviours appropriate to the context (Boal and Whitehead, 1992). Behavioural Complexity requires an appropriate level of judgement, so that an individual utilises their behavioural repertoire and applies it to the appropriate context - a concept referred to as behavioural differentiation (Hooijberg, 1996; Hooijberg, Hunt and Dodge

1997). Behavioural Complexity is a combination of behavioural repertoire (range of behaviours) and behavioural differentiation (the capacity to apply an appropriate behavioural repertoire, as the situation dictates). The next section explores how Behavioural Complexity can be measured.

2.5 MEASURING BEHAVIOURAL COMPLEXITY: THE COMPETING VALUES FRAMEWORK

Behavioural Complexity is an individual's capacity to exhibit a broad array of contrasting behaviours (Hooijberg and Quinn, 1992). The study of Behavioural Complexity acknowledges organisational leaders need to be able to play a multitude of leadership roles in order to be effective therefore any measure of Behavioural Complexity needs to be based on this assumption. Many frameworks measure behavioural differentiation and behavioural repertoire (the two dimensions of Behavioural Complexity discussed in section 2.4.3.); however, Quinn's (1981, 1988) Competing Values Framework has the advantage over the other frameworks because it acknowledges the similarities and differences of the behaviours involved in the leadership role - to be flexible and adaptable, whilst being stable and controlled (Quinn, 1988). Hooijberg, Hunt and Dodge (1997) describe how the Competing Values Framework was derived from empirical research that linked leadership Behavioural Complexity to leader effectiveness.

The Competing Values Framework consists of four quadrants: Control, Compete, Collaborate and Create that capture the extent to which an individual scores on each of these behaviours. Quinn (1981, 1988) maintains that these behaviours act as contingencies to all leadership situations and in turn contribute to leadership effectiveness. For the purpose of the proceeding section, the four quadrants of the framework will be discussed as defined by Lawrence, Lenk and Quinn's (2009) version of the Competing Values Framework.

2.5.1 Control Quadrant

Lawrence, Lenk and Quinn (2009) explain the Control quadrant is classified by utilising efficiency through value-enhancing activities, measurement and control. Control is defined by attempts to eliminate error by optimisation and increasing consistency and regularity. Individuals, who are Control focused, are generally concerned with promoting efficiency and production cost cutting, through standardised procedures, rule reinforcement, uniformity, discipline, information and document management. Control is of use to organisations when

there is no capacity for failure. Control attempts to create a stable regulated environment by increasing certainty, predictability and regularity.

Leaders in the Control quadrant tend to be good administrators and organisers because they pay close attention to details and make careful decisions based on precision and focus (one right way to do things). Such individuals tend to be conservative, cautious and logical in their problem-solving. They will characteristically work methodologically and with persistence. Control leaders, on average tend to be technical experts, who maintain their power based upon information control and technical expertises.

2.5.2 Compete Quadrant

Lawrence, Lenk and Quinn (2009) maintain the Compete quadrant is typically defined by the pursuit of competition. Leaders in this quadrant generally scan the market in detection of opportunity and potential rivals. Individuals of this nature are focused on competition, fast response and consumer focus. Competitive leaders value opportunity to expand working capital, alongside maintaining a reputation for the delivery of excellence, since customers and clients are a high priority for such individuals. Success is measured in terms of explicit outcomes, namely market share, meeting targets, moving fast, taking charge, speed and response.

Leaders in the Compete quadrant are open to challenges, extend their goal and are high achievement orientated. Such persons are typically assertive and strong-willed. Success is measured in terms of outcome and results, rather than the efforts or level of input invested.

2.5.3 Collaborate Quadrant

Lawrence, Lenk and Quinn (2009) describe individuals in the Collaborate quadrant as mentors, facilitators and team builders. Collaborators are focused on engaging the support and involvement of others. They are driven by values of commitment and communication, whilst being committed to human development and produce effectiveness. Individuals in the Collaborate quadrant are focused on building organisational competencies, by creating a culture that promotes such activities. Collaborative individuals promote activities that include developmental programs and employee retention initiatives. Compared with the other quadrants, work is harder to measure in terms of tangible outcomes. Activities in this quadrant take longer because it is focused on the value of inputs and developing those involved in such activities along the way.

2.5.4 Create Quadrant

Lawrence, Lenk and Quinn (2009) elucidate individuals in the Create quadrant are innovative, aimed at promoting new products, services and processes. In general they create and envisage the future. They handle discontinuity, change and risk well, have freedom of thought and action, break rules and stretch barriers. Their strategic concerns are that of high impact and typically break through levels of performance. Such behaviour is prompted with intended high pay offs and new values but with this comes potential for a higher risk of failure.

Create leaders, are entrepreneurs; they respond well to new ventures that allow them to flourish. Such persons excel in hyper turbulent environments that allow them to predict the future. Such activity may involve defining the future as such individuals bear the hallmarks of trend-setters and pioneers. Create leaders learn through mistakes. They tend to be visionary, futurists, inclined towards risk and unafraid of uncertainty.

2.5.5 Integration of the quadrants

The four quadrants of the Competing Values Framework are nested within two dimensions, namely:

1. Organisational focus, which emphasises an internal focus on the wellbeing and development of people in the organisation; and an external focus on the wellbeing and development of the organisation itself
2. Organisational preference, which represents the individual's inclination towards stability and control; as well as flexibility and change.

Figure 2.1 Competing Values Framework

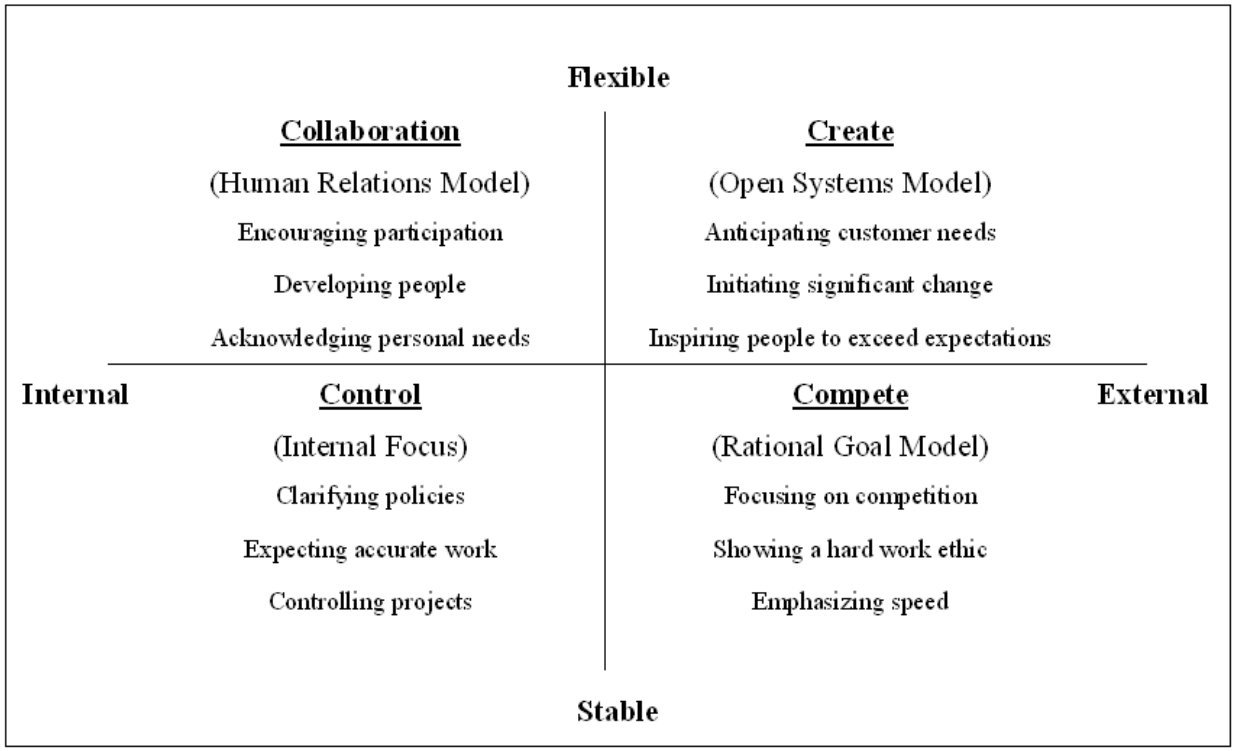


Figure 2.1 illustrates the relationship between the organisational focus and preference; and the four quadrants: Collaborate, the human relations model, concerned with flexibility and internal focus; Create, the open systems model that focuses on flexibility and external focus; Compete, the rational goal model, which emphasises stability and an external focus; Control, the internal process model, which highlights stability and an internal focus (Lawrence, Lenk and Quinn, 2009).

The Competing Values Framework is the only tool in the leadership literature that is specifically defined in terms of opposing behaviours and asserts that effectiveness requires meeting and integrating the competing behaviours (Zaccaro, 2001). The approach overcomes the tendency to see leadership behaviours in an either/or fashion (Densten and Gray, 2001).

Hooijberg, Hunt and Dodge (1997) propose that Behavioural Complexity is a precursor to leader effectiveness. The next section will explore a number of outcomes associated with leadership effectiveness in more detail.

2.6 LEADER EFFECTIVENESS

Organisations are dynamic and complex settings, where effective leaders respond to the many roles they encounter by being behaviourally complex (Hooijberg, Hunt and Dodge, 1997; Mintzberg, 1975; Tsui, 1984). Hooijberg and Quinn (1992) attribute Behavioural Complexity

to the leaders' ability to effectively playing out these roles, characterised by an array of differentiated and even competing behavioural expectations.

Within organisations, behaviourally complex leaders are effective because they have the ability to perform multiple roles and behaviours implied by the context (Denison, Hooijberg and Quinn, 1995). Here we explore a number of leadership effectiveness outcomes associated with Behavioural Complexity, specifically, "Overall Performance" "Ability to Lead Change" and "Influence".

2.6.1 Overall Performance

Lawrence, Lenk and Quinn (2009) found Behavioural Complexity was correlated with higher individual Overall Performance scores on an adapted version of Denison, Hooijberg and Quinn's (1995) effectiveness measure. Behavioural Complexity's association with higher scores for Overall Performance reinforces the importance of a large repertoire of behavioural strengths. This suggests that the cultivation of Behavioural Complexity by developing all four quadrants (discussed further in Section 2.7 of this chapter) may improve performance by allowing leaders to draw on a broad array of behaviours as the situation dictates.

2.6.2 Ability to Lead Change

Ability to Lead Change is associated with individuals who conceived change efforts, lead change and had impact. This capacity could prove potentially advantageous to individuals managing in today's increasingly uncertain, competitive and unpredictable organisational environments. Lawrence, Lenk and Quinn (2009) explored Ability to Lead Change as an outcome of Behavioural Complexity using an adapted version of Denison, Hooijberg and Quinn's (1995) Leader Effectiveness measure. Lawrence, Lenk and Quinn (2009) found that greater behavioural flexibility, alongside a more external organisational focus was associated with greater scores in Ability to Lead Change. Lawrence and colleagues results also showed that people with a particularly strong emphasis on the Create quadrant, had a high score for Ability to Lead Change, suggesting in some context imbalances could prove useful.

2.6.3 Influence

Yukl (2006) considers how most definitions of leadership reflect the assumption that leadership involves a process whereby intentional influence is exerted by one person over another - where influence and leadership go hand in hand. An empirical link between Behavioural Complexity and influence has not yet been made, however, conceptual discussion around the topic of complexity and leadership would suggest there is one. For instance, Marion and Uhl-Bien (2001) acknowledge that leaders cannot fully control the

environments in which they operate since often, the multitude of activity that exists in and around organisations is beyond the capacity of the individual 'in charge'. This assumption is central to an understanding of leadership from the perspective of Complexity Theory, where leaders enable effectiveness, rather than determining or guiding it. To enable effectiveness; Boal and Hooijberg (2001) maintain that Complex Leadership involves creating the conditions that enable productivity in largely unspecified future states. This suggestion recognises that leaders cannot control the future (determinism) because in complex system like organisations, unpredictable internal dynamics will determine future conditions. Under such circumstances Boal and Hooijberg recommend that leaders increase their capacity for Influence as a leadership strategy that will enable, rather than guide or determine effectiveness.

In view of the beneficial outcomes of leadership effectiveness associated with Behavioural Complexity, the final section of this chapter explores the extent to which Behavioural Complexity and leadership effectiveness can be developed through leadership training.

2.7 LEADERSHIP DEVELOPMENT

This chapter has taken an underlying behavioural theorist approach to the study of leadership. Behavioural theory focuses on what leaders do in terms of action. Behavioural theory is based upon the belief that great leaders can be made and developed, not just born. With this is mind, this section explores the possibility of whether Behavioural Complexity can be developed through leadership training.

Sendelbach (1993) upholds the usefulness of the Competing Values Framework (discussed in Section 2.5) as a tool in the training and development of leaders because of its potential to help such individuals better understand themselves. The Competing Values Framework provides no answers as to what leaders should do; it is not a prescription for behaviour, instead Sendelbach recommends leaders use the Competing Values Framework to profile their behavioural characteristics, and identify negative zones within their behavioural repertoire as diagnostic feedback for development and training.

Yukl (1998) acknowledges the wide use of leadership training programs in organisations. Research suggests that such training programs can improve leadership effectiveness (Bass 1990; Latham, 1988; Tetrault, 1988) though it is hard to establish and isolate whether the improvement in leadership effectiveness is the result of the training intervention or gaining skill through practise. Yukl (1998) discusses that while it may be difficult to extract the

effects of leadership training and exposure to the course, research suggests the outcomes of formal training effectiveness are strengthened when such interventions are well-designed and delivered by means of clear and specific learning objectives, catering for the needs and personal characteristics of the trainees. Baldwin and Padgett (1993) maintain that training programs are more likely to be effective when delivered in the context of appropriate learning processes and training techniques. The sum of these suggestions include: having clear learning objectives, clear meaningful context, appropriate sequence of content, appropriate mix of training methods, opportunity for active practice, relevant timely feedback, high trainee self-confidence and appropriate follow up activities.

The direct empirical link between Behavioural Complexity and leadership development training has not been discussed in the literature as such, but the idea is more often referred to in terms of behavioural theory, the idea that all behaviours are acquired through teaching observation and interaction with the environment.

2.8 CONCLUSION

Current leadership theory neglects the complexities of the context and nature of the leadership role. Complexity Theory identifies that it is important for leaders to invoke complex and versatile behaviours in response to the complex and diverse context that they face. Organisational leaders who are behaviourally versatile inevitably are more effective than those with a limited repertoire of leadership behaviours. Breadth of behaviours is also important, since effective leaders need to adopt a range of complementary and also contrasting behaviours to be responsive to the demands of the context. The subsequent chapter explores these contextual factors in more detail.

Chapter 3: Organisational Complexity

3.1 CHAPTER SUMMARY

The purpose of this chapter is to provide an overview of how Organisational Complexity can influence states of organisational stability and ultimately determine leader behaviour. The chapter begins with a discussion of Situational Leadership that acknowledges situational factors determine the style of leadership adopted by leaders in response to task and subordinate demands. A more specific discussion of Systems Theory and Organisational Complexity follows which acknowledges the various contextual factors that determine leader behaviour.

3.2 SITUATIONAL LEADERSHIP

Situational Leadership theory proposes there is no single "best" style of leadership. According to Hersey and Blanchard (1969), the most successful leaders are those that adapt their leadership style to fit the context. Quinn (1988) elaborates on this idea, maintaining Situational Leadership emphasizes the importance of contextual factors in determining leader behaviour. Contextual factors include the characteristics of the followers, the nature of the work, the type of organisation and influences from the external environment. It is argued individuals' sensitive to these contextual factors are flexible in diagnosing the leadership style appropriate to the situation and are more likely to apply a suitable response.

Three main theories have dominated Situational Leadership research: Fielder's Contingency Theory (1967), House's Path-Goal Theory (1971) and Hersey and Blanchard's Situational Leadership Theory (1977). These situational theories are focused generally on two key contingencies, task complexity and follower ability, and are discussed in view of how situational characteristics can determine leader behaviour, as this leads into a discussion of Organisational Complexity seeks to capture in a more comprehensive fashion the richness of the leadership context.

3.2.1 Fiedler's Least Preferred Co-worker Contingency Theory

Fiedler's (1967) Contingency Theory of Situational Leadership proposes that the effectiveness of a leader depends upon two relational elements; (1) leadership style and (2) the degree to which the situation provides the leader with control and influence over the outcomes. Fiedler's Least Preferred Co-Worker (LPC) Contingency model attempts to explain this relationship in terms of leadership effectiveness and the LPC scale. The LPC

scale is a measure used to identify the extent to which a leader is predominantly task-motivated or relationship-motivated. The leader is asked to think of a co-worker with whom he or she has had the most problems in the past and to rate this person on a series of dimensions, such as intelligent–unintelligent, honest–dishonest, and so on. A total score is then derived from these ratings. Leaders who score their least preferred co-worker relatively highly are assumed to be relationship-motivated; those who are more critical are assumed to be task-motivated.

The relationship between leader LPC score and effectiveness is dependent upon a context variable called situational favourability, which is described as the extent to which the situation gives a leader control over the subordinates. This measure is influenced by three factors:

1. Leader-Member Relations: The quality of the relationship between the subordinate(s) and leader, in terms of loyalty, cooperation and friendliness.
2. Positional Power: The degree of authority the leader has over the subordinates, in terms of evaluating performance, administering rewards and punishments.
3. Task Structure: The extent to which time is available, procedures are in place and knowledge is accessible, to accomplish the task successfully.

LPC theory assumes that the situation is most favourable to the leader when it is structured and controllable, characterised by good subordinates relations, when the leader has substantial positional power and when the task is highly structured - since this promotes leadership effectiveness. In contrast the situation is least favourable when leader-member relations are poor, positional power is low and the task is unstructured. Combined these three factors contribute to leadership ineffectiveness. Fielder's work into Situational Leadership laid the foundations for the study of leadership from a perspective that considered the contextual and situational factors that influence leadership outcomes. As situational research has grown over the years, better theories have developed including those that attribute such outcomes to performance. One of the most popular of these theories includes House's Path-Goal Theory of Leadership.

3.2.2 Path-Goal Theory of Leadership

Fiedler's contingency model of leadership proposes matching an individual's LPC score and an assessment of the three contingency variables to achieve maximum leadership effectiveness. According to Fiedler, individuals have a strong preference for certain leadership styles. In contrast to Fiedler, House (1971) proposes that leaders behaviours are

more flexible, implying that the same leader can display any or all leadership behaviours. House suggests there are four main types leader behaviour:

1. Directive behaviour that typically involves scheduling work, setting performance standards and giving direction.
2. Supportive behaviour that includes being friendly, approachable and expressing concern.
3. Participative behaviour that uses consultative processes, shares work problems and considers suggestions.
4. Achievement oriented, behaviours characterised as demanding and supportive, in addition to seeking continual improvement.

According to House (1971) leader behaviour will depend on aspects of the situation that relate to: (1) high/low subordinate ability and (2) high/low task complexity. This idea of behavioural flexibility allows the leader to respond effectively to less than favourable situational conditions, (e.g. low subordinate ability and high task complexity) and still be effective; in contrast to Fiedler who suggests leadership effectiveness is dependent on conditions that promote structure and control – but which in reality is not always achievable or possible.

According to House's Path Goal Theory follower satisfaction and motivation is achieved when the correct match is made as different tasks and subordinates require different types of leadership. For instance, a difficult task assigned to a novice follower group would probably require greater direction and support from the leaders than the same task given to a more advanced and able set of individuals. Path Goal theory is named so as it describes the way that leaders encourage and support their followers in achieving the goals they have been set by making the path that they should take clear and easy to accomplish by the leader adapting their own behaviour according to the subordinates ability and the task complexity.
Path-Goal Theory has made an important contribution to the study of leadership by providing a framework to the study of situational leadership that matches an appropriate behaviour with the relevant context. Hersey and Blanchard (1977) propose a similar theory that looked at context appropriate behaviour but this time in terms of intensity in response to the subordinates' level of task maturity. Adding an additional contingency

3.2.3 Hersey and Blanchard's Situational Theory

Hersey and Blanchard (1977) developed a two dimensional model similar to House's Path Goal Theory where it is possible to be high or low in both task ability and related subordinate ability. However, the defining characteristic of Hersey and Blanchard's model is that leadership behaviour becomes a function not only of the characteristics of the leader, but of the characteristics of followers as well. Accordingly, the framework consists of three variables:

1. Task behaviour: the amount of direction and guidance provided by the leader in relation to the task.
2. Relationship behaviour: the amount of emotional support demonstrated by the leader.
3. Maturity level: the ability of followers on a particular task, in addition to the readiness of follower to perform a task with maturity.

Hersey and Blanchard's theory proposes the subordinates maturity level will determine the most appropriate combination of task and relational behaviours executed by the leader, where the likelihood of the follower/s completing the task successfully determines the degree of task and relational support offered by the leader. The situational model places combinations of task and relationship behaviours into four quadrants each representing the leader style is dependent on the subordinates' maturity:

3.2.3.1 High task and low relationship behaviour

The high task and low relationship dimension (where task demands are high but leader/follower relations are poor) requires the 'telling' style approach. The telling style approach is very directive because the leader produces a lot of input but a minimum amount of relationship behaviour. Such conditions would be ideal for an autocratic leader.

3.2.3.2 High task and high relationship behaviour

The high task and high relationship dimension (where tasks demands are high and leader/follower relations are good) requires the 'selling' style. The selling style is also very directive, but in a more persuasive, guiding manner. The leader provides considerable input about task accomplishment but utilises good leader –follower relations to evoke co-operation.

3.2.3.3 High relationship and low task behaviour

The high relationship and low task dimension (where leader-follower relationships are good and task demands are low) requires the 'participating' style. In the participating leadership style, there is less direction and more collaboration between leader and group members. Fewer task demands allow the leader to encourage consultation with their followers, in addition to there being greater capacity for follower learning.

3.2.3.4 Low relationship and low task behaviour

The low relationship and low task dimension (where leadership-follower relationships are limited and task demands are low) requires the 'delegating' style. In the delegating leadership style, the leader delegates responsibility for a task to a group member and is simply kept informed of progress. If carried to an extreme, this style would be classified as free-rein. Hersey and Blanchard (1977) explain that with the Situational Leadership model there is no one particular way to influence group members. The most effective leadership style depends on the readiness level of group members to be responsive.

3.2.3.5 Readiness

Readiness in Situational Leadership is defined as the extent to which a group member has the ability and willingness or confidence to accomplish a specific task. The concept of readiness is therefore not a characteristic trait or motive, instead it relates to a specific task. Readiness has two components: ability and willingness. Ability is the knowledge, experience and skill an individual or group brings to a particular task or activity. Willingness is the extent to which an individual or group has the confidence, commitment, and motivation to accomplish a specific task. The key point of Situational Leadership theory is that as group members' readiness increases, leaders should rely more on relationship behaviour than on task behaviour.

3.2.3.6 Limitations of the Situational Theories of Leadership

The situational approach to the study of leadership represents a consensus of thinking about leadership behaviour in relation to group members that is based upon the idea that competent people require less specific direction than do less competent people and that the core determinants for leader behaviour are the nature of the task and the nature of the relationship with the subordinates. Whilst this provides a valuable insight into the study of leadership, relating to the way in which subordinates maturity determines leader task and relational behaviour, it is restricted because leadership is more complex than this picture presents. Real world leadership consists of numerous tasks of various degrees of difficulty, which run simultaneously and involve followers with different levels of skill and ability (particularly within organisations). Today's business world is rich in complexity (Lewis, 1994), due to

competing demands, new technologies, globalisation of markets, continuous change and pressure from shareholders. Leaders now operate in organisational environments where unpredictability is the norm. In such contexts, leadership becomes less about trying to have control over events and more about adapting to the demands of the context in order to be more effective (Weick,1979). The next section will explore, using Systems Theory, three states of un/predictability in which organisations typically rest, before considering some of the factors that contribute to these three states.

3.3 SYSTEMS THEORY

Lewis (1994) explains that organisations typically find themselves in one of three states of un/predictability: Stability, Chaos; and the middle ground between these two opposite states, The Edge of Chaos. Each of these three states represents a low to high intensity of Organisational Complexity as described below.

3.3.1 Stability

The notion of stability was popularised by early research into organisational environments. Such a notion is characterised by traditional bureaucracy observable through organisational constraints and consistency, limited choice and increased predictability. Systems Theory describes such a state as loosely coupled, because the units are isolated from one another and so changes in one part of the system tends to be contained, which ultimately means loosely coupled systems have little effect on one another (Weick, 1976). In stability, nothing changes. From an organisational perspective organisations in stability are relatively static. Few forces in the environment change because the organisation is contained from internal and external organisational stimuli. There are for example no new competitors, no new technologies, or little activity by public pressure groups to influence the organisation. Stable organisations are characterized by certainty, meaning leaders who operate in stability can rely on an established, albeit limited, repertoire of behaviour in order to be effective.

3.3.2 Chaos

Incongruent with the notion of stability is the concept of chaos, which Herman (1969) identifies as a state that threatens high priority goals that lead to unexpected and unpredictable outcomes. From a Systems Theory perspective, chaotic systems are described as tightly coupled. Tightly coupled systems are chaotic because the units are so closely connected with one another that an action in one part of the system tends to cascade throughout the whole system, which ultimately means tightly coupled systems are highly sensitive to one another's

activities (Pfeffer and Salancik, 1978). From an organisational perspective, chaotic organisations are highly sensitive to internal and external organisational stimuli, such as, rapid changing government regulations that affect their business, new competitors, difficulties in acquiring raw materials, continuously changing product preferences by customers and so on. Chaotic organisations create uncertainty for their leaders, where those who are most effective are dynamic, rapid and versatile in the behaviours they apply to the situation.

3.3.3 Edge of Chaos

The Edge of Chaos is the middle ground between Stability and Chaos (Osborn, Hunt and Jauch, 2002). At The Edge of Chaos the context is not so dynamic, non-linear and unpredictable that the organisation cannot survive; instead patterns of short-term predictability are present alongside unpredictable movement in the pursuit of fitness. Anderson (1999) maintains leaders need to be versatile to the demands of their role at The Edge of Chaos, by being sensitive to changes in their environment.

At any point in time an organisation can fluctuate between these three prevailing states. Acknowledging this phenomenon ultimately changes the underlying assumptions made about working environments and leadership; organisations are dynamic and so should their leaders be. The next section explores some of the factors that contribute to these fluctuating states in organisations, an occurrence referred to as Organisational Complexity.

3.4 ORGANISATIONAL COMPLEXITY

Over the past four decades numerous attempts have been made to understand the multifaceted factors of the working environmental that contribute to the changing states in which organisations find themselves. Such attempts parallel advancements in organisational diversity brought to the forefront in the 1960s, with the introduction of new technologies that sowed the antecedents for the technological and service sector.

In the 1960s, business was typically dominated by the manufacturing industry, where performance and efficiency was measured in terms of clear cut inputs and outputs. Over the past four decades organisations have continued to become increasingly complex, not solely because of advances in technology, but because of the consequences that have resulted from these advancements, including globalisation of markets, machines replacing people and

increased competition. In post-industrial society, where once manufacturing and industrial organisations dominated, technological and service industries now occupy. In light of this, Damanpour (1996) conducted a Meta-Analysis that used the cumulative data from three decades of research to generate a conceptual overview of the environmental factors that contributed to workplace stability.

Damanpour (1996) proposes four factors that contribute to Organisational Complexity that in turn determine the state of stability organisations find themselves in, these include: (1) Structural Complexity (2) Organisational Size (3) Environmental Uncertainty (4) and Innovation. Each of these will now be discussed.

3.4.1 Structural Complexity

Structural Complexity describes the various ways in which tasks, jobs and services are co-ordinated and performed within the workplace. Mileti, Gillespie and Hass (1977) considered this in terms of the number of locations in which the work is preformed, the number of services or jobs carried out, the diversity of the tasks and the hierarchical differentiation between individuals who perform these tasks. Damanpour (1996) recommends considering Structural Complexity in terms of two dimensions that can be measured horizontally across the organisation. These are:

1. Departmental and functional dimension, which Aiken, Bacharach and French (1980) and Kimberly and Evanisko (1981) explain as, the degree to which the organisation is arranged into functional units and structures.

2. Role specialisation and occupational dimension, described as the degree of occupational specialisations present within an organisation. (Hage and Aiken, 1967, Damanpour, 1987). Aiken and Hage (1971) maintain that organisations comprised of a diversity of specialists across workplace subunits are likely to have a greater knowledge base, have more ideas and increased innovation as a consequence.

3.4.2 Organisational Size

Blau (1970) identifies that there are advantages and disadvantages associated with both large and small organisations in terms of the extent of organisational stability that they produce. Hitt, Hoskisson and Duane Ireland (1990) consider these factors with reference to the pros and cons associated with Organisational Size:

1. Large organisations potentially have access to more resources, specialists and expertise, projects and opportunities, but likewise can be more restricted as operations are increasingly becoming more standardised and formal.

2. Small organisations have the capacity to be more flexible, with a greater capacity for adaptability but can be restricted by a lack of resources, opportunities and expertise.

Small organisations typically operate on a simple structure. Consequently, as organisations grow, their structure becomes more complex with the introduction of formalised structure, increased employee specialism and organisational hierarchies that attempt to create a sense of order in times of uncertainty (Child, 1973; Mintzberg, 1979). While such order is often necessary, it can be restrictive if structures are too rigid (Pierce and Delbecq, 1977).

3.4.3 Environmental Uncertainty

Daft (1992) and Duncan (1972) consider Environmental Uncertainty in terms of variability, which refers to the degree of environmental un/predictability and frequency with which such variability occurs within a given context. Increased Environmental Uncertainty is associated with environments that are highly complex and experience a high degree of change (Galbraith, 1973). Research has indicated that a moderate degree of Environmental Uncertainty is healthy for an organisation.

3.4.4 Innovation

Traditional organisational literature defines Innovation in terms of an organisation adopting new ideas and behaviours (Daft, 1978). While this simple explanation of organisational innovation still holds true in today's business world, Innovation is seen to additionally encompass the degree to which new technologies, new products and services are adopted and welcomed in organisations. Additionally, this description of Innovation considers such innovative practises in terms of the structure and systems, plans and programs that in turn affect organisational members and their stakeholders. Damanpour (1996) links Innovation with Environmental Uncertainty and Organisational Size. Environmental Uncertainty can determine whether innovations are incremental or radical. Incremental innovations are emergent; they are slower and more steady to take impact and result in changes that are less of a departure from existing organisational norms and activates (Dewar and Dutton, 1986). Radical innovations are those that have a significant impact on the organisation; radical innovations promote change and departure from existing organisational practises, but are less

frequent than incremental changes because they are seen to be more complex and experience more resistance than incremental innovations (Frost and Egri, 1991). Ettlie and Rubenstein (1987) maintain that increases in Organisational Size can help overcome the problems associated with radical innovations due to the presence of specialist knowledge and greater unrestricted resources that promote the integration of new practices. As organisations increase in size, structures such as human and technical resources can help promote Innovation whilst acting as a buffer against the environment should such innovations fail.

To recap, Lewis (1994) explains that organisations typically find themselves in three states: Stability, Chaos and The Edge of Chaos. Anderson's (1999) acknowledged that organisations can fluctuate between these three states at anytime. Consequentially, leaders need to be versatile to the demands of their role by being sensitive to changes in their environment (relating to Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation) since organisations are dynamic and so too should their leaders' be.

3.5 CONTEMPORARY DEBATES

Leadership 'presence' is a concept that had occupied much scholarly debate but is one that is difficult to define and accordingly study (Bryman, 1992). Some researchers attribute presence to an aspect of a leader's personality, others to the actions performed by a leader, whilst some explain presence as a product of leadership style (Fairhurst and Cooren, 2009). The consensus is that presence is an effect or outcome of leadership but how it is produced still remains uncertain and may never be defined; as Murphy (1994) asserts, 'To try to theorise presence is to drain the vitality from the concept' (p.13).

Traditional discussions around presence focus on the human aspects of presence, the impact a leader produces by their own physical presence. Alternative fields of research have explored the non-human aspects of presence, where a non-human entity provokes a similar effect to that of a human. To illustrate this idea, Fairhurst and Cooren (2009) use the example of the speed bump, a non- human entity that when present triggers a reaction (to uphold the Law) without the need for a deliberate human intervention or presence. Such a concept mirrors the idea of 'tags' described in the Complexity Theory literature. Marion (1999) explains that a 'tag' is a symbolic or physical structure around which behaviours unify. Examples of tags include: new technologies, ideas, symbolic acts, myths and beliefs. Holland (1995) observed that tags often serve as auto-catalysts that bring about reactions observable in human behaviour. Auto-catalysts create "order for free" that is action without deliberate human

intervention. “Order for free” is present in organisational life; it exists in organisational culture e.g. when employees undertake their daily duties without deliberate human intervention (e.g. micromanagement) and instead self organise. Like leadership presence, order for free is more easily observed than explained but we acknowledge it exists.

Current research considers leadership presence as a hybrid of human and non-human entities; where the leader’s physical being coupled with material extensions (car, ipad, designer clothing, etc) contribute to the leader’s sense of presence. What is more is that there is an expectation from ‘followers’ for ‘leaders’ to possess these material items, as Grint (1997) suggests, ‘money-less and technology-less leaders are unlikely to prove persuasive’ (p.17). Fairhurst and Cooren (2009) acknowledge there is also an expectation as to how leaders should behaviour. Using the example of US State leaders who face national disaster, Fairhurst and Cooren (2009) acknowledged that leaders is remain unaltered and confidence receive more positive public reaction and perceived credibility than those who become visibility panicked and overwhelmed. In high uncertainty there is no capacity to sympathise to the leader’s human-side, ‘followers’ call for reassurance to unite behind the leaders cause, as the many become one. If the ‘official leader’ cannot rise to this challenge, ‘followers’ will self-organise around someone or something that can.

Fry and Kriger (2009) extent upon the idea of leadership presence with reference to the concept of ‘being’. Being is the state of having existence, where something such as an object, a person, an idea, or a symbol is thought to exist or is represented as existing. This approach to understanding leadership goes beyond current theories of leadership focused on having (traits) and doing (actions). The being-centred theory of leadership, like the others theories discussion in this section, moves away from a perspective of leadership focused on deliberate intent or perceived control (on the part of the leader). Instead effective leadership becomes a produce of perception, in the eye of the follower. The being-centred theory regards leadership as a socially constructed reality supported by vision, values and images which motivate other to perform. The theory acknowledges the infinite number of possibilities that exist in any moment and advocates ‘leaders’ and ‘followers’ foster greater self-awareness in view of this.

Acknowledging the infinite number of possibilities that exist in any moment includes context as a factor that determines events. Liden and Antonakis (2009) refer to this through interactional psychology, where the person and situation are reciprocally influenced by one another. This phenomenon has implications for the study of leadership and organisations, particularly when exploring behaviour. Lewin (1936; 1947) observed that behaviour is a

function of person and environment in which they two are embedded. The situational theories of leadership acknowledged this in the late 1960s and throughout the 1970s (Fiedler, 1967; House, 1971; Hersey & Blanchard, 1977). At present these perspectives are re-emerging in more sophisticated process models (Antonakis, 2004; Lim & Ployhart, 2004; Zaccaro et al, 2004) linking traits with behaviours in particular contexts.

Osborne, Hunt and Jauch (2002) maintain that leadership and its effectiveness is largely dependent upon, and embedded in, the context. Similar to Fry and Kriger (2009), they uphold that leadership is socially constructed in and from the context in which it exists; however, Osborne et al (2002) acknowledge that within the embedded contexts, pattern and history matter. Pattern and history give rise to common circumstances that allow us to anticipate leadership behaviours and provide an appropriate context for interpreting the social reality. Using the organisational hierarchy as an example, Osborne and colleagues (2002) observe a pattern, namely: within lower organisational levels conditions appear to be more stable, however, moving up the hierarchy conditions become less stable and more chaotic. This observed pattern has implications for our understanding of organisations and for the leaders who operate within such contexts.

Osborne and Marion (2009) call for research that treats context as the prime consideration, rather than an afterthought, particularly in relation to leadership which takes place within a (organisational) context, not a vacuum. Part of not operating in a vacuum or isolation involves creating alliances, a merging of efforts or interests by persons. Scholars have speculated that alliances are essential to leadership success. All involved in the alliance have their own and shared interests but gain more from cooperation than independent action (Osborne et al, 2009).

Returning to Osborne and colleagues (2002) observation that lower organisational levels are more stable than higher organisational levels, which are generally more chaotic; whilst this maybe a general pattern there will be occasions when organisational dynamics fluctuate from the norm. Osborne et al (2009) remark that often organisations rest in a state of ‘dynamic equilibrium’ that is between stability and chaos because all organisations are exposed to factors that stimulate change: competition, new technology, internal initiatives and institutional evolution. Organisations who survive are usually more responsive to change; likewise, those who adopt alliances are generally more agile to shifting organisational dynamics than individuals operating in isolation.

Reflecting upon strategies that may provide less useful in dynamically changing organisations, Osborne et al (2009) controversially identify transformational leadership. Transformational leadership is one of the best known theories of leadership. It occurs when the leader takes a visionary position and inspires people to follow. However, Osborne and colleagues (2009) caution that transformational leadership reinforces top-down, centralised decision-making, controlled communication, formalization and executive determined goals. Transformational leadership supports a perspective of leadership that champions the 'individual in charge'. To reiterate our previous discussion around the work of Fry and Kriger (2009) effective models of leadership need to move away from deliberate intervention and perceived control on the part of the leader. As Osborne and Marion (2009) maintain 'leaders', particularly those exposed to high uncertain conditions, need to work with subordinates to discover what information is important for improving the system and connecting subordinates to a broad variety of potential information sources. Such a perspective echoes that of self-organisation; as Osborne et al (2009) articulate, order can arise out of chaos if the system is effectively interactive and networked; where the context is of equal importance to leadership.

Conducting a review of the leadership literature from 1990-2005, Porter and McLaughlin (2006) remark upon the lack of research concerning how organisational contexts affects leadership, with many studies being context free. Likewise, Porter and McLaughlin (2006) observe the effects can be two-way, the context can affect the leader but likewise the leader can affect the context.

Amongst the minority of articles that did recognise the context, most were conceptually driven rather than empirical. In general, neither type of article was instrumental in advancing the study of context; the conceptual articles focused on how context should be studied (rather than putting the suggestions into practice), or drew to attention the weaknesses of the studies that attempted to test these assertions. Such critique may not be untoward, as Porter and McLaughlin (2006) maintain many of the empirical leadership studies that explored context did so as an afterthought.

There are no universally agreed components that comprise the context for leader behaviour occurring within organisational settings; however, Porter and McLaughlin (2006) identity the following as important and deserving of attention: culture/climate, goals/purposes, people/composition, processes, state/conditions, structure, and time. This list is by no means absolute; some contexts will exclude several of these components, others will include more. Taking the complexity theorist perspective of Complex Adaptive Systems (CAS), systems

(such as organisations) comprised of dynamic and adaptive networks of interactions, we may never be able to identify all of the components that underlie organisational contexts. Nonetheless, we need to compromise if we are to advance the study of organisational contexts somewhat, instead basing our research around patterns to support our understanding (Osborne et al, 2002).

The changing nature of work and the impact this has on leadership and organisations makes exploration of the components that underlie organisational contexts ripe for research. As Uhl Bien and Marion (2009) explain organisational leadership theory is shifting away from the industrial age to one of knowledge/service provision, which may require a different type of conceptualisation. Likewise, we must contend with contradictions that exist in working environments, specifically the presence of administrative functions and bureaucracy that favour control in the midst of the emergent, adaptive dynamics that are deep-seated in the nature of organisations. This phenomenon is something that not only needs to be acknowledged in academia but also in practice.

3.6 CONCLUSION

This chapter has provided an overview of how Organisational Complexity can influence states of organisational stability and ultimately determine leader behaviour. The chapter began with a discussion of Situational Leadership that acknowledges situational factors determine the style of leadership adopted by leaders in response to task and subordinate demands. A more specific discussion of Systems Theory and Organisational Complexity followed which acknowledged the various contextual factors that determine leader behaviour. The subsequent chapter brings together discussions from this chapter and Chapter Two relating to the study of leadership and organisations from the perspective of Complexity Theory through the creation of a conceptual framework.

Chapter 4: Development of the conceptual framework

4.1 CHAPTER SUMMARY

The purpose of this chapter is to bring together previous discussions relating to the study of leadership and organisations from the perspective of Complexity Theory through the creation of a conceptual framework that guides this research.

The sheer volume of the theory and research devoted to the study of leadership is a testimony to its prominence in our efforts to understand and improve organisations. This chapter builds upon prior leadership research by exploring leadership from the perspective of Complexity Theory, an approach recommended by Marion and Uhl Bien (2001) as a possible resolution to the limitations in current leadership research and new lens from which leadership research can be explored and advanced. By exploring leadership from the perspective of Complexity Theory this research contributes to the evolving process of moving the study of Complexity from the arena of metaphor to something real and operational.

The latter half of the chapter presents a set of hypotheses about how Complexity Theory can inform our understanding of the relationship between Behavioural Complexity and leadership effectiveness (introduced in Chapter Two) , in addition to how this relationship can be moderated by the influence of Organisational Complexity and leadership training (discussed in Chapter Three).

4.2 LITERATURE OVERVIEW

This section provides an overview of how Complexity Theory can be applied to the study of leadership and organisations that later informs the development of the conceptual framework on which the thesis is based.

Chapter One considered the general strengths and weaknesses of existing organisational leadership studies which prompted suggestions for future research. Chapter Two elaborated on these suggestions by identifying the problems associated with the current study of leadership, specifically relating to problems of reductionism, where leadership is studied in isolation of the context where it exists; and determinism, the belief events are caused by preceding events and by knowing enough about the preceding events one can predict the future with certainty (Prigogine, 1997). Chapter Two explores Complexity Theory as a perspective from which leadership could be studied to address some the limitations of past research.

Complexity Theory has existed in the natural sciences for many years but has only recently surfaced as a metaphor for studying leadership and organisations within the Social Sciences. In its simplest terms Complexity Theory moves away from linear mechanistic views of the world where simple cause and effect solutions are sought to explain physical and social phenomena, to one that is non-linear and organic, characterised by uncertainty and unpredictability (Regine and Lewin, 2000). In the context of leadership this means we cannot always predict the outcomes of particular leadership processes but we can make assumptions within particular parameters as to a select number of processes that may be effective. These assumptions are based upon patterns of short term predictability that are present in the dynamic and somewhat unpredictable contexts where leadership takes place; where a select number of behaviours enable the desired outcomes that promote leadership effectiveness. The behaviours referred to are discussed explicitly in Chapter Two with reference to Behavioural Complexity. Behavioural Complexity encompasses behavioural repertoire (range of behaviours) and behavioural differentiation (the capacity to apply appropriate behaviour as the situation dictates). Behavioural Complexity is operationalised using Quinn's Competing Values Framework (Lawrence, Lenk and Quinn, 2009). To briefly recap, the Competing Values Framework encapsulates four behaviours (Control, Compete, Collaborate and Create) that complement and contrast each other but are also contingent to nearly all situations because they promote versatility and adaptability.

Chapter Three explored the situational factors that affect leader behaviour. Acknowledging these factors is important because as Osborne, Hunt and Jauch (2002) explain leadership does not exist in isolation. Instead, leadership is influenced by the situation in which it exists where leaders need to be sensitive to changes in their environment by reacting with the right combination of behavioural repertoire and behavioural differentiation in order to be effective. Those who achieve this are referred to by Osborne et al as Complex Leaders.

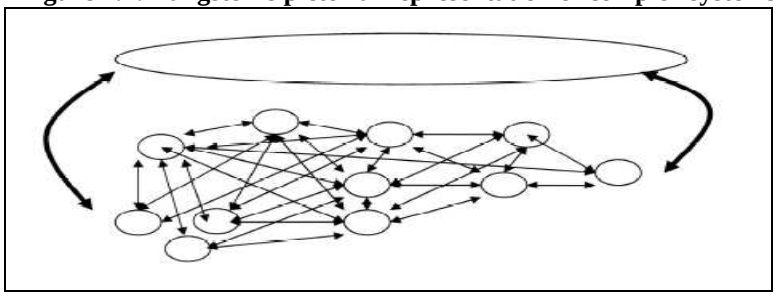
Complex Leaders invoke complex behaviours to be effective in multifaceted and unpredictable environments. Complex Leaders utilise a repertoire of complex behaviours to create the conditions that enable productive but largely unspecified future states (Boal and Hooijberg, 2001). This suggestion recognises that leaders cannot control the future because Organisational Complexity and unpredictable internal dynamics will determine the future. With this perspective in mind, the following conceptual model is presented about Complex Leadership, centred on leader Behavioural Complexity as a main leadership response strategy for enabling effectiveness in complex and diverse organisational contexts.

4.3 LINK BETWEEN COMPLEXITY THEORY AND THE RESEARCH METHODOLOGY

Chu (2011) describes a complex system as one comprised of interconnected parts, in which the whole explains more about the behaviours of the system than the parts in isolation. The natural sciences have extensively explored such systems, under the banner of complexity science. To provide just a few examples this, complexity science incorporates the study of: ant colonies, climate, nervous systems, cells, and the human body.

The manifestations of complexity science span several academic disciplines, including: mathematics, computer science and the social sciences. Regardless of the academic discipline the features of all complex systems are the same; Langston (1986) represents this pictorially (see figure 4.1). The characteristics of this illustration shall now be explained as described by Cohen and Havlin (2010), as the nine characteristics of complex system.

Figure 4.1: Langston's pictorial representation of complex systems



1. Coupling. Complex systems are comprised of coupled components (illustrated by the arrows linking the circles in figure 4.1). Linkages between the components mean the effects of actions which impinge upon one unit cascade to all the units to which the unit is linked. The process is repeated for the newly affected units; meaning the impact of the original impinging factor cascades throughout the whole system. This process can be catalyzed from within the system or from outside. The process is repeated for different impinging factors. In biology we can compare this process to the way a virus attacks cells of the body and the body's response to such invasion, here the catalyst is external to the system. Likewise, we observe this process in human interaction, e.g. when two relatives have a dispute and a split is created in a family as allegiances manifest, here the catalyst is created from within the system.

2. Boundary-less. Interaction between the coupling components makes it difficult to determine the boundaries of a complex system. For example, a complex system such as an organisational department is comprised of people working in that department. However, individuals within that department will interact with people from outside the department, be these employees from another department, or customers external to the organisation. Each interaction has a cascading effect; the boundaries of this effect are defined by the observer and the point at which they cease observing.

3. Open-systems. Complex systems are open, fluctuating between different states of stability. Complex systems are dynamic sometimes resting in a state of stability, chaos, or dynamic equilibrium (the zone between stability and chaos). The state of the system will be determined by the degree of coupling between the components, driven by factors internal and external to the system. In times of chaos or change coupling between the system's components will be more frequent that in times of stability. In human systems we attribute this phenomenon to individuals interacting in times of uncertainty to help rationalise or respond to the demands of the context.

4. Memory. Complex systems have memory, which can account for the system's present and future state. In human systems individuals learn from their interaction with the environment, which helps determines future coupling, activities and survival.

5. Nested. Complex systems are themselves nested within complex systems. For example, an economy is comprised of organisations, which are made up of people, which themselves are made up of cells. Each link in the sequence represents a complex system.

6. Multiplicity. Complex systems generally cluster which means interactions between the system's components tend to be localised rather than dispersed. In the human cortex we observe this with dense local connectivity and very few long axon projections with other brain regions.

7. Emergence. Complex systems produce emergent behaviours that emerge without deliberate co-ordination or intention, order is for free. Order for free exists everywhere, from the flocking of birds to cell mitosis.

8. Non-linearity. Complex systems are non-linear, meaning events within complex systems do not follow direct sequences. Neither are the effects proportionate to the cause; big effects can have small consequences and small effects can have big consequences, this phenomenon is referred to as the butterfly effect. The butterfly effect is a term used in the complexity sciences (as an analogy) to describe how small changes to a seemingly unrelated thing or condition (also known as an initial condition) can affect large, complex systems. The term comes from the suggestion that the flapping of a butterfly's wings in South America could affect the weather in Texas, meaning that the tiniest influence on one part of a system can have a huge effect on another part.

9. Feedback loops. Complex systems contain feedback loops to allow for self-regulation. The endocrine system is an example of a complex system in the human body the uses a feedback

loop. The endocrine system regulates body temperature. When the body is too cold, nerve impulses cause muscles to contract and shiver, blood vessels to constrict and thyroid to increase its metabolic rate. These processes all work to increase body temperature. If the body becomes over-heated, nerve impulses work to dilate the blood vessels, move warm blood away from the warmer core of the body into the cooler skin and stimulate the sweat glands to release sweat, thereby cooling the body via evaporation.

The characteristics of complex systems are broad and vast. Some systems may display some of the nine characteristics (listed above), others may display them all. Each characteristic represents a science in its own right, for this reason we acknowledge there is not a complexity science but instead several complexity sciences. Each science offers an analogy through which organisational life can be studied. Whilst acknowledging the existence of each of the nine features of complex systems the thesis makes indirect reference to a selection of these features as analogies, specifically:

Feature 1 – *Coupling*. Interaction with agents (people) and the environment catalyses a reaction which the thesis hypotheses as behavioural change, where an agent applies appropriate behaviour to the demands of the context.

Feature 3 - *Open systems*. Complex systems fluctuate between different states of stability, a phenomenon which the thesis recognises as organisational complexity.

Feature 4– *Memory.* Agents in the systems have memory and learn from experience. The thesis hypotheses whether agents can be taught behaviours that could be instrumental to their functioning within the system,

Feature 9 – *Feedback loops.* As an overarching theme to the thesis, the idea of self-regulation in response to the demands of the environment underlies the notion of complexity applied as an analogy to explain organisational life.

By exploring these features, we do not state a claim to exploring them in their entirety. Indeed for many of the features we do not do them justice by attempting to empirically test them. Many of the features of complex systems cannot be empirically tested. Remember at the heart of complexity is the notion of unpredictability and the whole explaining more than the sum of its parts. To empirically test a complex system applies a deterministic/predictive model to it, which goes against the underlying ethos of complex systems. Complex systems are boundary-less, to empirically test them creates a boundary, defined by the observer and the point at which they cease observing. Such a method of testing creates the common mistake of exploring the parts to explain the whole.

Despite all good intentions, many of the features of complex systems cannot be empirically tested. For this reason the thesis will use the features of complex systems as an analogy to help explain organisational life and complexity to mean highly complicated. From this perspective we do not explore complexity theory in the purest sense of the term but instead take elements from the different (conceptually discussed) features of complex systems in an attempt to test them in practice - this creates a paradox! By dissecting the parts of a complex system we lose the essence of its complexity but if we do not attempt to explore some of these features in practice the study of complexity remains in the realms of theoretical discussion. This paradox is comparable to the study of the human body. We cannot explore the human body fully as a system whilst a person is alive, as to do so would bring about premature death. Much of this exploration can only be done posthumous, at which point most of the essence of the system is lost, whilst the sum of the parts are explored to explain the whole. At present we do not have a better or alternative way of studying the human body that does not sacrifice the principles of complexity but this does not make what we have worthless. On the contrary, some remarkable medical interventions have been made with 'what we have'. We cannot predict with complete certainty which interventions will be effective but we can anticipate around patterns of behaviour as to the ones that could be, which some might say is better than nothing, particularly for those diagnosed with a chronic illness.

Complexity theory poses a challenge to the traditional positivistic paradigm adopted in quantitative research. Positivism assumes that knowledge is achieved through observation, where data is obtained and verified, creating empirical evidence. Central to the positivistic approach is the notion of 'value freedom', by which data and analysis do not change under examination. To this end positivism is only concerned with social facts that are examinable. Realism is a branch of positivism. Realists accept the world as it literally is and deal with it accordingly. Realists are pragmatic, viewing things in black and white as opposed to the rich multi-colour of complexity.

In an attempt to explore complex (organisational) systems we shoehorn them into a positivistic paradigm, when on the surface an interpretivistic approach may appear more suitable. Interpretivists take the view that since human beings think and reflect scientific methods are inappropriate for studying their behaviour. Unlike objects in nature human beings can change their behaviour if they know they are being observed. Interpretivists argue that if we want to understand social action we have to speculate into the reasons and meanings which that action has for people. Interviews, focus-groups and ethnographies are common methods used to capture such data. However these methods are restrictive in terms of the

number of participants that can be feasibly studied, which makes it difficult to apply generalisability to the findings. Likewise, much of the research that has attempted to operationalise the conceptual components of complexity has done so using qualitative methods; in contributing to knowledge this research deliberately to takes a different approach. In complex systems we acknowledge the presence of unpredictability that is why we look for patterns. Survey methodology allows us to gather such data in larger quantities than one would achieve using qualitative methods. There is a trade off in that survey methodology, as opposed to interviews, does not allow us to gauge fully the participants' interpretation of the questions, something which face-to-face contact would allow one to clarify; the advantage of this trade-off is that of a larger sample. Larger samples mean we can achieve greater generalisability in the findings, or pattern (in keeping with the complex systems terminology), making a positivistic paradigm the most suitable of the opinions for this research design.

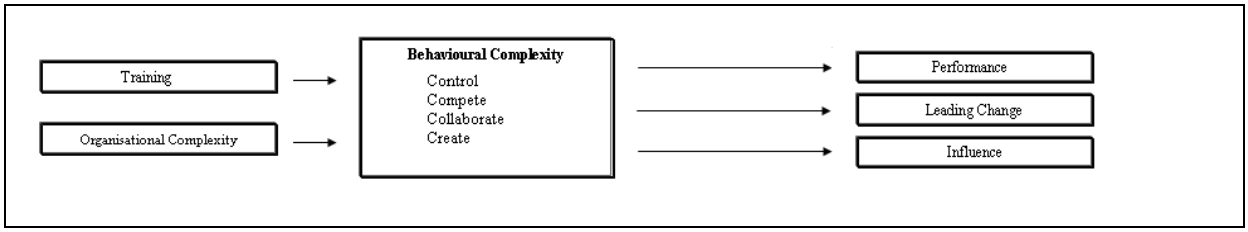
4.4 CONCEPTUAL FRAMEWORK

This research sought to shed light on the relationship between Behavioural Complexity and outcomes of leadership effectiveness, specifically:

1. To establish the extent to which Behavioural Complexity is an enabler of leadership effectiveness
2. To establish the extent to which Organisational Complexity moderates Behavioural Complexity and leadership effectiveness
3. To establish the extent to which leadership training supports Behavioural Complexity in contributing to leadership effectiveness

The conceptual framework that defines these aims is presented below in figure 4.2. Behavioural Complexity is captured through Quinn's Competing Values Framework. The model is anchored from low to high for each of the four Competing Values (Control, Compete, Collaborate and Create). Individuals who demonstrate proficiency on each of the four Competing Values are considered Behaviourally Complex. The conceptual model will now be discussed.

Figure 4.2: A conceptual model of the outcomes and moderators associated with Behavioural Complexity



Behavioural Complexity forms the central focus for the research, as illustrated in the conceptual model above. Three outcomes of leadership effectiveness: (1) Performance (2) Leading Change and (3) Influence are attributed to Behavioural Complexity. Organisational Complexity and training are presented as two factors that can potentially moderate an individual's capacity to be Behaviourally Complex and ultimately be effective as a leader. Following this line of reasoning hypotheses were drawn which are outlined in the following section and will be tested in the proceeding chapters of the thesis, where Behavioural Complexity refers to a leader's capacity on each of the four Competing Values: Control, Compete, Collaborate and Create, as captured by Lawrence, Lenk and Quinn's (2009) framework.

4.5 HYPOTHESES

Following from the conceptual framework detailed above this section presents the hypotheses that flow from it. Specifically they rest on leader Behavioural Complexity and its associated outcomes of leadership effectiveness, in addition to the factors that may moderate it.

Behavioural Complexity is the ability of a leader to demonstrate a large repertoire of behaviours; to Control, Compete, Collaborate and Create (as captured by Lawrence, Lenk and Quinn's, 2009; Competing Values Framework) in response to the context. These behaviours enable leadership effectiveness, they are complementary and contrasting but appropriate to nearly all leadership situations, so leaders can use them to be responsive to the demands they face in practice through the process of behavioural differientation (Lawrence, Lenk and Quinn (2009).

Leadership effectiveness is defined here as an individual's capacity for proficient performance and ability to lead change (Lawrence, Lenk and Quinn, 2009); and influence (Yukl, 2006). These outcomes of leadership effectiveness have been widely discussed in the leadership literature, but generally have not been empirically tested within the context of Behavioural Complexity. With that said, the following hypotheses are presented:

4.5.1 Behavioural Complexity as an enabler of Overall Performance

Lawrence, Lenk and Quinn (2009) demonstrated that Overall Performance (defined as a leader's performance in terms of the following areas: success compared to their peers, the degree to which they meets performance standards, their performance as a role model for others, and their overall performance as a leader) is associated with higher scores on each of the four Competing Values, reinforcing the importance of a wide behavioural repertoire that enables leaders to draw upon an array of behaviours in response to the demands of the context. The link between Behavioural Complexity and Overall Performance has been previously demonstrated by Lawrence, Lenk and Quinn (2009) whose research indicates that Overall Performance is associated with overall higher instrument scores on the Competing Values - reinforcing the importance of a wide array of behavioural strengths. In keeping with consistency, this study aims to replicate the findings by proposing the following hypotheses:

Hypothesis 1: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling leadership effectiveness in terms of Overall Performance.

4.5.2 Behavioural Complexity as an enabler of Ability to Lead Change

Lawrence, Lenk and Quinn (2009) demonstrated that people with a particularly strong emphasis on the Create quadrant of the Competing Values Framework also had a high score for Ability to Lead Change, suggesting for certain performance outcomes imbalances across the four quadrants could prove useful. In keeping with consistency, this study aims to replicate the findings by proposing the following hypothesis:

Hypothesis 2: Behaviours in the Create quadrant of the Competing Values Framework are needed for change. Accordingly, Create will have strongest magnitude of the quadrants in relation to Ability to Lead Change.

4.5.3 Behavioural Complexity as an enabler of Influence

Leaders cannot fully control the environments in which they operate because the level of activity that exists in and around organisations is beyond the capacity of the individual 'in-charge' to appreciate. Accepting this is central to understanding leadership from the perspective of Complexity Theory where the role of the leader is that of enabler rather than determiner of effectiveness. Boal and Hooijberg (2001) maintain leadership involves creating the conditions that enable productivity in largely unspecified future states. This suggestion recognises that leaders cannot control the future (determinism) because in complex systems such as organisations, unpredictable dynamics will determine future conditions. Under such circumstances Boal and Hooijberg recommend leaders increase their capacity for influence. Influence is a process whereby intentional influence is exerted by one person over others; to guide, structure, and facilitate activities and relationships in a group or organisation (Yukl, 2006). Much of the literature surrounding influence and its links with Behavioural Complexity has been discussed conceptually but has not been tested empirically. In view of this the following hypothesis is proposed.

Hypothesis 3: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling leadership effectiveness in terms of Influence.

4.5.4 Organisational Complexity as a moderator of Behavioural Complexity and leadership effectiveness

Marion and Uhl Bien (2001) maintain that the most effective leaders are the ones who adapt themselves in response to the environment; a view that has echoed through the leadership literature particularly in relation to Situational Leadership (discussed at length in Chapter Two). House's (1971) Path Goal Theory is probably one of the most well known of the situational theories, in addition to most comparable to leadership in the context of Organisational Complexity. The basic premise for the theory is that leaders will execute appropriate behaviour based upon two situational variables: the subordinates perceived ability and the task characteristics: structured or unstructured.

Whilst acknowledging the contribution Path Goal Theory has made to the study of Situational Leadership this research aims to explore the factors that the theory fails to acknowledge when applied to an organisational context. Specifically, often the distinction between the follower characteristics and task structure is not as clear cut as the theory describes. Real-world tasks are often a combination of structured and unstructured elements that are carried out by capable and less capable followers simultaneously. Accordingly, leaders who operate under such conditions need to be versatile to successfully respond to multiple sources of situational stimuli (referred to in this research as Organisational Complexity) if they are to be effective.

Damanpour (1996) proposes four factors (see Chapter Three for more details) that contribute to Organisational Complexity, these include:

1. Structural Complexity, describes the various ways in which tasks, jobs and services are coordinated and performed within the workplace.
2. Organisational Size, relates to the physical capacity of the organisation.
3. Environmental Uncertainty refers to the degree of environmental viability and frequency with which such variability occurs within a given context.
4. Innovation encompasses the degree to which new technologies, new products and services are adopted and welcomed in organisations.

In view of these descriptions of the following hypotheses are presented where the Competing Values are proposed as contingencies to the effects of Organisational Complexity as a means of maintaining leadership effectiveness.

Hypothesis 4: High Structural Complexity decreases leadership effectiveness. The effects of Structural Complexity can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create), that in turn contributes to improved leadership effectiveness.

Hypothesis 5: High Organisational Size decreases leadership effectiveness, The effects of Organisational Size can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create), that in turn contributes to improved leadership effectiveness.

Hypothesis 6: High Environmental Uncertainty decreases leadership effectiveness. The effects of Environmental Uncertainty can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create), that in turn contributes to improved leadership effectiveness.

Hypothesis 7: High Innovation decreases leadership effectiveness. The effects of Innovation can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create), that in turn contributes to improved leadership effectiveness.

4.6 LEADERSHIP TRAINING SUPPORTING BEHAVIOURAL COMPLEXITY IN CONTRIBUTING TO LEADERSHIP EFFECTIVENESS

In view of the anticipated benefits associated with Behavioural Complexity this research explores whether leadership training can support Behavioural Complexity in contributing to leadership effectiveness. Much research had endorsed the importance (and benefits) of educating individuals in leadership practices but none as yet have explored whether Behavioural Complexity, in particular, can be developed alongside leadership training. The thesis specifically addresses this question. In view of this, the following hypotheses are proposed:

Hypothesis 8: Leadership training has a positive effect on leaders' capacity on each of the four Competing Values.

Hypothesis 9: Leaders exposed to training will show greater increases on each of the Competing Values than leaders not exposed to leadership training.

Hypothesis 10: Leadership training has a positive effect on the development of leadership effectiveness

Hypothesis 11: Leaders exposed to training will show greater increases in leadership effectiveness than leaders not exposed to leadership training.

Hypothesis 12: Increases in the Competing Values will mediate the relationship between training and improved leadership effectiveness.

4.7 CONCLUSION

This chapter brought together discussions from earlier in the thesis that contributes to the creation of the conceptual framework that underlies this research. The chapter builds upon prior leadership research by exploring leadership from the perspective of Complexity Theory as a possible resolution to the limitations in current leadership research. The latter half of the chapter presented a set of hypotheses relating to the research aims: (1) to establish the extent to which Behavioural Complexity is an enabler of leadership effectiveness (2) to establish the extent to which Organisational Complexity moderates Behavioural Complexity and leadership effectiveness and (3) to establish the extent to which leadership training supports Behavioural Complexity in contributing to leadership effectiveness. The next chapter details the methodology adopted in the investigation of these research aims.

Chapter 5: Methods and Samples

5.1 CHAPTER SUMMARY

Chapter Four described the thought processes underpinning the conceptual framework that guides the design of the study. This chapter moves on to look in detail at the methodology adopted to address the questions raised in Chapter Four regarding the relationship between Behavioural Complexity, Organisational Complexity and leadership effectiveness. The objective of this chapter is to describe the methods used in this study of Behavioural Complexity. The chapter begins with a discussion concerning the philosophical paradigm and methodological rationale in which the thesis is grounded. The chapter then goes on to describe the methods used in the thesis to explore leader Behavioural Complexity. Study-specific information is included in the individual study chapters that follow. This chapter describes the sample characteristics, research design, instruments and the study procedure common to the three studies that form this research as a whole

5.2 RESEARCH PARADIGM

Kuhn (1970) defines a paradigm as a set of rules, beliefs, values and techniques accepted by science that provide different conceptualisations of the world. It is these conceptualisations that determine how knowledge is transmitted, since the planning and methods adopted in research reflect the research paradigm held by the researcher. This project is founded within a positivistic paradigm.

Delanty (2002) endorses the positivistic paradigm. Positivism is based upon two assumptions: (1) Realism, the idea that realities exist outside of our minds and (2) Objectivism, the belief that objects have meaning independently of any consciousness of them, since the social world exists independently of our appreciation of it (Crotty, 1998). Positivism also incorporates empiricism, the perspective that knowledge is restricted to immediate experience and what can be logically derived from that. Delanty explains, from the positivistic perspective, that knowledge is obtained through observation, linked to science through verification. Verification allows us to acquire unambiguous and accurate knowledge about the social world and also to uncover causal laws with the power of explanation.

At the heart of the positivist approach is the notion of ‘value freedom’, by which data and analysis do not change under examination. To this end positivism is only concerned with social facts that are examinable.

Positivistic assumptions make it possible to identify and test hypotheses relating to the nature and extent to which Behavioural Complexity predicts hypothesised outcomes of leadership effectiveness. Furthermore, we may also explore the extent to which Behavioural Complexity is affected by Organisational Complexity and also exposure to leadership training.

The methodology applied in this project follows a deductive approach, where hypotheses are derived from pre-existing theoretical knowledge that is tested through observation and verification. The results are analysed and eventually translated into general laws that feed back to the theory.

5.3 RESEARCH METHODOLOGY

The research paradigm determines the type of methodology adopted. Traditionally, the positivistic paradigm is associated with quantitative methods. Quantitative methods claim a high level of scientific rigor through processes that involve careful definition and measurement of the variables under investigation. Quantitative methods are deductive in approach through the formulation of hypotheses produced from falsifiable theories. Such an approach uses probability statistics to decide whether an effect is significant or not. Also, this ultimately allows us to infer the extent to which the findings generated can be generalised to the wider population.

Edmondson and McManus (2007) recommend that researchers ensure their methodological decisions promote good methodological fit. This means there should be internal consistency between the four elements of the research project, which include: (1) the research question (2) prior work in the field (3) the research design and (4) the contribution to the literature. When choosing a methodology Edmondson and McManus recommend selecting an approach that best addresses these four elements.

Methodology is also determined by the maturity of the topic of interest. Theories tend to fall along a continuum, from Infancy to Maturity. Mature theories are well developed, having been studied over time with increased precision that results in an accumulation of knowledge, in contrast to infant theories which are new and generally novel. Intermediate theories fall between these two ends of the continuum, offering a new construct, relationship or perspective to an existing and well established idea (Edmondson & McManus, 2007). Intermediate research draws upon existing work to build new constructs, benefiting from the use of quantitative methods to increase confidence in the alternative explanations. The state of the field for the present piece of research on Behavioural Complexity can be considered in the intermediate range of the continuum, since much of the topic is grounded in conceptual thinking that now requires empirical testing. Although leadership theory is mature,

Leaderplex is intermediate, and Complexity relatively infant in the behavioural science context.

5.3.1 Surveys

The primary method of empirical testing selected for this study was the field survey. A field survey involves the collection of data by survey at a point in time, in order to collect data in connection with two or more variables which are examined to identify patterns of association (Bryman & Bell, 2003).

Surveys are a popular method of data collection due to their simplicity of application. This method was suitable for the present project on the basis that such an approach acts as an effective tool for gathering structured information from a large number of individuals in a reasonably intuitive way. It allows for hypotheses to be tested, results generated and a large amount of data to be gathered in a relatively short space of time. The survey used in this research was targeted at the individual level, based on a self-report methodology; a technique where information is gathered openly from the tested person. Self-report is widely used across diverse fields of empirical research, such as organisational behaviour, social psychology, personality and individual differences.

For this piece of research respondents were asked to self-rate (by survey) their own perceived level of Behavioural Complexity. Research by Hooiberg and Choi (2000) (on an earlier version of the Competing Values Framework) demonstrates convergence between an individual's own perceived level of Behavioural Complexity and others' ratings of them.

Despite the prevalent use of self-report data in empirical studies, there is concern amongst researchers that there are limitations to its validity, which serve to weaken the intended substantive inferences to be drawn from the data. Some of the more commonly associated limitations of self-report data, specifically, construct validity, common method variance, social desirability and superiority of non-self-report measures, shall now be discussed and refuted, in justification of the self-report data.

5.3.1.1 Construct validity of self report data

Within almost any major research domain, there are numerous well-established, self-report measures of diverse constructs which have obtained construct validity evidence through both convergent and discriminant validation. For example, the Big-Five Personality Traits (Costa and McCrae, 1992; Digman, 1990), Proactive Personality (Bateman and Crant, 1993), Affectivity Disposition (Watson, 1988; Watson and Clarke, 1984), Self-Efficacy (Bandura, 1997), Goal Orientation (Button, Mathieu and Zajac, 1996; Vande Walle, 1997), Perceived Organisational Support (Eisenberger, Huntington, Hutchinson and Sowa, 1986; Shore and Tetrick, 1991), Job Satisfaction (Agho, Price and Mueller, 1992), Organisational Commitment (Mowday, Steers and Port, 1979) and Life Satisfaction (Diener, Emmons, Larson and Griffin, 1985). Behavioural Complexity holds many similar characteristics to the above mentioned measures; as the self is (generally) the only person present to observe the full scope of their own behavioural repertoire in different contexts. Ethnographic observations or 360^0 feedback could validate to some extent the self-rating, since behaviour is something that can be externally observed by others. However, a limitation of this approach is that the breadth of behaviour the external rater is privy to is likely to be restricted as the rater is unlikely to observe the ratee in all possible contexts.

5.3.1.2 Common Method Variance

Common method variance concerns the interpretation of association (e.g. correlation) inferred between two or more same source variables in self report data. Self-report measures contain random measurement errors and therefore do not have perfect reliability. The correlation of two measures using the same self-report method (whether the observed correlation between two measures is higher than, lower than, or equal to the true correlation between the two intended test constructs) is dependent on the relative magnitudes of the construct factor loadings and the product of the factor loadings. As such, relying solely on self report measures has been interpreted as potentially inflating the estimates for true inter-construct relationships. However, correlations amongst self report measures are not always inflated estimates of the true inter-construct relationships. In recent years, several scholars have suggested that the problem with common method variance is probably exaggerated (Chan, 2001; Crampton and Wagner, 1994; Spector, 1994), arguing that the notion of common method variance is often poorly defined within a specification of the measurement issues involved, highlighting the need for a theory of method effects and measurement error when discussing the notion (Schmitt, 1994; Spector, 2006). In view of the benefits associated with self-rated data and the suggestion that the issue of common method variance is probably

exaggerated. Common method variance was not felt to preclude going forward with the study as described. Whilst it is acknowledge that common method variance is limitation, it is not a drawback.

5.3.1.3 Social desirability

Social desirability, 'the tendency for an individual to present themselves in test taking situations in a way that makes them look positive with regard to culturally derived norms and standards" (Ganster, Hennessey and Luthans, 1983, p. 322), is one of the most frequently cited criticisms of self-report data. However, not all constructs assessed by self-report measures are equally susceptible to social desirability. Studies of faking research in personnel selection found similar scores between actual applicants and incumbents who had no reason to fake good (Hough, Eaton, Dunnette, Kamp and McCloy, 1990; Hough and Schneider, 1996; Rosse, Stechner, Levin and Miller, 1998). There is also evidence that self-report measures are less susceptible to social desirability responding when the accuracy of the item responses is verifiable (Becker and Colquitt, 1992; Cascio, 1975). In short, many self report measures are often fakeable, however, fakeability has been mistakenly assumed to necessarily imply actual faking, and this fallacious implication has contributed to the false belief associated with the problem of social desirability responding in self-report data. It is true that response motivation to fake is likely to be high in high-stakes testing contexts (Chan, 2001). Faking motivation, however, has been mistakenly assumed to be necessarily operative in all contexts in which self report measures are used (Chan, 2004; Moorman and Podsakoff, 1992) and this overgeneralisation of response motivation across testing contexts has contributed to an association with the problem of social desirability responding in self-report data. The nature of this study, as a low-stakes, non-testing context, meant there was little motivation for the participants to fake their responses, neither was there clear-cut culturally derived norms and standards in relation to the responses, as the items measure personal preference to one or more, positively worded, behavioural styles.

5.3.1.4 Superiority of non-self-report measures

Status concerning the superior value of data collected from non-self report measure over self-report measures has lead to common belief that is always better to use non-self-report measures and that we can be more confident of the validity of a self-report measure if the self-report measure and the corresponding non-self report measure are highly correlated.

The issue of over-valuing non-self report measures is most obvious when assessing constructs that are inherently perceptual in nature. For example, the use of self-report measures is not only justifiable but probably necessary when assessing constructs that are self-referential respondent perceptions such as job satisfaction, mood, perceived organisational support and fairness perceptions. For these self-perception constructs, even if other (i.e. non-self report) forms of measurement are available, it is difficult to argue for superior validity of these non-self report measures given the self-experiential nature of the respondent perception constructs. A construct like behaviour, for instance, emerges in response to the demands the individual faces and where the individual "self" is the only person who is truly present to observe all context and occasions where they may or may not utilise the repertoire of behaviours they have in their possession. In short, to find out about the perception of an individual, it is probably best to ask the individual.

In summary, there is no strong evidence to lead us to conclude that all self-report data is inherently flawed. On the contrary, there are situations in which the use of self report data appears to be appropriate and perhaps sometimes the only appropriate approach.

5.4 SAMPLE CHARACTERISTICS

Primary data were collected from clinical and non-clinical National Health Service (NHS) leaders based within an acute NHS hospital trust. The NHS is a publicly funded healthcare system, offering predominantly free healthcare to all UK residents. Acute Trusts provide secondary health services, which are predominantly delivered by medical specialists. Within each specialism there are numerous healthcare leaders who are responsible for the leadership of the department and its employees. Many of these healthcare leaders have a medical specialism; others come from a managerial background.

Targeting one organisation was done purposefully to mirror the methodology adopted when Complexity is studied within the natural sciences, where scientists will often sample one pool or ecosystem to explore the Complexity contained within (Holland, 1998). Contained within the walls of a hospital organisation is a vast array of Complexity. Hospitals are complex in terms of the wide range of services offered, ranging from clinical care, to non-clinical: administrative, operational, logistical and infrastructural support. Hospitals are also complex in terms of the demographic characteristics of their staff; unpredictability of the working environment and nature of the work. The work of NHS staff is generally very interdependent in nature. An example of collaboration in NHS Acute Trusts is the work of surgical teams, whereby a surgeon, anaesthetist, nursing staff and technical staff all have to work together in a tightly co-coordinated, efficient manner. Together, they provide a continuum of care, from preoperative care, care during surgical procedures, to care during postoperative recovery. Although each individual has different roles and expertise, and may be involved at different stages of the overall process, they are all working together towards a common goal – to ensure the delivery of high quality, effective healthcare for the patient. Metaphorically speaking, this is very similar to the Complexity of an ecosystem, where all part of the ecosystem, though independent are interdependently connected to maintain the survival, harmony and continuation of the ecosystem. Within the NHS interdependence is also driven by a government agenda, as highlighted in Darzi's (2008) report, team-working should be a key priority for all staff working in NHS Acute Trusts. However, due to the highly complex and multi-faceted nature of their tasks, which have to be carried out in environments characterized by high demands and limited resources, Sullivan (1993) maintains that such outcomes can only be achieved through interdependence.

5.5 RESEARCH DESIGN OVERVIEW

The overall aim of the thesis is to explore leadership from the perspective of Behavioural Complexity, which focuses on the behaviours that enable effectiveness rather than determine or guide it. Behaviourally complex leaders are versatile in the behaviours they adopt, this versatility enables leader effectiveness.

Behavioural Complexity was interpreted from the perspective of Lawrence, Lenk and Quinn's (2009) Competing Values Framework. The framework measures the degree to which an individual scores on the four quadrants of Behavioural Complexity (1) Control (2) Compete (3) Collaborate and (4) Create, in terms of the extent to which an individual adopts some or all of these Competing Values. Quinn (2003) argues that effective leaders need and are expected to have the ability to exhibit all these behaviours, since behaviours act as contingences within the increasingly complex and fast moving contexts that most leaders face. With Quinn's assertion in mind, the thesis investigates whether Behavioural Complexity is a predictor of leader effectiveness, defined as a leader's capacity for Overall Performance, Ability to Lead Change, and Influence. Most leaders operate in dynamic, complex and unpredictable environments. With that said, this study explores the impact of Organisational Complexity on leader Behavioural Complexity and its associated outcomes of leadership effectiveness. Finally, given the anticipated outcomes of leadership effectiveness associated with Behavioural Complexity, this study aims to explore if such capability can be developed alongside leadership training and if so, provide evidence for other organisations to engage in similar practices of leadership development. An outline of the studies that form the thesis can be found in table 5.1 and also in more details within the proceeding chapters that follow.

Table 5.1: Study outline

Study No.	Study Name	Chapter No.
1	Exploring Behavioural Complexity as an enabler of leadership effectiveness *The aim of this study is to establish the extent to which Behavioural Complexity is an enabler of leadership effectiveness*	7
2	Exploring Organisational Complexity as a moderator of Behavioural Complexity and leadership effectiveness *The aim of this study is to establish the extent to which Organisational Complexity moderators Behavioural Complexity and leadership effectiveness*	7
3	Exploring the impact of leadership training and Behavioural Complexity on Leadership Effectiveness *The aim of this study is to establish the extent to which leadership training supports Behavioural Complexity in contributing to leadership effectiveness*	8

5.6 MATERIALS

Data collection brought together Lawrence, Lenk and Quinn's (2009) measure of Behavioural Complexity (The Competing Values Framework) and leadership effectiveness (Overall Performance and Ability to Lead Change) across the three studies of the thesis. Each study combines Behavioural Complexity and leadership effectiveness with a different moderation and outcome variable by combining a range of pre-existing measures (the details of which will be described within each study specific chapter). This chapter focuses on explaining the measures generic to each study.

5.6.1 Behavioural Complexity – The Competing Values Framework

Behavioural complexity was captured using Lawrence, Lenk and Quinn's (2009) Competing Values Framework (introduced in Chapter Two). The framework consists of thirty-six self-evaluation questions across four quadrants: Control, Compete, Collaborate and Create. Each quadrant consists of three sub-dimensions, each sub dimension containing three questions, illustrated in table 5.2.

Table 5.2: The Competing Value Framework

Collaborate	Create
1. Encouraging participation	*4. Anticipating customer needs*
1a. Making it legitimate to contribute opinions.	4a. Meeting with customers to discuss their needs.
1b. Employing participative decision making.	4b. Identifying the changing needs of the customer.
1c. Maintaining an open climate for discussion.	4c. Anticipating what the customer will want next.
2. Developing people	*5. Initiating significant change*
2a. Encouraging career development.	5a. Initiating bold projects.
2b. Seeing that everyone has a development plan.	5b. Starting ambitious programs.
2c. Coaching people on career issues.	5c. Launching important new efforts.
3. Acknowledging personal needs	*6. Inspiring people to exceed expectations*
3a. Being aware of when people are burning out.	6a. Inspiring direct reports to be creative.
3b. Encouraging people to have work/life balance.	6b. Encouraging direct reports to try new things.
3c. Recognizing feelings.	6c. Getting unit members to exceed traditional performance patterns
Control	**Compete**
7. Clarifying policies	*10. Focusing on competition*
7a. Seeing that corporate procedures are understood.	10a. Emphasizing the need to compete.
7b. Insuring that company policies are known.	10b. Developing a competitive focus.
7c. Making sure formal guidelines are clear to people.	10c. Insisting on beating outside competitors.
8. Expecting accurate work	*11. Showing a hard work ethic*
8a. Emphasizing the need for accuracy in work efforts.	11a. Showing an appetite for hard work.
8b. Expecting people to get the details of their work right.	11b. Modeling an intense work effort.
8c. Emphasizing accuracy in work efforts.	11c. Demonstrating full exertion on the job.
9. Controlling projects	*12. Emphasizing speed*
9a. Providing tight project management.	12a. Getting work done quicker in the unit.
9b. Keeping projects under control.	12b. Producing faster unit outcomes.
9c. Closely managing projects.	12c. Providing fast responses to emerging issues.

Source: Adapted from Lawrence, Lenk and Quinn (2009: p. 101)

For the self- evaluation, the phrase "I would describe myself as being skilled in the following…" appears at the top of the page. The questions are administered with a 5-point likert type scale (strongly disagree = 1, disagree = 2, neither agree/disagree = 3, agree = 4, strongly agree = 5), plus an option "don't know" which is treated as missing data. Items were randomized so that constructs were not grouped together.

5.6.2 Leadership Effectiveness – Overall Performance and Ability to Lead Change

The Overall Performance and Ability to Lead Change measure is an extension of the Competing Values Framework. Lawrence et al (2009) suggest there is relationship between the Competing Values Framework and leadership effectiveness, in terms of Behavioural Complexity predicting Overall Performance and Ability to Lead Change. The Overall Performance measure consists of five questions, the Ability to Lead Change measure consisting of three questions, both illustrated in table 5.3.

Table 5.3: Effectiveness Measures

Effectiveness Measures (Scale of 1 to 5; phrases in parentheses below are anchors for the ends of each scale).

Overall Performance

1. Meeting of performance standards (Above most standards/below most standards, reverse coded).
2. Comparison to the person's professional peers (Worse than peers/Better than peers).
3. Performance as a role model (Poor role model/Excellent role model).
4. Overall professional success (A professional success/A professional failure, reverse coded).
5. Overall effectiveness as a leader (Ineffective leader/Effective leader).

Ability to Lead Change

1. Conceiving change efforts (Pursues small, incremental changes/Pursues large, quantum changes).
2. Leading change (Leads in bold, new directions/Pursues the status quo, reverse coded).
3. Having impact (Is responsible for profound changes/Has little impact, reverse coded).

Source: Adapted from Lawrence, Lenk and Quinn (2009: p. 101)

The effectiveness questions are administered on a 1 (low) to 5 (high) scale; the phrases after each question in table 6.3 anchor each item. A "don't know" option was also included, treated as missing data.

5.6.3 Leadership Effectiveness – Influence

Influence has been conceptually discussed as a fundamental outcome of leader effectiveness (see Chapter Two) but had not been empirically linked to Behavioural Complexity. This study aimed to test such an assertion using a scale developed by the Personnel and Human Resource Innovations (P.H.I) Group (Dickinson, 2001) that measures influence as an outcome of leadership effectiveness. This scale complements the effectiveness outcome measures included in Quinn's Competing Values Framework by being a relatively short scale (whilst still tapping into the issues of influence identified in the leadership literature) and also by being measurable on a similar 5-point Likert scale anchored at 1= 'Strongly Disagree' to 5 = 'Strongly Agree'. The influence measure consists of nine questions, illustrated in table 5.4. The influence questions are administered on a 1 (low) to 5 (high) Likert scale that anchor each item. A "don't know" option was also included, treated as missing data.

Table 5.4: Influence Measures

1. Effectively represents the teams interests to upper management
2. Involves the right people in decisions
3. Has a good network of contacts
4. Has an astute sense of organisational politics
5. Recognizes some battles are not worth fighting
6. Good at judging the reactions of others
7. Effective at influencing upper management
8. Good at selling an idea
9. Negotiates persuasively

5.6.4 Organisational Complexity

The items that formed the Organisational Complexity scale were derived from a meta-analysis, conducted by Damanpour (1996) to highlight the main themes in the Organisational Complexity literature because no previous scale existed that adequately captured Organisational Complexity. The nearest available measures were of Perceived Environmental Uncertainty, many of which were developed in the 1970's when organisations were still typically defined by the manufacturing industry. Over the past four decades organisations have become increasingly complex, not solely because of advances in technology but because of the consequences that have resulted from these advancements, including globalisation of markets, technological development and increased competition. Where once manufacturing and industrial organisations dominated, technological and service industries now prevail, consequently, pre-existing measures used to assess such environments may no longer be adequate. Damanpour (1996) conducted a Meta-Analysis that used the cumulative data from three decades of research, to generate a conceptual overview of Organisational Complexity in terms of Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation. In keeping with consistency of the scales already used in this study, a five point Likert scale, anchored at 1= 'Low' to 5 = 'High', was applied to the 10 factors derived from Damanpour's Meta-Analysis, the items for which are illustrated in table 5.5. The Organisational Complexity questions are administered on a 1 (low) to 5 (high) Likert scale that anchor each item. A "don't know" option was also included, treated as missing data.

Table 5.5: Organisational Complexity Measure

Structural Complexity
1. The total number of units below the Chief Executive level in the organisation is?
2. The total number of occupational specialities in the organisation is?
Organisational Size
3. The physical capacity of the organisation is?
4. The average work input of the organisation is?
5. The average work output of the organisation is?
Environmental Uncertainty
6. The degree of turbulence in the organisation is?
7. The degree of competition in the organisation is?
8. The degree of variability in the organisation is?
Innovation
9. The degree of initiated innovations in the organisation is (note: initiated refers to innovations that are proposed but not implement)?
10. The degree of implemented innovations in the organisation is?

5.6.5 Demographics

Finally, a number of individual level demographics were also included in the survey as factors that may influence Behavioural Complexity and its associated outcomes of leadership effectiveness. Specifically, respondents were asked to indicate their gender (Burn, 1978), age (Rhodes, 1983), whether they were from a clinical or non-clinical background (Wyatt, 1995), their managerial level (Moon, 2000), highest educational qualification (Brungardt, 1996) and leadership tenure (Sinclair, 1998), since existing research has identified these demographics as factors that may influence leadership.

5.7 PROCEDURE

Prior to approaching the organisation in pursuit of participation, ethical approval was first sought and granted by the Aston Business School Research Ethics Committee and NHS Research Ethics Board. Access to the sample was negotiated with the organisation's Directorate of Research and Education, based upon a pre-existing relationship with Aston University through the NHS National Staff Survey. The organisation's involvement on the project was scheduled from February 2008 to December 2009 (to incorporate a longitudinal element to the research, see Study Three, Chapter Nine). The researcher was granted access to distribute a survey to organisation's leaders, proving they agreed to participate. The organisation appointed two contact persons responsible for providing the investigator with the necessary support to collect data. That support came from the Directorate of Governance and the Directorate of Research and Ethics.

Study specific information relating to the way in which the survey was administered appear in the study chapters that follow, but for now, by means of a general overview, the parts of the procedure shared by each of the three studies will be explained. Mixed-mode survey

administration using both paper and web-based questionnaires was adopted depending on participants' access to computers. Participants were invited to take part by either: (a) clicking on an URL link to a secure online survey (for those who received email notification of the study) or (b) completing a paper-based version. Both types of survey were accompanied by a cover-letter that outlined the aims of the study, confidentiality, anonymity, and possible dissemination of results, estimated time to compete the survey and details on how to answer the questions (Appendix A). Participants were informed that participation was completely voluntary and that they could withdraw from the research at anytime. The contact email and telephone number of the investigator was also provided to the participants in case they had any queries about the survey or project during data collection.

5.8 CONCLUSION

This chapter explored the rationale for the methodology adopted in this research. Founded within the positivistic paradigm, this research is based upon two assumptions: realism and objectivism that is empirically tested using a quantitative survey methodology. The methodology is determined by the maturity of the topic of interest, this research in Behavioural Complexity can be considered in the intermediate range of the continuum because since much of the topic is grounded in conceptual thinking that now requires empirical testing in an organisational context characterised as highly complex. The chapter went on to described the methods used in the thesis to explore Behavioural Complexity, driven by the assertion behaviourally complex leaders are versatile and it is this versatility that enables effectiveness because behaviours act as contingencies within complex environments. A discussion relating to the characteristics of the sample set the scene for the research. Three studies were then presented. The materials used to study Behavioural Complexity were described. The chapter closed with a description of the general study procedure that involved a questionnaire methodology. Study specific information relating to each of the three studies is explained in the chapters that follow.

Chapter 6: Scale Validation

6.1 CHAPTER SUMMARY

This chapter reports on the statistical properties of the scales identified for use in this research (the Competing Values Framework, the Leadership Effectiveness Measure, the Leadership Influence Measure and the Organisational Complexity Measure) outlined in Chapter Six. Details of the structural validity of these scales using Exploratory Factor Analysis (EFA) is presented on individual level data. Reliability estimations are also reported. Following this, Confirmatory Factor Analysis (CFA) techniques are used to refine and re-test the scales, further establishing the structural and content validity of the scale through item reduction. Investigation into the structural validity of these scales (as opposed to reporting the alpha coefficients of the existing measures) was conducted to refine the scales from their original formulation so as to create a more precise measure of the factors that effect leadership and organisations in healthcare from the perspective of Complexity Theory. The chapter concludes with a summary of the scales to be reported on in the remainder of the thesis.

6.2 STRUCTURAL VALIDITY OF THE SCALES

Examination of three core measurement instruments are reported in this chapter:: Lawrence, Lenk and Quinn's (2009) Competing Values Framework, their Leadership Effectiveness Measure (of Overall Performance and Ability to Lead Change); and P.H.I. Group's (Dickinson, 2001) Leadership Influence Measure. Despite these scales being established and widely used within organisational research, much of their application has been in "for profit" organisations, rather than a publicly funded "not for profit" healthcare setting. For this reason it was viewed important to consider the structural validity of the scales used in this study and to explore their relevance in a healthcare setting.

In addition to these established scales, a new measure of Organisational Complexity was explored for structural validity. The items that formed the Organisational Complexity Measure were derived from a meta-analysis, conducted by Damanpour (1996), to highlight the main themes in the Organisational Complexity literature.

For each scale, initially data are screened for their appropriateness for analysis. Subsequently EFA is performed to investigate the underlying structures of the scales. Following this, CFA is performed in order to test the goodness of fit of either the originally theorised solutions or, where the EFA has indicated the theoretical structure is not robust, to assess the comparative goodness of fit of the theoretical and statistically derived scales.

6.3 EXAMINATION OF THE PSYCHOMETRIC PROPERTIES OF THE COMPETING VALUES FRAMEWORK

Lawrence, Lenk and Quinn's (2009) Competing Values Framework, consists of 36-items across four quadrants: Control, Compete, Collaborate and Create, each quadrant contains 9-items (see Chapter Five for details of the survey items).

Data from 118 healthcare leaders was examined using EFA to test the adequacy of the scale. References to 'customers' were replaced with the label 'services users' to reflect the healthcare context. Principal axis factoring with an oblique rotation (direct oblimin) was used, thus allowing for correlations among factors (Fabrigar, Wegener, MacCallum, and Strahan, 1999). It was expected that the sub-scales captured above would load onto four separate factors, therefore supporting the four sub-dimensions which characterise the Competing Values Framework (as a 36-item scale). For the purpose of exploration minimum eigenvalue mineigen analysis, (the criterion of which states that only components with eigenvalues above 1 should be retained) was run to see how many factors would be extracted from the data rather than specifying a set number of factors in advance of the analysis.

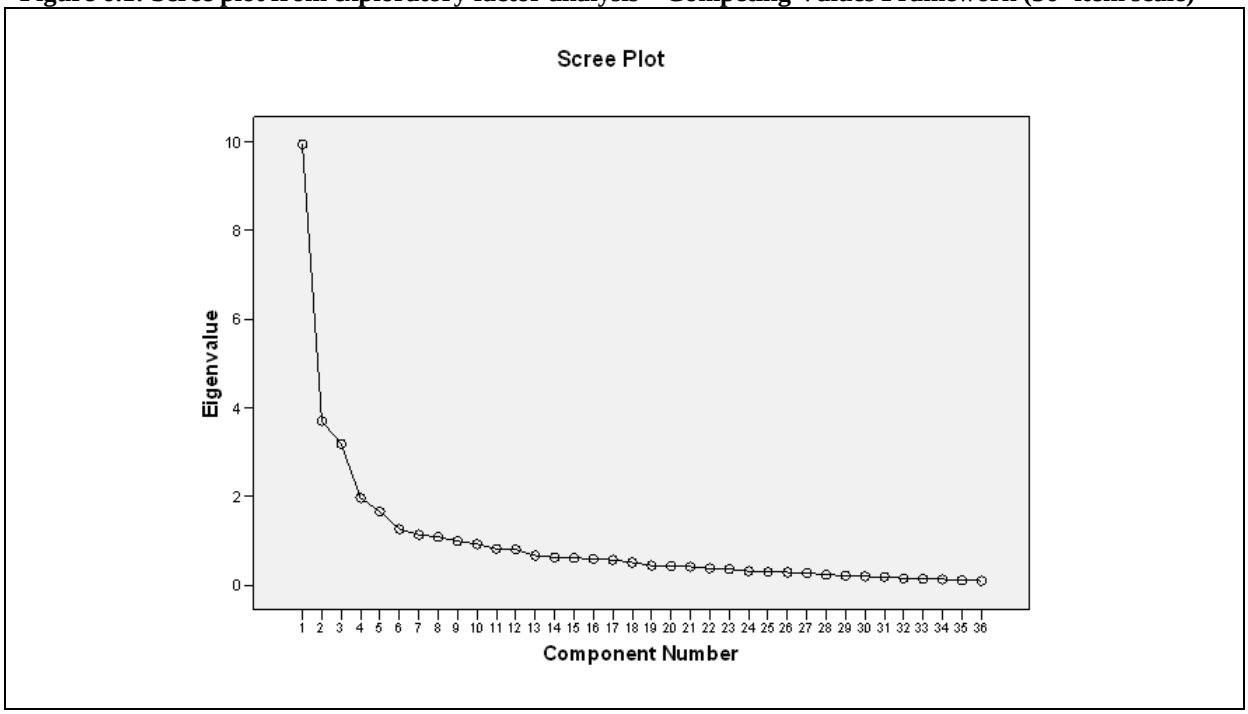
Eigenvalues measure of how much variance in all the data is explained by a single factor. The higher the value, the more variance is explained by that factor. The results in table 6.1 suggests the 36- item Competing Values Framework naturally loads onto five factors, rather than the expected four factor solution representing the four quadrants of the Competing Values Framework: Control, Compete, Collaborate and Create. The cumulative percentage of variance explained by all of the five extracted components together explains 57% of the variance.

Table 6.1: Total Variance Explained Competing Values Framework (36- items scale) five extracted components together explain 57% of the variance

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.93	27.607	27.607	9.93	27.607	27.607
2	3.70	10.295	37.902	3.70	10.295	37.902
3	3.19	8.861	46.763	3.19	8.861	46.763
4	1.97	5.481	52.245	1.97	5.481	52.245
5	1.66	4.622	56.867	1.66	4.622	56.867

The scree plot (see figure 6.1) displays the eigenvalues of all the factors produced in descending order of size and can be used to decide on the number of factors that should be extracted. A break in the scree plot at the fifth factor supported a five-factor solution.

Figure 6.1: Scree plot from exploratory factor analysis – Competing Values Framework (36- item scale)



Results from the pattern matrix displayed in table 6.2 indicate that the Competing Values subscales of Control, Compete, Collaborate and Create, by and large, load onto the four expected factors, with the exception of:

1. Two items from the Control quadrant: *Providing tight project management* and *Keeping projects under control*
2. Three items from the Compete quadrant, which relate to focusing on competition that separately load onto a miscellaneous fifth factor: *Emphasizing the need to compete, Developing a competitive focus, Insisting on beating outside competitors*.
3. None from the Collaborate quadrant:

4. Two from the Create quadrant: *Encouraging direct reports to try new things* and *Getting unit members to exceed traditional performance patterns*.

Table 6.2: Principle axis factor analysis of Competing Values Framework data (36-items); pattern matrix, oblique rotation

	Collaborate	Create	Control	Compete	Compete
Encouraging career development (Collaborate).	**.74**				
Coaching people on career issues (Collaborate).	**.71**				
Recognizing feelings (Collaborate).	**.70**				
Encouraging people to have work/life balance (Collaborate)	**.69**				
Being aware of when people are burning out (Collaborate)	**.65**				
Making it legitimate to contribute opinions (Collaborate).	**.62**				
Seeing that everyone has a development plan (Collaborate).	**.61**				
Maintaining an open climate for discussion (Collaborate).	**.57**				
Employing participative decision making (Collaborate).	**.55**				
Getting unit members to exceed traditional performance patterns (Create).	**.40**				
Starting ambitious programs (Create).		**.84**			
Launching important new efforts (Create).		**.83**			
Initiating bold projects (Create).		**.76**			
Inspiring direct reports to be creative (Create).		**.71**			
Anticipating what the service user will want next (Create).		**.67**			
Identifying the changing needs of the service user (Create).		**.61**			
Keeping projects under control (Control).		~~.54~~			
Meeting with service users to discuss their needs. (Create).		**.54**			
Providing tight project management (Control).		~~.52~~			
Encouraging direct reports to try new things (Create).		_			
Emphasizing the need for accuracy in work efforts (Control).			**.76**		
Emphasizing accuracy in work efforts (Control).			**.75**		
Expecting people to get the details of their work right (Control).			**.70**		
Making sure formal guidelines are clear to people (Control).			**.63**		
Closely managing projects (Control).			**.59**		
Insuring that company policies are known (Control).			**.51**		
Seeing that corporate procedures are understood (Control).			**.48**		
Demonstrating full exertion on the job (Compete).				**.78**	
Getting work done quicker in the unit (Compete).				**.73**	
Producing faster unit outcomes (Compete).				**.73**	
Modelling an intense work effort (Compete).				**.72**	
Showing an appetite for hard work (Compete).				**.58**	
Providing fast responses to emerging issues (Compete).				**.42**	
Developing a competitive focus (Compete).					~~.75~~
Emphasizing the need to compete (Compete).					~~.63~~
Insisting on beating outside competitors (Compete).					~~.62~~

NB: The items with a strikethrough load onto the incorrect factor than expected.

Closer inspection indicates some cross loading across the dimensions, specifically with regard to the Create item *Getting unit members to exceed traditional performance patterns*, which loads weakly onto the Collaborate quadrant, with a factor loading of .40. This overlap can be explained by looking at the item itself, which concerns getting subordinates to performance beyond the norm. This item is labelled by Lawrence, Lenk and Quinn (2009) as Create; however, in practice it is viable that such activity also could involve collaboration. The subsequent section will consider the feasibility of dropping such items from the scale. Two Control items: *Keeping projects under control* and P*roviding tight project management*, both load onto the Create dimension; this may relate to the creative manner in which Control is achieved; however, given that these assumptions are based only on speculation and that the other items load stronger onto the expected dimensions, these outlying items will also be considered for removal from the scale. It could be considered that these items lack appropriateness in the not-for-profit healthcare sector, where tight project control maybe unsuitable leadership behaviour in this context. Three F*ocusing on competition* items from the Compete dimension will also be considered for removal, as to merge them with the other Compete items would weaken the structural validity of the Compete quadrant. The Create item, *Encouraging direct reports to try new things*, will also be considered for removal from the Create dimension because of its weak factor loading. Removing these proposed seven items reduces the Competing Values Framework from a 36-item scale, to a 29-item scale. The structural validity of the 29-item Competing Values Framework will now be explored.

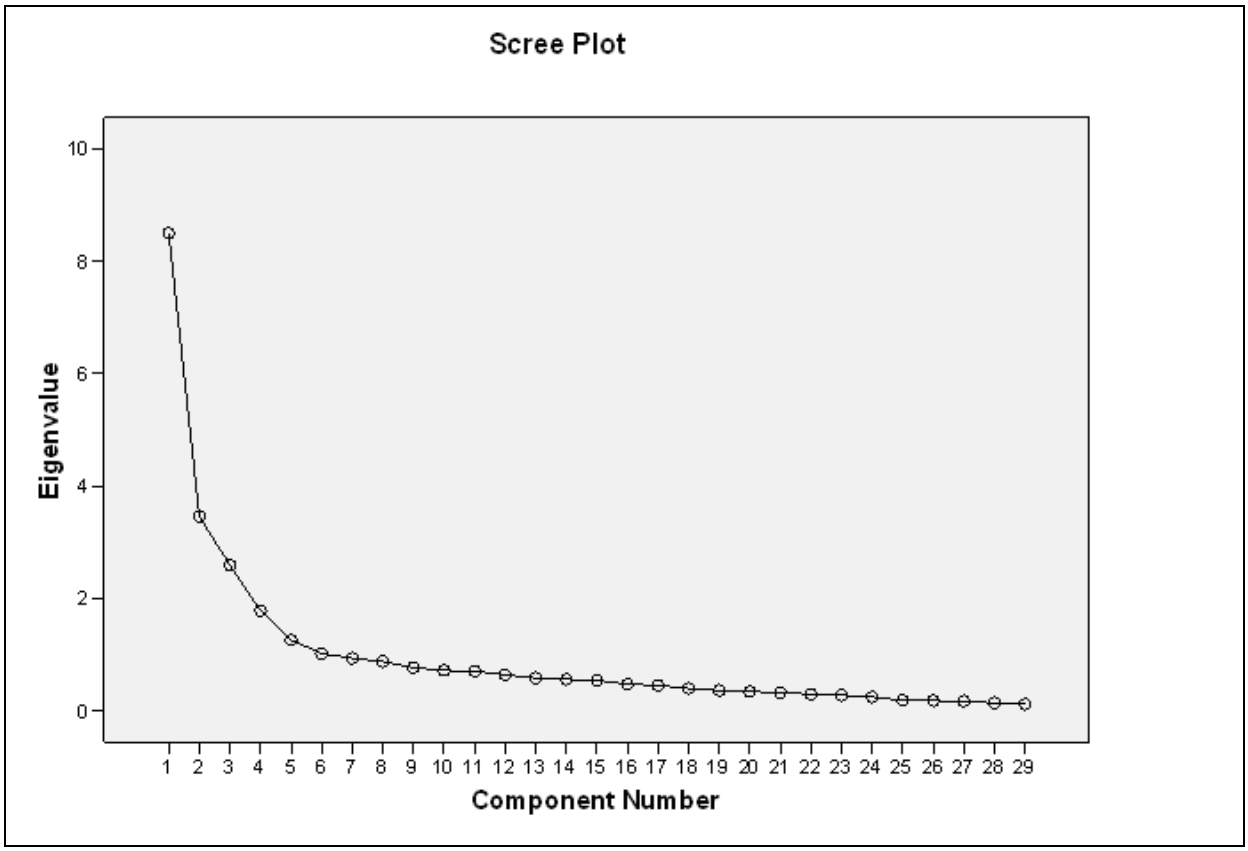
The procedure described above was repeated for the 29-item version of the Competing Values Framework although on this occasion specifying a 4 factor solution. This time the cumulative percentage of variance explained by specifying a four factor criteria, representative of the four quadrants of the Competing Values Framework, together explain 56% of the variance (see Table 6.a)

Table 6.a: Total Variance Explained Competing Values Framework (29- items scale)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.497	29.300	29.300	8.497	29.300	29.300
2	3.458	11.926	41.226	3.458	11.926	41.226
3	2.596	8.952	50.177	2.596	8.952	50.177
4	1.786	6.157	56.334	1.786	6.157	56.334

While a 4 factor solution was specified, the scree plot (figure 6.2) also supports this theory-based expectation of the Competing Values Framework

Figure 6.2: Scree plot from exploratory factor analysis – Competing Values Framework (29- item scale)



The results from the pattern matrix (table 6.3) indicate the expected four factors from the Competing Values Framework. Therefore, this is the version of the Competing Values Framework to be used from here on.

Table 6.3: Principle axis factor analysis of Competing Values Framework data (29-items); pattern matrix, oblique rotation (Four Factors)

	Collaborate	Create	Control	Compete
Encouraging career development (Collaborate).	**.75**			
Recognizing feelings (Collaborate).	**.73**			
Encouraging people to have work/life balance (Collaborate).	**.69**			
Coaching people on career issues (Collaborate).	**.69**			
Being aware of when people are burning out (Collaborate).	**.66**			
Making it legitimate to contribute opinions (Collaborate).	**.66**			
Maintaining an open climate for discussion (Collaborate).	**.57**			
Seeing that everyone has a development plan (Collaborate).	**.56**			
Employing participative decision making (Collaborate).	**.54**			
Starting ambitious programs (Create).		**.86**		
Launching important new efforts (Create).		**.82**		
Initiating bold projects (Create).		**.77**		
.Inspiring direct reports to be creative (Create).		**.71**		
Anticipating what the service user will want next (Create).		**.66**		
Identifying the changing needs of the service user (Create).		**.61**		
Meeting with service users to discuss their needs (Create).		**.52**		
Emphasizing accuracy in work efforts (Control).			**.77**	
Emphasizing the need for accuracy in work efforts (Control).			**.73**	
Making sure formal guidelines are clear to people (Control).			**.68**	
Expecting people to get the details of their work right (Control).			**.67**	
Closely managing projects (Control).			**.62**	
Insuring that company policies are known (Control).			**.57**	
Seeing that corporate procedures are understood (Control).			**.48**	
Producing faster unit outcomes (Compete).				**.78**
Getting work done quicker in the unit (Compete).				**.77**
Modelling an intense work effort (Compete).				**.77**
Demonstrating full exertion on the job (Compete).				**.76**
Showing an appetite for hard work (Compete).				**.58**
Providing fast responses to emerging issues (Compete).				**.42**

To provide support for the conceptualisation of the Competing Values Framework as four dimensions, as opposed to one global factor, CFA was conducted on both the 36-item (original) and 29-item (refined) Competing Values Framework, using AMOS 7.0 SEM program (Arbuckle, 1997). Given that in CFA multiple models may fit the same dataset, it is best practice to not only test the single postulated model, but also a number of plausible rival models (Thompson, 2000).

Therefore, the hypothesised four factor model (representing the four sub-dimensions of the Competing Values Framework) was tested against a one-factor model for both the 36 (original) item and 29-item (refined) Competing Values Framework. Table 6.4 details the results from the CFA.

Table 6.4: Fit indices of confirmatory factor analysis – Competing Values Framework (36 item original and 29-item refined scale)

	$\chi 2$	Df	$\chi 2/df$	NFI	CFI	TLI	PCFI	RMR	RMSEA
One-factor (36-item scale)	1471.33	594	2.48	.37	.480	.44	.45	.08	.12
One-factor (29-item scale)	1039.31	377	2.76	.40	.50	.46	.46	.08	.13
Four Factor (36-item scale)	1056.09	588	1.79	.54	.72	.70	.68	.07	.09
Four Factor (29-item scale)	614.33	371	1.72	.65	.82	.80	.75	.06	.08

Several indices were used to explore model fit. Traditionally reported fit statistics used to report CFA are the $\chi 2$ significance test and the $\chi 2$ difference test. Regarding table 6.4, the four factor model for the 29 item scale yielded a $\chi 2$ of 614.33, with 371 degrees of freedom, giving a $\chi 2$ /*df* ratio of below 2.0 ($\chi 2/df$=1.72) indicating a reasonable fit (Buss and Perry, 1992) very similar to the 36-item version.

Relative fit indices were also computed to provide a more robust evaluation of the model fit (Byrne, 1989). These included the normed fit index (NFI; Bentler and Bonnett, 1980), the comparative fit index (CFI; Bentler, 1990) and the Tucker Lewis index (TLI; Tucker and Lewis, 1973). For these indices, closer coefficients to unity indicate good fit, with acceptable levels of fit being above 0.9 (Marsh, Balla and McDonald, 1988). Although, the relative fit indices fell slightly below the recommended value for the four factor (refined) 29-item scale, these values were an improvement on the one-factor and four-factor (original) 36-item alternatives.

Good fitting models have small root mean square residuals (RMR), values of less than .08 are desired (Hu and Bentler, 1999). Another common fit measure which is based on the non-central chi-square distribution is the root-mean-square error of approximation (RMSEA; Steiger and Lind, 1980). With RMSEA, smaller values are preferred with values around 0.08 representing reasonable fit, (Bryne, 2001). Based on the RMR and RMSEA fit indices, the four-factor (29-item) model demonstrates the most acceptable level of fit with the data over the alternatives.

Having established the preferred structure of the scales, the internal consistency of the revised scales was also explored. The term reliability refers to the consistency of a set of results (Foster, 1998). By comparing participants' scores on any individual item with their total score across all items, one can ensure that all items of a scale are tapping into the same overall

latent variable. The reliabilities of each quadrant from the original 36-item, Competing Values Framework, were compared against the reliabilities of each quadrant derived from the reduced 29-item scale, drawn from the above EFA. The results of this analysis are presented in table 6.5. The reliability of the items was assessed using Cronbach's alpha. Howitt and Cramer (2002) recommend an alpha coefficient of above 0.7, to demonstrate a satisfactory fit of internal consistency, which was the case for all the items.

Table 6.5: Cronbach's alphas for each quadrant of the Competing Values Framework, for both the 36 and 29 item scales

	36- item scale (Original)	29-item scale (Refined)
1 Factor	.92	.91
4-Factor		
Control	.86	.83
Compete	.83	.83
Collaborate	.85	.85
Create	.86	.87

Table 6.6 illustrates the final list of items that went forward to the analyses that contribute to the studies in the proceeding chapters of the thesis.

Table 6.6: The Competing Value Framework – 29 item scale

Collaborate	Create
1. Encouraging participation	*4. Anticipating customer needs*
1a. Making it legitimate to contribute opinions.	4a. Meeting with customers to discuss their needs.
1b. Employing participative decision making.	4b. Identifying the changing needs of the customer.
1c. Maintaining an open climate for discussion.	4c. Anticipating what the customer will want next.
2. Developing people	*5. Initiating significant change* (.83, .79)
2a. Encouraging career development.	5a. Initiating bold projects.
2b. Seeing that everyone has a development plan.	5b. Starting ambitious programs.
2c. Coaching people on career issues.	5c. Launching important new efforts.
3. Acknowledging personal needs	*6. Inspiring people to exceed expectations* (.78, .76)
3a. Being aware of when people are burning out.	6a. Inspiring direct reports to be creative.
3b. Encouraging people to have work/life balance.	
3c. Recognizing feelings.	
Control	**Compete**
7. Clarifying policies	*11. Showing a hard work ethic*
7a. Seeing that corporate procedures are understood.	11a. Showing an appetite for hard work.
7b. Insuring that company policies are known.	11b. Modeling an intense work effort.
7c. Making sure formal guidelines are clear to people.	11c. Demonstrating full exertion on the job.
8. Expecting accurate work	*12. Emphasizing speed*
8a. Emphasizing the need for accuracy in work efforts.	12a. Getting work done quicker in the unit.
8b. Expecting people to get the details of their work right.	12b. Producing faster unit outcomes.
8c. Emphasizing accuracy in work efforts.	12c. Providing fast responses to emerging issues.
9. Controlling projects	
9c. Closely managing projects.	

Source: Adapted from Lawrence, Lenk and Quinn (2009: p. 101)

6.4. EXAMINATION OF THE PSYCHOMETRIC PROPERTIES OF THE LEADERSHIP EFFECTIVENESS MEASURE

Lawrence, Lenk and Quinn's (2009) Leadership Effectiveness Measure, consists of 8-items, comprised of two dimensions: Overall Performance (5-items) and Ability to Lead Change (3-items) which accompany the Competing Values Framework (see Chapter Five for details of the survey items).

The psychometric properties of these items were assessed for suitable inclusion in the study, by means of the same analysis techniques used to explore the Competing Values Framework: EFA, CFA and reliability analysis, as shall now be discussed.

Data from 118 healthcare leaders was examined using EFA to test the adequacy of the Leadership Effectiveness scale, using principal axis factoring with an oblique rotation (direct oblimin). For the purpose of exploration, mineigen analysis, was run to see how many factors would be extracted from the data rather than specifying a set number in advance of the analysis.

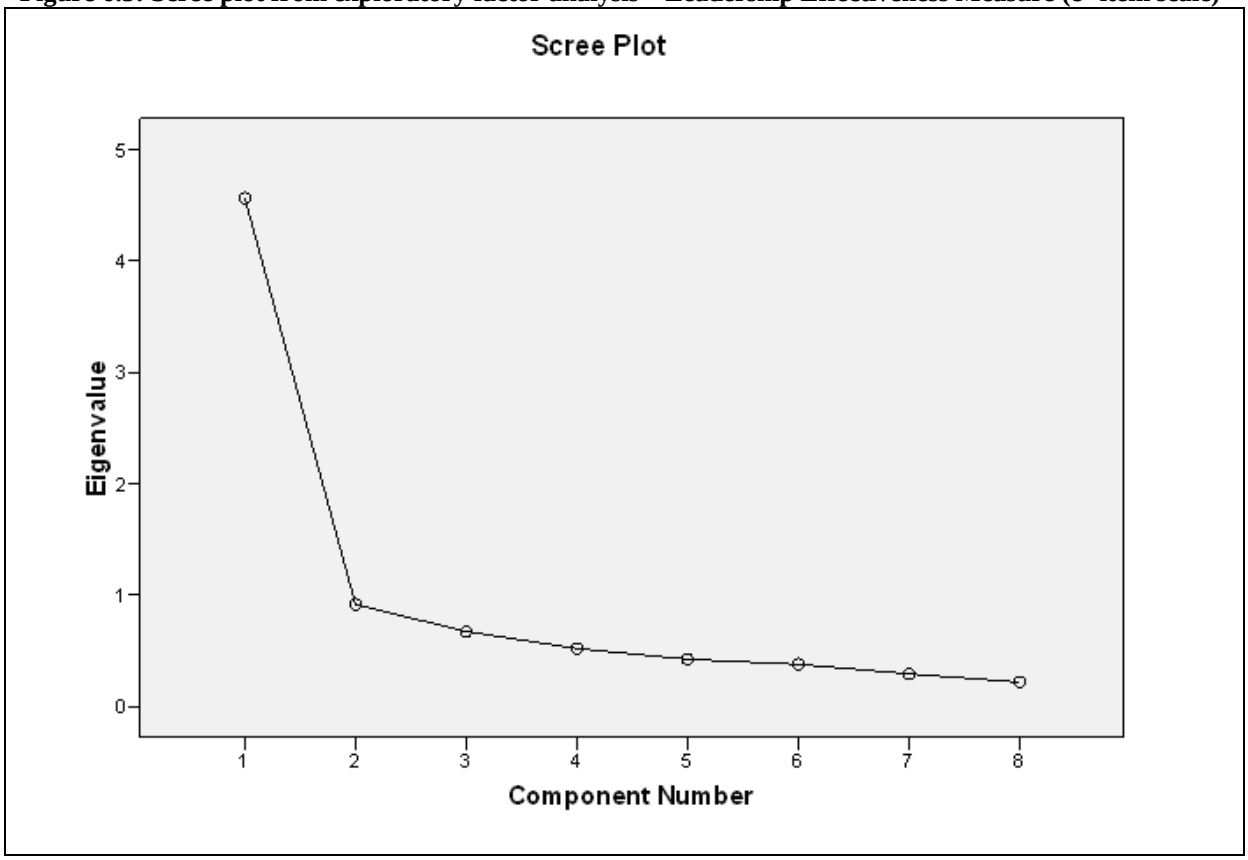
The results in Table 6.7 suggests the 8-item Leadership Effectiveness measure naturally loads onto one factor, rather than the expected two factor solution that represents Overall Performance and Ability to Lead Change. The cumulative percentage of variance explained by the extracted components explains 57% of the variance.

Table 6.7 Total Variance Explained Leadership Effectiveness Measure (8-item scale)

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.561	57.012	57.012	4.561	57.012	57.012
2	.918	11.469	68.481	.918	11.469	68.481

Scree plot representation (see figure 6.3) also strongly indicates a unitary solution. Clearly this poses a challenge to the initial formulation of this measure and therefore to the integrity of the research.

Figure 6.3: Scree plot from exploratory factor analysis – Leadership Effectiveness Measure (8- item scale)



In the hope of shedding further light on the issue and in keeping with consistency of the original scale formulation, the two factor solution was explored (which had an eigenvalue of .92). The results of which are presented in the pattern matrix in table 6.8.

Table 6.8: Principle axis factor analysis of Leadership Effectiveness data (8-items); pattern matrix, oblique rotation (Two factors)

	Ability to Lead Change	Overall Performance
Conceiving change efforts (Ability to Lead Change)	**.970**	
Overall effectiveness as a leader (Overall Performance)	~~**.766**~~	
Leading change (Ability to Lead Change)	**.751**	
Having impact (Ability to Lead Change)	**.738**	
Performance as a role model (Overall Performance)		**.829**
Meeting of performance standards (Overall Performance)		**.811**
Comparison to your professional peers (Overall Performance)		**.775**
Overall professional success (Overall Performance)		**.570**

NB: The items with a strikethrough load onto the incorrect factor than expected.

Result from the pattern matrix displayed in table 6.9 indicates that the Leadership Effectiveness subscales of Overall Performance and Ability to Lead Change loads onto two factors, with the exception of the item *Overall effectiveness as a leader (Ineffective leader/Effective leader).*

In light of this unexpected result, the content of the items was examined further. The items on the Overall Performance dimension appear to relate to two slightly separate constructs: (1) Relative Performance – performance relative to others and targets, and (2) Absolute Performance – an indication of ones performance in relation to his/her self. Accordingly therefore a three factor solution was explored (table 6.9).

Table 6.9: Principle axis factor analysis of Leadership Effectiveness data (8-items); pattern matrix, oblique rotation (Three factors)

	Ability to Lead Change	**Absolute Performance**	**Relative performance**
Conceiving change efforts (*Ability to Lead Change)*	.985		
Leading change *(Ability to Lead Change)*	.747		
Overall effectiveness as a leader (*Relative Performance)*	~~.736~~		
Having impact (*Ability to Lead Change)*	.731		
Overall professional success (Absolute *Performance)*		.888	
Performance as a role model (Absolute *Performance)*		.692	
Meeting of performance standards (Relative *Performance)*			.937
Comparison to your professional peers (Relative *Performance)*			.458

NB: The items with a strikethrough load onto the incorrect factor than expected.

Result from the pattern matrix displayed in table 6.9 indicates that the Leadership Effectiveness subscales of Ability to Lead Change, Relative Performance and Absolute Performance loads onto three factors, with the exception of again of the question, *Overall effectiveness as a leader (Ineffective leader/Effective leader)*. Therefore one further analysis was conducted omitting this item but seeking a 7-item, three factor Leadership Effectiveness Measure.

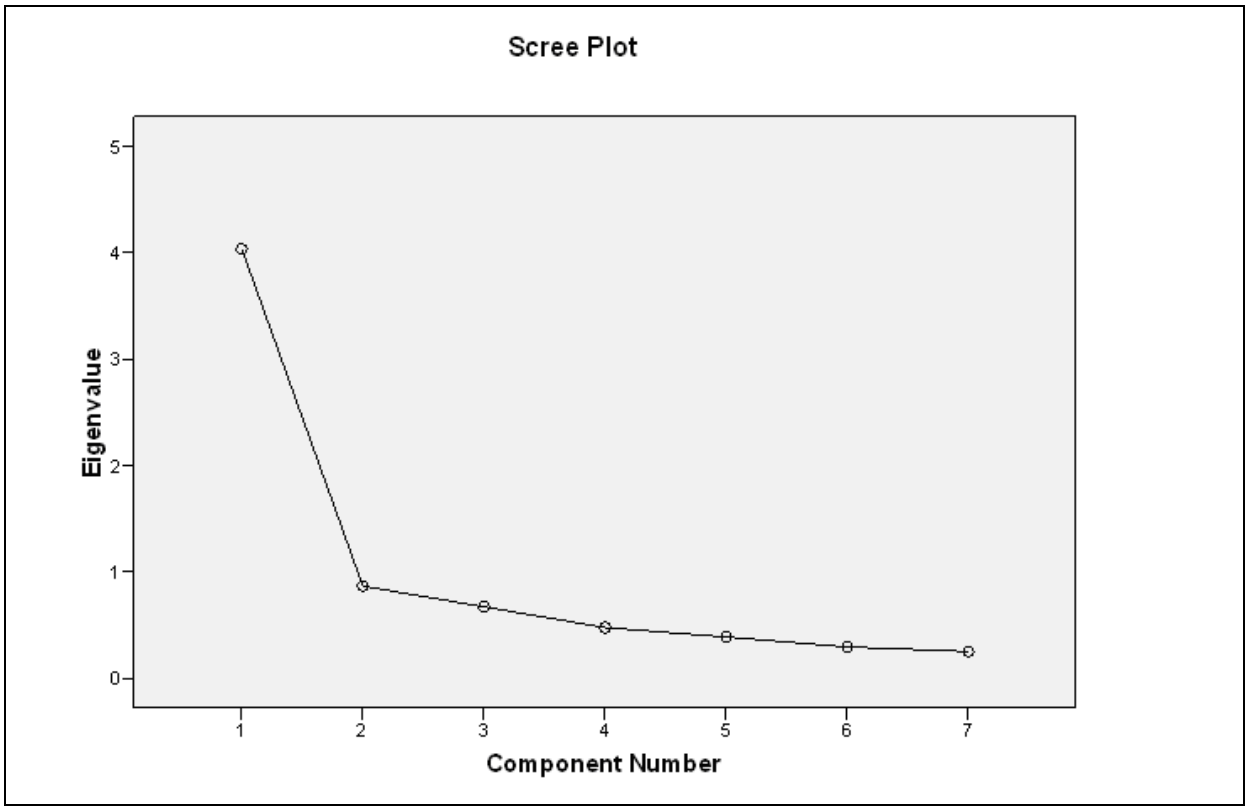
The results in Table 6.10 suggests the 7-item Leadership Effectiveness measure again naturally loads onto one factor, rather than the expected three factor solution that represents Relative Performance, Absolute Performance and Ability to Lead Change. The cumulative percentage of variance explained by the extracted components explains 57% of the variance. For information the eigenvalues for the second and third factors are reported.

Table 6.10 Total Variance Explained Leadership Effectiveness Measure (7-item scale)

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	**4.035**	**57.637**	**57.637**	**4.035**	**57.637**	**57.637**
2	.869	12.419	70.056	.869	12.419	70.056
3	.674	9.628	79.684	.674	9.628	79.684

Scree plot representation (see figure 6.4) also strongly indicates a unitary solution. Clearly this poses a challenge to the initial formulation of this measure and therefore to the integrity of the research.

Figure 6.4: Scree plot from exploratory factor analysis – Leadership Effectiveness Measure (7- item scale)



The results from the pattern matrix (table 6.11), indicate the Leadership Effectiveness Measure subscales of Relative Performance, Absolute Performance and Ability to Lead Change load onto three separate factors when a three factor solution is specified. Accordingly this was the verson used in subsequent analysis.

Table 6.11: Principle axis factor analysis of Leadership Effectiveness data (7-items); pattern matrix, oblique rotation (Three factors specified)

	Absolute Performance	Ability to Lead Change	Relative performance
Overall professional success (Absolute *Performance)*	.924		
Performance as a role model (*Absolute Performance)*	.717		
Conceiving change efforts (*Ability to Lead Change)*		.992	
Leading change *(Ability to Lead Change)*		.763	
Having impact (*Ability to Lead Change)*		.710	
Meeting of performance standards (Relative *Performance)*			.948
Comparison to your professional peers (Relative *Performance)*			.480

.

Finally, CFA was conducted on both the 8-item (original) and 7-item (refined) scale. Therefore, the hypothesised three-factor model (representing the three sub-dimensions of the Leadership Effectiveness Measure) was tested against a one-factor model for both the 8-item (original) and 7-item (refined) Leadership Effectiveness Measure. Table 6.12 details the results from the CFA.

Table 6.12: Fit indices of confirmatory factor analysis

	$\chi 2$	Df	$\chi 2/df$	NFI	CFI	TLI	PCFI	RMR	RMSEA
One-factor (8-item scale)	50.02	20	2.50	.85	.90	.86	.64	.04	.14
One-factor (7-item scale)	37.98	14	2.71	.86	.90	.86	.60	.04	.15
Two-Factor (8-item scale)	34.99	19	1.84	.90	.95	.92	.48	.03	.10
Two-Factor (7-item scale)	12.97	13	1.00	.95	1.00	1.00	.62	.02	.00
Three-Factor (8-item scale)	26.60	17	1.56	.92	.97	.95	.59	.02	.08
Three-Factor (7-item scale)	10.17	11	0.92	.96	1.00	1.00	.52	.02	.00

Again a range of indices were used to explore the model fit, with the three-factor (7-item scale) model offering the best level of fit over the alternatives, giving a $\chi 2$ */df* ratio of below 2.0 ($\chi 2/df=0.92$); NFI (.96), CFI (1.00) TLI (1.00) all above the recommended level of 0.9; RMR (.02) and RMSEA (.00) below the recommended level of .08.

The internal consistency of this scale was also explored. The reliabilities of each dimension from the original 8-item, Lawrence, Lenk and Quinn, Leadership Effectiveness Measure, was compared against the reliabilities of each dimension derived from the reduced 7-item scale,

drawn from the above EFA. The results of this analysis are presented in Table 6.13; in general the internal consistency of the scale improved with the removal of the absolute performance question, *Overall effectiveness as a leader (Ineffective leader/Effective leader).* The unsuitability of this item could reflect the healthcare context where performance is not identifiable in clear cut ineffective/effective terms as might be the case in more profit driven organisations.

Table 6.13: Cronbach's alphas for the Leadership Effectiveness Measure (8 and 7 item scale)

	8- item scale (Original)	**7 -item scale (Refined)**
1-Factor	.86	.88
3-Factor		
Relative Performance	.70	.70
Absolute Performance	.70	.71
Ability to Lead Change	.86	.86

Table 6.14 illustrates the final list of items that went forward to the analyses that contribute to the studies in the proceeding chapters of the thesis.

Table 6.14: Leadership Effectiveness Measure –7 item scale

Effectiveness Measures (Scale of 1 to 5; phrases in parentheses below are anchors for the ends of each scale)

Relative *Performance*

1. Meeting of performance standards (Above most standards/below most standards, reverse coded).
2. Comparison to the person's professional peers (Worse than peers/Better than peers).

Absolute *Performance*

1. Performance as a role model (Poor role model/Excellent role model).
2. Overall professional success (A professional success/A professional failure, reverse coded).

Ability to Lead Change

1. Conceiving change efforts (Pursues small, incremental changes/Pursues large, quantum changes).
2. Leading change (Leads in bold, new directions/Pursues the status quo, reverse coded).
3. Having impact (Is responsible for profound changes/Has little impact, reverse coded).

Source: Adapted from Lawrence, Lenk and Quinn (2009: p. 101)

In view of the refined scale structure where the Leadership Effectiveness outcome Overall Performance is split in two to represent Relative Performance and Actual Performance, Hypothesis 1 (see Chapter Four) is refined:

Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in determining leadership effectiveness in terms of overall performance

and is replaced with two new hypotheses, Hypothesis 1a and 1b:

Hypothesis 1a: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in determining leadership effectiveness in terms of Relative Performance.

Hypothesis 1b: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in determining leadership effectiveness in terms of Absolute Performance.

Both Hypothesis 1a and 1b are based on the same theoretical assumptions that informed Hypothesis 1.

6.5 EXAMINATION OF THE PSYCHOMETRIC PROPERTIES OF THE LEADERSHIP INFLUENCE MEASURE

Personnel and Human Resource Innovations (P.H.I.) Group's Leadership Influence Measure (Dickinson, 2001) consists of 9-items (see Chapter Five for a details of the survey items). The psychometric properties of these items were assessed for suitable inclusion in the study.

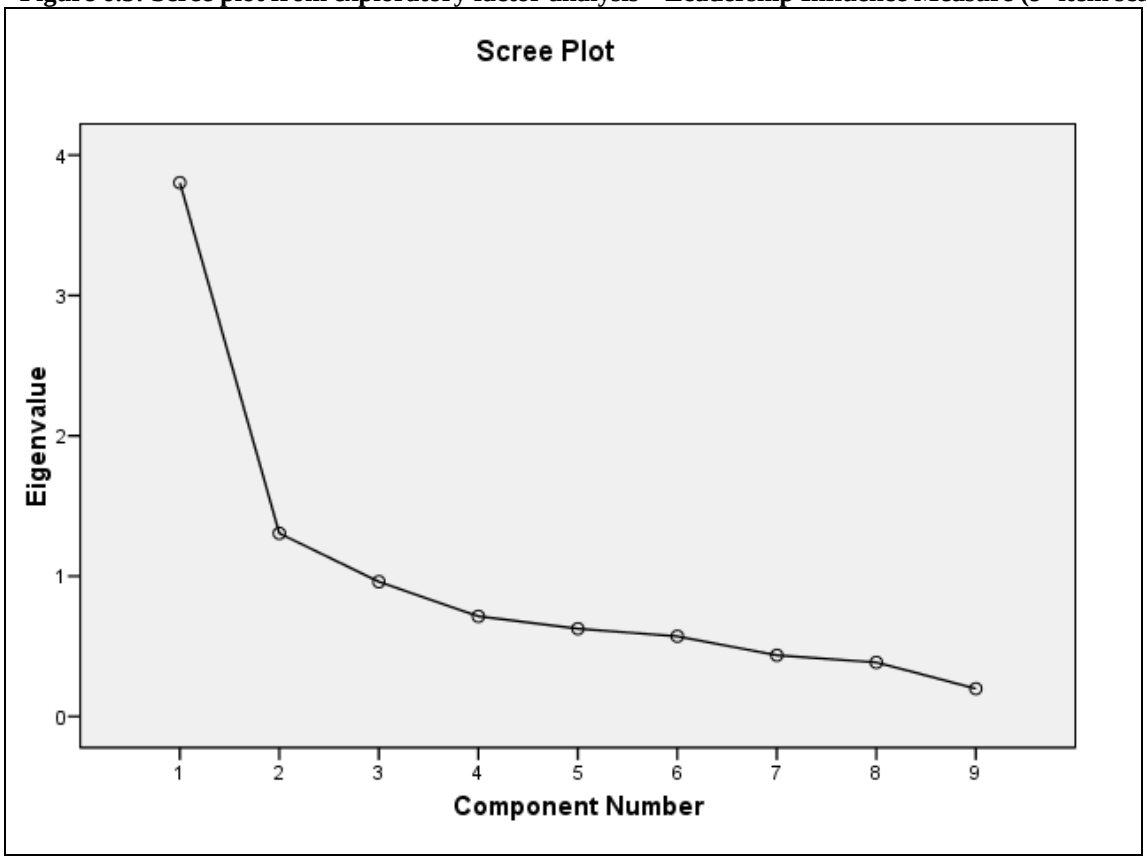
The same series of analyses as reported above were applied to the data relating to the Leadership influence measure. Again data from 118 healthcare leaders were explored
The results in table 6.15 suggest the 9-item Leadership Influence Measure naturally loads onto two factors, rather than the expected one factor solution. The cumulative percentage of variance explained by the two extracted components together explains 57% of the variance.

Table 6.15: Total Variance Explained Leadership Influence Measure (9-item scale)

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.803	42.259	42.259	3.803	42.259	42.259
2	1.305	14.502	56.760	1.305	14.502	56.760

Scree plot representation (figure 6.5) suggests two factors underlie the data.

Figure 6.5: Scree plot from exploratory factor analysis – Leadership Influence Measure (9- item scale)



A break in the scree plot between the first and second factor (eigenvalues of 3.80 and 1.31, respectively), indicated a one-factor solution. The first factor accounted for 42.26% of the total variance, with the subsequent factor explaining 14.50%.

The two factor solution emerging from the mineigen procedure (table 6.16) suggests that the split into two factors may arise from the focus of the questions. Items loading on the first component relate to the capacity of an individual to produce effects on the actions, behaviours, options, etc of others while items loading on the second component relate more to judgement; the political awareness of the leader to recognise the situational factors that contribute to influence. Moreover alpha coefficients calculated for the two factor solution suggested the second factor was not reliable (alpha = .59).

Given that the two factor solution therefore appears to be somewhat artificial, the subsequent analysis focuses on the proposed unitary solution. The alpha coefficient for the unitary 9 item scale was .81.

Table 6.16: Principle axis factor analysis of Influence data (9-items); pattern matrix, oblique rotation

	Influence	Judgement
Has a good network of contacts (Influence)	.82	
Effective at influencing upper management (Influence)	.81	
Effectively represents the teams interests to upper management (Influence)	.78	
Negotiates persuasively (Influence)	.72	
Good at selling an idea (Influence)	.60	
Involves the right people in decisions (Influence)	.57	
Has an astute sense of organisational politics (Influence)	.54	
Recognises some battles are not worth fighting (Judgment)		.89
Good at judging the reactions of others (Judgment)		.71

One final test of the structural properties of this scale was carried out. CFA was conducted comparing the solutions obtained from the original the 9-item scale, the 7 item scale, omitting the two judgement-related items and finally a two factor solution, retaining the judgment factor in the model. Table 6.17 details the results from the CFA.

Table 6.17: Fit indices of confirmatory factor analysis

	$\chi 2$	Df	$\chi 2/df$	NFI	CFI	TLI	PCFI	RMR	RMSEA
One-factor (9-item scale)	79.31	27	2.94	.70	.77	.70	.58	.05	.16
One-factor (7-item scale)	43.27	14	3.09	.80	.85	.77	.44	.04	.16
Two-Factor (9-item scale)	62.85	26	2.42	.76	.84	.78	.61	.04	.13

Overall the two-factor, 9-item interpretation, including Influence and Judgment components, offers the best fit of the data amongst the alternatives tested.

Table 6.18 illustrates the final list of items that went forward to the analyses which contribute to the studies in the proceeding chapters of the thesis.

Table 6.18: Leadership Influence Measure –9 item scale

Influence

1. Effectively represents the teams interests to upper management
2. Involves the right people in decisions
3. Has a good network of contacts
4. Has an astute sense of organisational politics
5. Recognizes some battles are not worth fighting
6. Good at judging the reactions of others
7. Effective at influencing upper management

Judgement

1. Good at selling an idea
2. Negotiates persuasively

In view of the refined scale structure where Leadership Influence is split in two to represent Influence and Judgement, Hypothesis 3 (see Chapter Four) is refined:

Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in determining leadership effectiveness in terms of Influence.

And is replaced with two new hypotheses: Hypothesis 3a and 3b:

Hypothesis 3a: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in determining leadership effectiveness in terms of Influence.
Hypothesis 3b: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in determining leadership effectiveness in terms of Judgment.

Both Hypothesis 3a and 3b are based on the same theoretical assumptions that informed Hypothesis 3.

6.6 DEVELOPMENT AND PSYCHOMETRIC PROPERTIES OF THE ORGANISATIONAL COMPLEXITY MEASURE

Given that the study is seeking to explore the effectiveness of Behavioural Complexity on leader effectiveness in complex environments, some evaluation for the complexity of the environment is needed. To this end a new measure of Organisational Complexity was developed. This section describes both the process of scale development and the properties of the emergent measure.

The generation of items is a critical step in the development of a reliable and valid measure. As theory is a great aid to clarity, it is essential that a scale is grounded in a number of substantive theories which underpin the phenomenon of interest (DeVellis, 2003). Following the guidelines of Hinkin (1998) and Cronbach and Meehl (1955), the first step involved in the development of the Organisational Complexity Measure involved establishing content validity. Content validity is of primary concern during the item generation phase and is concerned with whether a scale samples all of the relevant or important domains of a concept, without containing any extraneous content. As such, content validity is considered as the minimum psychometric requirement in determining the adequacy of a measure, and constitutes the initial step of complete construct validation (Schriesheim, 1993).

In a review on scale development practices Hinkin (1995) discusses item generation, in terms of the deductive approach following a thorough review of the literature, after which a comprehensive definition of the construct under examination is derived, which is grounded firmly in theory. According to Schwab (1980), this definition provides a conceptual guide for the subsequent development of an item pool.

The Organisational Complexity Measure consists of ten items, derived from a meta-analysis of the Organisational Complexity literature, conducted by Damanpour (1996), where four main themes were extracted (Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation) and converted into items (see table 6.19). Damanpour's meta-analysis provided the themes for the Organisational Complexity scale, which were converted into items as part of the thesis using the same scale structure used for the Competing Values Framework and measures of leadership effectiveness, specifically, a low to high five point Likert scale.

Table 6.19: Organisational Complexity Measure – 10 items

The Organisational Complexity questions are administered on a 1 (low) to 5 (high) likert scale that anchor each item.

Structural Complexity

1. The total number of units below the Chief Executive level in the organisation is?
2. The total number of occupational specialities in the organisation is?

Organisational Size

3. The physical capacity of the organisation is?
4. The average work input of the organisation is?
5. The average work output of the organisation is?

Environmental Uncertainty

6. The degree of turbulence in the organisation is?
7. The degree of competition in the organisation is?
8. The degree of variability in the organisation is?

Innovation

9. The degree of initiated innovations in the organisation is (note: initiated refers to innovations that are proposed but not implement)?
10. The degree of implemented innovations in the organisation is?

The psychometric properties of these items were assessed for suitable inclusion in this study using EFA, CFA and reliabilities analysis.

Data from 118 healthcare leaders was examined using EFA to test the adequacy of the Organisational Complexity scale, using principal axis factoring with an oblique rotation (direct oblimin). It was expected that the sub-scales captured above would load onto four separate factors, therefore providing initial support for the four sub-dimensions which characterise the Organisational Complexity literature. For the purpose of exploration, mineigen analysis was run to see how many factors would be extracted from the data rather than specifying a set number in advance of the analysis.

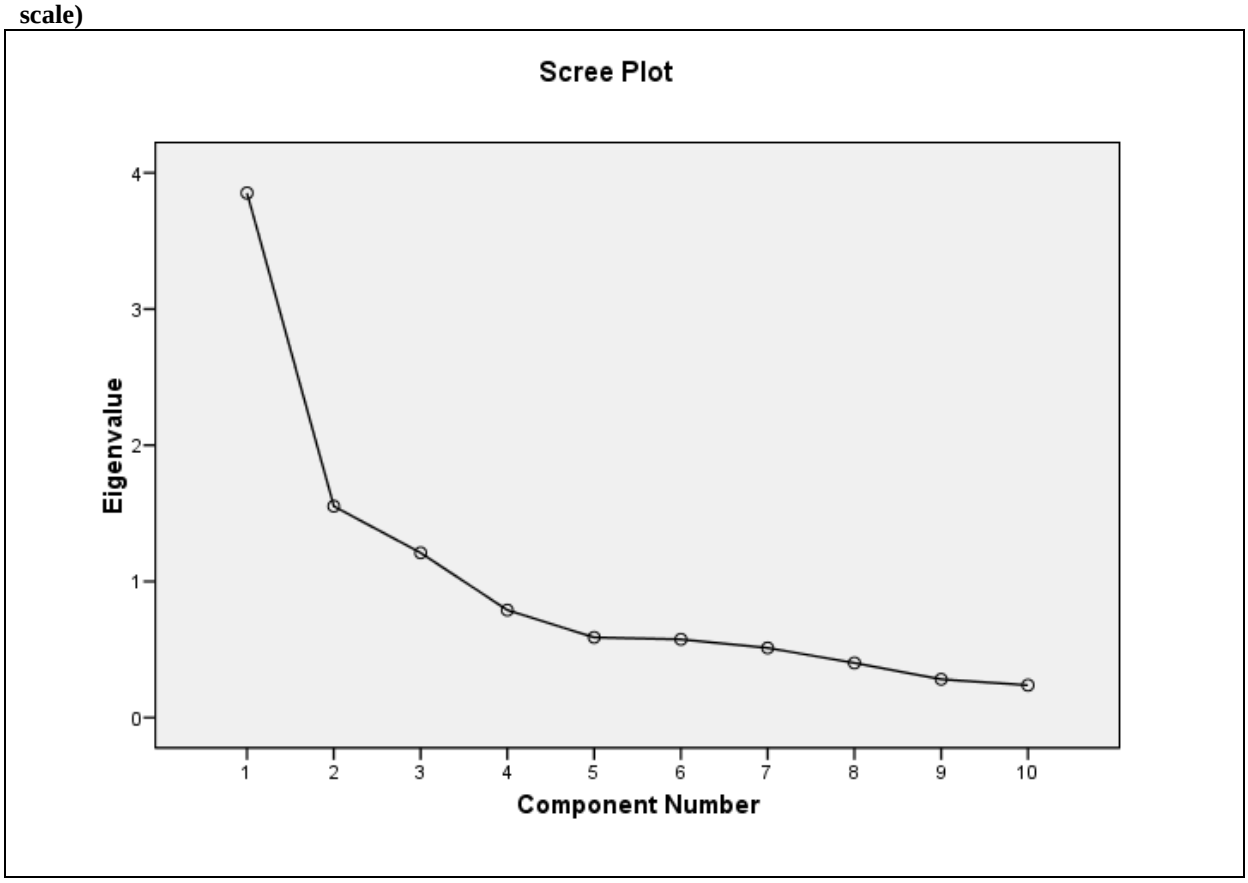
The results in table 6.20 suggest the 10-item Organisational Complexity measure naturally loads onto three factors, rather than the expected four factor solution that represents Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation. The cumulative percentage of variance explained by the three extracted components together explains 66% of the variance.

Table 6.20:Total Variance Explained Organisational Complexity Measure (10-item scale)

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.852	38.517	38.517	3.852	38.517	38.517
2	1.552	15.520	54.037	1.552	15.520	54.037
3	1.210	12.100	66.137	1.210	12.100	66.137

Scree plot representation (Figure 6.6) suggested that three factors underlie the data.

Figure 6.6: Scree plot from exploratory factor analysis – Organisational Complexity Measure (10- item scale)



In an attempt to shed light on this issue the three factor solution was explored. The results of which are presented in the pattern matrix in table 6.21.

Table 6.21: Principle axis factor analysis of Organisational Complexity Measure (10-items) 3 Factors; pattern matrix, oblique rotation

	Structural Complexity / Organisational Complexity	Environmental Uncertainty	Innovation
The total number of occupational specialities in the organisation is (Structural Complexity)	.80		
The average work input of the organisation is (Organisational Size)	.78		
The physical capacity of the organisation is (Organisational Size)	.74		
The average work output of the organisation is (Organisational Size)	.74		
The total number of units below the Chief Executive level in the organisation is (Structural Complexity)	.65		
The degree of competition in the organisation is (Environmental Uncertainty)		.77	
The degree of turbulence in the organisation is (Environmental Uncertainty)		.76	
The degree of variability in the organisation is (Environmental Uncertainty)		.71	
The degree of implemented innovations in the organisation is (Innovation)			.89
The degree of initiated innovations in the organisation is (Innovation)			.84

Results from the pattern matrix displayed in Table 6.21 indicate that the Organisational Complexity subscale: Structural Complexity, Organisational Complexity, Environmental Uncertainty and Innovation, appear to load onto three dimensions because Structural Complexity and Organisational Size merge onto the same component. Piecewise EFA, was then used to explore the cross loading between these two factors, the results of which are displayed in Table 6.22.

Table 6.22: Piecewise Principle axis factor analysis of Structural Complexity and Organisational Size scale (10-items); pattern matrix, oblique rotation

	Structural Complexity	Organisational Complexity
The total number of units below the Chief Executive level in the organisation is… (Structural Complexity)	**.87**	
The total number of occupational specialities in the organisation is… (Structural Complexity)	**.69**	
The physical capacity of the organisation is… (Organisational Size)	~~.68~~	
The average work output of the organisation is… (Organisational Size)		**.90**
The average work input of the organisation is… (Organisational Size)		**.86**

NB: The items with a strikethrough load onto the incorrect factor than expected.

The results of the analysis indicated the Organisational Size question The physical capacity of the organisation is…, loaded with the Structural Complexity questions, which could account for the linkage between these two dimensions. Accordingly, this item was dropped and the EFA re-ran.

The cumulative percentage of variance explained by specifying a four factor criteria representative of the four dimensions of Organisational Complexity, together explains 77% of the variance (see Table 6.23)

Table 6.23: Total Variance Explained Organisational Complexity Measure (9-item scale)

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	3.518	39.091	39.091	2.203	24.477	24.477
2	1.541	17.127	56.219	1.643	18.257	42.734
3	1.128	12.531	68.750	1.640	18.226	60.960
4	.761	8.459	77.210	1.462	16.249	77.210

Consistent with the theory-based expectation of the Organisational Complexity measure consisting of four dimensions, scree plot (figure 6.7.) representation suggested that four factors underlie the data when the number of items is reduced from 10 to 9.

Figure 6.7: Scree plot from exploratory factor analysis – Organisational Complexity Measure (9- item scale)

Scree plot representation (figure 6.7) indicates a four-factor solution. This finding is supported by the result of the pattern matrix (table 6.24) which indicates that the Organisational Complexity subscales of: Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation load onto four separate factors.

Table 6.24: Principle axis factor analysis of Organisational Complexity data (9-items); pattern matrix, oblique rotation

	Organisational Size	Structural Complexity	Innovation	Environmental Uncertainty
The average work output of the organisation is… (Organisational Size)	.83			
The average work input of the organisation is… (Organisational Size)	.79			
The total number of units below the Chief Executive level in the organisation is… (Structural Complexity)		.83		
The total number of occupational specialities in the organisation is…(Structural Complexity)		.78		
The degree of implemented innovations in the organisation is… (Innovation)			.88	
The degree of initiated innovations in the organisation is…(Innovation)			.87	
The degree of competition in the organisation is…(Environmental Uncertainty)				.89
The degree of variability in the organisation is…(Environmental Uncertainty)				.55
The degree of turbulence in the organisation is…(Environmental Uncertainty)				.52

Using CFA the hypothesised four-factor model (representing the four sub-dimensions of the Organisational Complexity measure) was tested against a one-factor model. Table 6.25 details the results from the CFA.

Table 6.25: Fit indices of confirmatory factor analysis – Organisational Complexity Measure

	χ2	**Df**	**χ2/*df***	**NFI**	**CFI**	**TLI**	**PCFI**	**RMR**	**RMSEA**
One-factor (9-item scale)	96.57	27	3.58	.69	.75	.66	.56	.09	.16
Four Factor (9-item scale)	28.51	21	1.36	.91	.97	.95	.57	.05	.06

A range of indices were used to explore the model fit, with the four-factor model offering the best level of fit, yielding χ2 /*df* ratio of below 2.0 (χ2/*df=1.36*); NFI (.91), CFI (.97), TLI (.95) all above the recommended level of 0.9; RMR (.05) and RMSEA (.06) below the recommended level of .08.

The internal consistency of this scale was also explored, by testing the reliabilities using Cronbach's alpha. Again, the four factor solution was compared against the one factor solution (see table 6.26) where the 9-item four factor solution offered a satisfactory level of fit.

Table 6.26: Cronbach's alphas for the Organisational Complexity Measure (9 item scale)

	9 -item scale
1-Factor	.79
4-Factor	
Structural Complexity	.67
Organisational Size	.86
Environmental Uncertainty	.65
Innovation	.76

Table 6.27 illustrates the final list of items that went forward to the analyses that contribute to the studies in the proceeding chapters of the thesis.

Table 6.27: Organisational Complexity Measure –9 item scale

Organisational Complexity Measure
The Organisational Complexity questions are administered on a 1 (low) to 5 (high) likert scale that anchor each item.

Structural Complexity
1. The total number of units below the Chief Executive level in the organisation is?
2. The total number of occupational specialities in the organisation is?

Organisational Size
1. The average work input of the organisation is?
2. The average work output of the organisation is?

Environmental Uncertainty
1. The degree of turbulence in the organisation is?
2. The degree of competition in the organisation is?
3. The degree of variability in the organisation is?

Innovation
1. The degree of initiated innovations in the organisation is (note: initiated refers to innovations that are proposed but not implement)?
2. The degree of implemented innovations in the organisation is?

6.7 CONCLUSION

This chapter has explored the psychometric properties and validity of four scales: (1) The Competing Values Framework, (2) Effectiveness Measure, (3) Influence Measure and (4) Organisational Complexity Measure. Investigation into the structural validity of these scales (as opposed to reporting the alpha coefficients of the existing measures) was conducted to refine the scales from their original formulation so as to create a more precise measure of the factors that effect leadership and organisations in healthcare. The structural validity of these scales was tested using EFA and CFA that resulted in scale refinement based upon optimal model fit to the data. The 36-item Competing Values framework was reduced to 29-items, the Effectiveness Measure split into 3 factors, and the Influence Measure halved to reflect the Influence versus Judgment focus of the questions. A new Organisational Complexity scale was created out of a meta-analysis; this scale consists of four dimensions: Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation. Each dimension was subject to the same factor analysis techniques used to explore the three established scales; and a 9-item measure produced. The following chapters test hypotheses presented in Chapter Four using the newly refined scales validated in this chapter.

Chapter 7: Exploring Behavioural and Organisational Complexity as an enabler of Leadership Effectiveness

7.1 CHAPTER SUMMARY

The objective of the chapter is to explore Behavioural Complexity (through the Competing Values Framework) as an enabler of Leadership Effectiveness, in terms of: Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgment. This addresses research aim one, to establish the extent to which Behavioural Complexity is an enabler of leadership effectiveness, captured by hypotheses: 1a, 1b, 2, 3a and 3b). The chapter also explores whether Behavioural Complexity is altered by the presence of Organisational Complexity, defined in terms of four constructs: Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation. This relates to research aim two, to establish the extent to which Organisational Complexity moderates Behavioural Complexity and leadership effectiveness, denoted by hypotheses: 4, 5, 6 and 7. The methods used in this study are described and results presented.

The results in general partially support hypotheses 1 to 3b. However, the hypotheses cannot be fully accepted because proficiency in all quadrants of the Competing Values Framework does not enable all of the outcomes of leadership effectiveness as originally expected. Instead, different quadrants of the Competing Values Framework contribute to different outcomes of leadership effectiveness, with some dimensions, such as Collaborate and Create, being more favourable than others. Similarly, hypotheses 4 to 7 are also partially accepted because the relationship between Behavioural Complexity and leadership effectiveness is moderated by only certain aspects of Organisational Complexity, instead of all aspects as initially hypothesised. The relationship between Behavioural Complexity and leadership effectiveness is moderated predominately by certain aspects of Organisational Complexity, specifically: Innovation, Environmental Uncertainty and Structurual Complexity.

7.2 METHODS

A detailed description of tools adopting in the research is given in Chapter Five. This section provides a brief overview describing, participants, design, materials and procedure that relate specifically to this study.

7.2.1. Participants

The Healthcare organisation (Acute Hospital) that is the focus of this research is structured into thirteen directorates, subcategorised into divisions. At the time of data collection, the organisation employed four hundred and thirty eight leaders who ranged in seniority from junior to senior level. All types of leader, from the thirteen directorates were invited to participate, regardless of their level or functional background. A response rate of 26% was achieved, based upon the responses of one hundred and eighteen participants. The demographic characteristics of the leaders who participated in this study are presented in Table 7.1.

Table 7.1 Demographic details of the sample

	%
Gender	
Female	86%
Male	11%
Not specified	3%
Age	
Under 30	12%
30 to 40	29%
41 to 50	26%
51 to 65	15%
Not specified	18%
Functional Background	
Clinical	66%
Non-Clinical	12%
Not specified	22%
Level of Leader	
Senior	12%
Middle	24%
Junior	32%
Not specified	32%
Highest Educational Qualification	
University	73%
College	8%
Not specified	19%
Duration in current leadership role	
Less than one year	23%
One to two years	17%
Three to five years	19%
Six to ten years	12%
Eleven to fifteen years	4%
Fifteen years plus	3%
Not specified	22%
Duration in a Leadership capacity	
Less that one year	13%
One to two years	17%
Three to five years	13%
Six to ten years	18%
Eleven to fifteen years	6%
Fifteen years plus	13%
Not specified	20%

7.2.2. Design

The overall aim of this study is to explore leadership in Healthcare from the perspective of Behavioural Complexity and focus on the behaviours that enable Leadership Effectiveness (Hypotheses 1a, 1b, 2, 3a and 3b) in addition to exploring how Organisational Complexity moderates the relationship (Hypotheses 4 to 7).

Behavioural Complexity is captured using the adapted version of Lawrence, Lenk and Quinn's, Competing Values Framework. The Competing Values Framework measures four dimensions of Behavioural Complexity: (1) Control (2) Compete (3) Collaborate (4) Create. This study investigates whether Behavioural Complexity is an enabler of leadership effectiveness, defined as a leader's capacity for: Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgment. Organisational Complexity is measured using a new scale, developed in this study from a meta-analysis conducted by Damanpour (1996), by which four factors of Organisational Complexity were identified: (1) Structural Complexity, (2) Organisational Size, (3) Environmental Uncertainty and (4) Innovation. Details of the development and structural properties of these measures are provided in Chapter Six.

7.2.3. Materials

Data collection brought together Lawrence, Lenk and Quinn's (2009) measure of Behavioural Complexity (The Competing Values Framework) and Leadership Effectiveness (Relative Performance, Absolute Performance and Ability to Lead Change); alongside, P.H.I. Group's (Dickinson, 2001) measure of Influence and Judgement; and a measure of Organisational Complexity developed in this study based upon a meta-analysis conducted by Damanpour(1996). Each scale is measured on a 5-point likert scale, from low to high.

7.2.4. Procedure

The Directorate of Governance, with the support of HR provided the investigator with the details of all leaders working in the organisation. This included email or departmental postal addresses depending on staff access to ICT. Mixed-mode survey administration sought both to boost the response rate and also to ensure that all participants were given equal opportunity to complete the survey. In February 2009 an invitation was sent to all leaders working for the organisation. The invitation included details of the study and the opportunity to participate there and then, by either: (a) clicking on an URL link to a secure online survey (for those who

received email notification of the study) or (b) to complete a paper-based version of the survey that was sent along with the postal invitation; this contained a cover-letter (which was identical to the email invitation that accompanied the online version) asking participations to return the survey to Aston University in the prepaid envelope provided.
The leaders were informed that participation was completely voluntary and that participants could withdraw from the research at anytime. As this was a cross sectional-study, data was collected from each participant once.

T-test analysis indicated no significant differences between the online and paper-based survey administration on all main variables of interest (all T values were non- significant).

Respondents were given six weeks to either complete the survey on-line or return it to the investigator in the pre-paid envelope. Reminders were sent out (to all leaders because the survey was anonymous and there was no way to tell who had participated.) two weeks after the survey was launched and a final reminder was sent out on the last week of data collection. These efforts were aimed at increasing the survey response rate. The contact email and telephone number of the investigator were also provided to the participants in case they had any queries about the survey or project during data collection. A cover sheet which accompanied the survey outlined: the aim of the study; confidentiality; anonymity; and possible dissemination of results; estimated time to compete the survey; and details on how to answer the questions.

Before commencing the statistical analysis, the data set was checked for missing data and data normality, since both factors can pose a problem in data analysis. With regards to outliers, the data was visually examined and histograms explored to identify any outlying scores. Variables were also assessed on the basis of univarate statistics prior to analysis. Following data preparation, hypothesis testing began, details of which follow in the proceeding results section.

7.3 RESULTS: STUDY ONE – EXPLORING BEHAVIOURAL COMPLEXITY AS A ENABLER OF LEADERSHIP EFFECTIVENESS

This section presents the results of analyses that explore the link between Behavioural Complexity and Leadership Effectiveness, in view of the research aim: *To establish the extent to which Behavioural Complexity is an enabler of Leadership Effectiveness.*

The section begins by testing the direct effects of control variables on outcomes of Leadership Effectiveness. The direct effects of the quadrants that form the Competing Values Framework are also explored. Hypotheses are then tested, using moderation regression analysis, to explore the dyadic relationships between the quadrants of the Competing Values Framework and outcomes of Leadership Effectiveness, specifically:

Hypothesis 1.a.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Relative Performance.

Hypothesis 1.b.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Absolute Performance.

Hypothesis 2: Behaviours in the Create quadrant of the Competing Values Framework are needed for change. Accordingly, Create will have strongest magnitude of the quadrants in relation to Ability to Lead Change.

Hypothesis 3.a.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Influence.

Hypothesis 3.b.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Judgment.

7.3.1 Main effects between the control variables and outcomes of Leadership Effectiveness

Table 7.2 presents the main effects of the control variables (Gender, Age, Level, Functional Background, Leadership Tenure, Current Leadership Tenure and Qualifications) on each of the outcomes of leadership effectiveness (Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgment) at Step One of the regression. The control variables had no significant impact on the outcomes of leadership effectiveness relating to: Relative Performance, Influence and Judgment. Likewise, Absolute Performance and Ability to Lead Change were neither affected by the control variables apart from a few exceptions, namely:

Analysis of the direct effects between the control variables and Absolute Performance indicate a statistically significant effect for Functional Background and Qualifications. Clinical leaders score (mean = 4.20) higher than non-clinical leaders (mean = 3.81); and University educated leaders score (mean = 4.18) higher than college educated leaders (mean = 3.72). None of the other control variables had a significant impact on Absolute Performance.

The impact of the control variables on Ability to Lead Change indicates a statistically significant effect for Leadership Level (seniority), Leadership Tenure and Qualifications. Ability to Lead Change increases with seniority and tenure; and varies in terms of Qualifications, university educated leaders score (mean = 3.72) higher than college educated leaders (mean = 3.26). None of the other control variables had a significant impact on Absolute Performance.

The main effects of the control variables on the Competing Values Framework (an operationalised measure of Behavioural Complexity) shall now be explored.

Table 7.2 Testing the main effects of the control variables on outcomes of Leadership Effectiveness

Control Variables	Relative Performance				Absolute Performance				Ability To Lead Change				Influence				Judgement			
	β	***SE***	***t***	***p***	**β**	***SE***	***t***	***p***	**β**	***SE***	***t***	***p***	**β**	***SE***	***t***	***p***	**β**	***SE***	***t***	***p***
Gender	-.23	.19	-1.19	.24	.14	.18	.79	.43	-.26	.20	-1.29	.20	.00	.21	-.00	1.00	.29	.21	1.40	.17
Age	.20	.70	.30	.77	.08	.06	.138	.17	.11	.08	1.51	.14	.07	.06	1.13	.26	.04	.07	.56	.58
Level	.14	.10	1.40	.16	.15	.09	1.80	.08	.28	.10	2.84	.01**	.23	.08	2.75	.07	0.06	.10	.63	.53
Functional Background	-.23	.18	-1.31	.19	-.39	.15	-2.61	.01**	-.21	.18	-1.16	.25	.09	.15	.60	.55	-.14	.17	-.82	.41
Leadership Tenure	.06	.04	1.37	.18	.07	.03	1.94	.06	.13	.04	3.04	.003**	.04	.04	1.01	.31	-.00	.04	-.04	.97
Current Leadership Tenure	.03	.05	.65	.52	.06	.04	1.56	.12	.03	.05	.50	.62	-.02	.04	-.42	.68	.01	.05	.16	.87
Qualifications	-.23	.23	-1.01	.32	-.46	.19	-2.44	.02*	-.46	.23	-1.99	.05*	.26	.19	1.36	.18	-.16	.2	.77	.44

*$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

7.3.2 Main effects between the control variables and the Competing Values Framework quadrants

Table 7.3 presents the main effects of the control variables (Gender, Age, Level, Functional Background, Leadership Tenure, Current Leadership Tenure and Qualifications) on each of the quadrants of the Competing Values Framework (Control, Compete, Collaborate and Create).In general the control variables had little impact on the quadrants of the Competing Values Framework, with a few exceptions, specifically:

Analysis of the direct effects between the control variables and the Control quadrant behaviours indicate statistically significant effects for, Leadership Level (Seniority) and Functional Background. Control quadrant behaviours increase with seniority (junior Level leader mean = 3.71, middle Level leader mean = 4.17 and senior Level leader mean = 4.17). And non-clinical leaders score higher (mean = 4.37) than clinical leaders (mean = 4.05) on the Control quadrant behaviours.

Analysis of the direct effects between the control variables and Create quadrant behaviours indicate a statistically significant effect only for Qualifications, with University educated leaders scoring higher than College educated leaders (means 3.63 and 2.87 respectively) on Create quadrant behaviours.

Analysis of the direct effects between the control variables and Compete quadrant behaviours indicate a number of statistically significant effects; for Age, Leadership Level (Seniority) and Leadership Tenure. Compete quadrant behaviors, decrease with Age (under 30 years old = 4.12, 30-40 years old = 3.87, 41-50 years old = 3.55, and 50-65 years old = 3.63), decrease with seniority (senior level leader mean = 3.24, middle Level leader mean = 3.66 and junior level leader mean = 3.89) and decrease with tenure (1 year = 3.89, 1-2 years = 4.00, 3-5 years = 3.82, 6-10 years = 3.73, 11-15 years = 3.50 and 6 years = 3.43).

This demographically diverse distribution reduced the need to include such variables as controls in sequent analyses, thus optimising degrees of freedom in the statistical analysis.

Table 7.3 Testing the main effects of the control variable on the quadrants of the Competing Values Framework

Control Variables	Collaborate				Control				Create				Compete			
	β	*SE*	*t*	*p*	β	*SE*	*t*	*p*	β	*SE*	*t*	*p*	β	*SE*	*t*	*p*
Gender	.11	.14	.76	.45	.00	.14	.01	.99	-.36	.19	-1.88	.06	.13	.17	.72	.47
Age	.04	.05	.90	.37	-.09	.05	-1.74	.09	.04	.07	.06	.55	-.18	.06	-2.88	.01**
Level	.06	.07	.81	.42	.16	.08	2.06	.04*	.16	.10	-1.29	.20	.30	.09	3.24	.002**
Functional Background	.17	.13	1.40	.17	.32	.14	2.37	.02*	-.07	.17	-.44	.67	.14	.17	.81	.42
Leadership Tenure	.04	.03	1.53	.13	-.05	.03	-1.66	.10	.07	.04	1.64	.11	-.11	.04	-2.95	.004**
Current Leadership Tenure	.06	.03	1.72	.09	-.01	.04	-.23	.82	.06	.05	1.31	.20	-.06	.05	-1.38	.17
Qualifications	-0.00	.16	.03	.98	.01	.17	.04	.97	-.75	.22	-3.42	.001***	.27	.21	1.25	.22

*$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

7.3.3. Main effects between the Competing Values Framework quadrants and outcomes of Leadership Effectiveness

Table 7.4 presents the main effect of the Competing Value Framework quadrants (Control, Compete, Collaborate and Create) on each of the outcomes of Leadership Effectiveness (Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgment) at Step One of the Regression, Allowing for the following hypotheses to be tested:

Hypothesis 1.a.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Relative Performance.

Hypothesis 1.b.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Absolute Performance.

Hypothesis 2: Behaviours in the Create quadrant of the Competing Values Framework are needed for change. Accordingly, Create will have strongest magnitude of the quadrants in relation to Ability to Lead Change.

Hypothesis 3.a.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Influence.

Hypothesis 3.b.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Judgment.

No controls where put into the regression at this stage, since analyses presented in Table 7.2 and 7.3 already provide an indication of the effects of the control variables on the Competing Values Framework quadrants and outcomes of Leadership Effectiveness. For the purpose of this analysis the researcher wanted to explore the direct effects of the Competing Values on the outcomes of Leadership Effectiveness, before looking at the combined effects of the controls and Competing Values as enablers of Leadership Effectiveness (which instead will be investigated and discussed in Section 7.3.5).

Table 7.4 illustrates that measures of Competing Values contribute to the five predicted outcomes. The results of Table 7.4 will now be discussed in view of hypotheses presented at the start of the chapter and will be further explored in later sections of this chapter.

Hypothesis 1.a.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Relative Performance.

All four quadrants of the Competing Values Framework are important in enabling the leadership effectiveness outcome, Relative Performance. Control, Compete and Create have the strongest influence, although the effects of Collaborate are similarly statistically significant, leading to suggestions that Hypothesis 1.a. can be accepted.

Hypothesis 1.b.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Absolute Performance.

Two of the four quadrants of the Competing Values Framework, Collaborate and Create, are important in enabling the Leadership Effectiveness outcome, Absolute Performance. Accordingly, as only two of the four hypothesised quadrants enable Absolute Performance Hypothesis 1.b. is only partially accepted.

Hypothesis 2: Behaviours in the Create quadrant of the Competing Values Framework are needed for change. Accordingly, Create will have strongest magnitude of the quadrants in relation to Ability to Lead Change.

Create has a strong influence on Ability to Lead Change but equally Collaborate has a similarly strong statistically significant effect. Control also enables Ability to Lead Change although the influence is not as strong as Collaborate and Create. Hypothesis 2 is therefore partially accepted.

Hypothesis 3.a.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Influence

Two of the four quadrants of the Competing Values Framework, Collaborate and Create, are important in enabling the Leadership Effectiveness outcome, Influence. Hypothesis 3.a. is partially accepted.

Hypothesis 3.b.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Judgment

Two of the four quadrants of the Competing Values Framework, Collaborate and Create, are important in enabling the Leadership Effectiveness outcome, Judgement. Hypothesis 3.b. is partially accepted.

Table 7.4 Testing the main effects of the quadrants of the Competing Values Framework on the outcomes of Leadership Effectiveness

Control Variables	Relative Performance				Absolute Performance				Ability To Lead Change				Influence				Judgement			
	β	***SE***	***t***	***p***	**β**	***SE***	***t***	***p***	**β**	***SE***	***t***	***p***	**β**	***SE***	***t***	***p***	**β**	***SE***	***t***	***p***
Collaborate	.34	.12	2.79	.01**	.42	.11	3.67	.000***	.56	.13	4.48	.000***	.34	.12	2.86	.01**	.32	.13	2.44	.02*
Control	.37	.12	2.98	.004**	.13	.12	1.12	.26	.30	.13	2.19	.03*	.12	.12	1.00	.32	.18	.12	1.41	.16
Create	.28	.09	2.99	.003**	.27	.09	2.96	.004**	.57	.09	6.43	.000***	.18	.09	2.02	.05*	.11	.09	1.18	.24
Compete	.30	.10	2.94	.004**	.17	.10	1.73	.09	.21	.11	1.85	.07	.17	.10	1.81	.07	.23	.10	2.31	.02*

*$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

The objective of the section was to explore Behavioural Complexity (through the Competing Values Framework) as an enabler of Leadership Effectiveness, in terms of: Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgment. This section addressed research aim one, to establish the extent to which Behavioural Complexity is an enabler of leadership effectiveness, captured by hypotheses: 1a, 1b, 2, 3a and 3b. The results fully support hypothesis 1a and in general partially support hypotheses 1b, 2, 3a and 3b. The majority of these hypotheses can only be partially accepted because the results indicate that proficiency in four the quadrants of the Competing Values Framework relate only to specific outcomes of leadership effectiveness, rather than all outcomes of leadership effectiveness as was initially thought.

Instead, different quadrants of the Competing Values Framework contribute to different outcomes of leadership effectiveness. Control does not contribute directly to the leadership effectiveness outcomes Absolute Performance, Influence and Judgement. Control also appears to be the least favourable of the quadrants in terms of Leadership Effectiveness, alongside Compete which only contributes to Relative Performance and Judgment. Create does not contribute to Judgement but contributes substantially to the other outcomes of Leadership Effectiveness. Collaborate has the strongest magnitude (of the quadrants) across all five outcomes of Leadership Effectiveness, specifically: Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgment.

In view of the imbalances across the quadrants, where certain Competing Values more favourably enable specific outcomes of leadership effectiveness, the next set of analysis seeks to explore the effects of the quadrants in combined ‘dyads’. For example, this section has demonstrated that Collaborate and Create both enable Absolute Performance, the next step is to explore if Collaborate and Create as a combined dyad even better enable Absolute Performance. Put simply, if a single behaviour can enable leadership effectiveness can combined behaviours even better enable leadership effectiveness? Such a question ties into the underlying idea of the importance of a large behavioural repertoire in promoting leadership effectiveness. This shall now be explored using hierarchical regression analysis to investigate the interaction effects between the Competing Values as combined enablers of leadership effectiveness.

7.3.4. Interactions between the Competing Values as combined enablers of leadership effectiveness

Hypothesis 1.a. states proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Relative Performance. This hypothesis was accepted. In view of this finding it was decided to explore whether any interactions existed between these behaviours in promoting relative performance. Therefore, a series of moderation regressions were performed, entering pairs of quadrants at Step 2 and the product of each pair of Competing Values Framework quadrants at Step 3. A summary of the findings are presented in Table 7.5

Table 7.5 Summary of the Competing Values Framework quadrants in dyads as enablers of Relative Performance

Dyads	Relative Performance
Compete and Control	N/S
Collaborate and Control	N/S
Collaborate and Compete	N/S
Create and Control	Yes, $p \leq .05$ (See Table 7.6)
Create and Compete	Yes, $p \leq .05$ (See Table 7.7)
Create and Collaborate	NS

N/S = Not Significant.

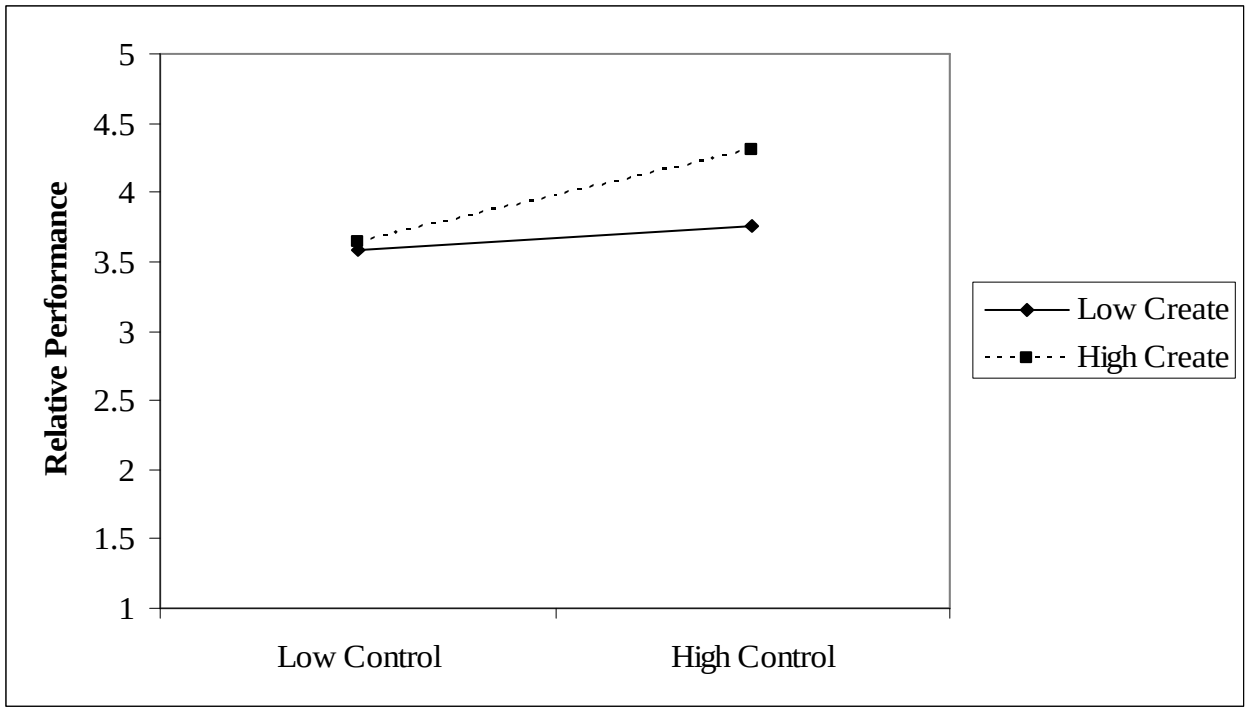
As Table 7.5 indicates not all of the dyads significantly predict Relative Performance. However, two of the dyads did appear to interact in predicting Relative Performance, namely: Create and Control; and Create and Compete, The results of these tests are given in tables 7.6 and 7.7, and illustrated in figures 7.1 and 7.2

Table 7.6: Hierarchical regression in the prediction of Control and Create on Relative Performance

	Relative Performance			
	R^2	adj R^2	□ΔR^2	□□□□□β
Step 1	.05	.-05	.05	
Gender				-.07
Age				-.01
Level				-.08
Functional Background				-.04
Qualifications				-.05
Leadership Tenure				-.01
Current Leadership Tenure				.06
Step 2	.18	.06	.12	
Control				.16†
Create				.15†
Step 3	.24	.12	.06	
Interaction between Control and Create				.12*

N=118 † $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$
Note: The values presented are the unstandardised β coefficients at each stage of the regression equation. Due to rounding off R^2 may differ .01 from the sum of R^2*change.*

Figure 7.1 Interaction between Control and Create on Relative Performance



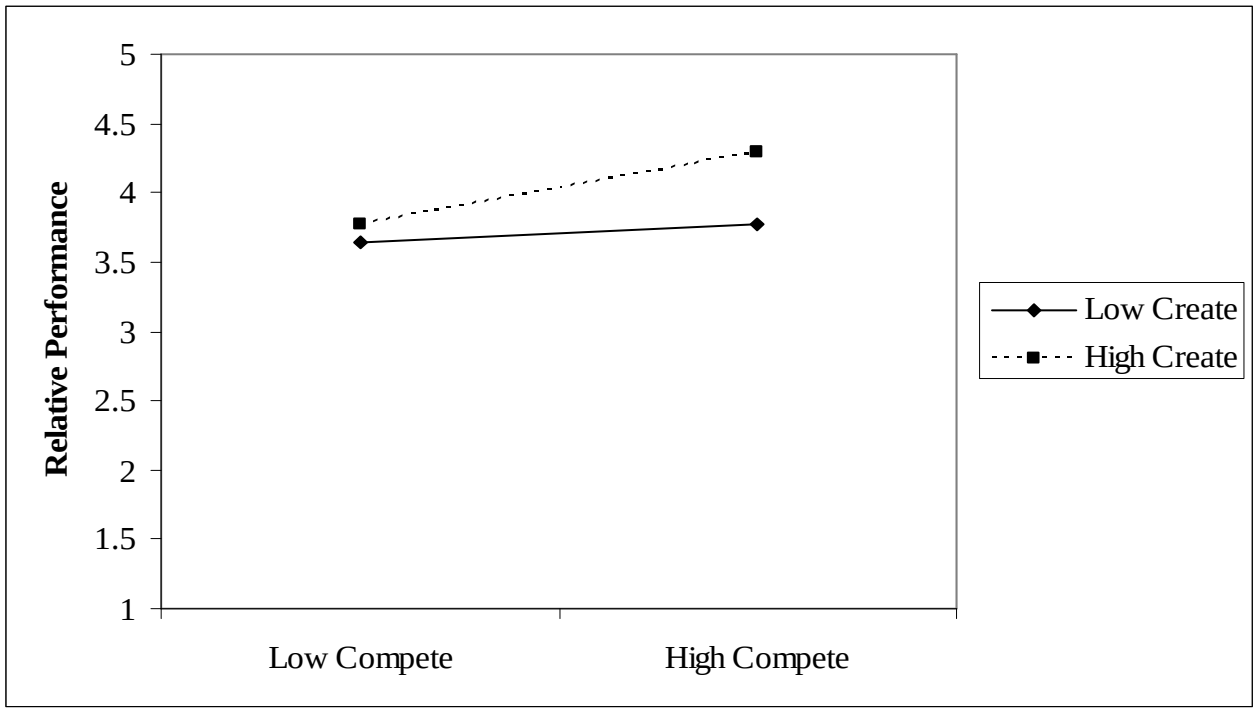
The interaction plot (Figure 7.1) illustrates leaders high on the Create quadrant score higher on Relative Performance than those who score low on the Create quadrant. When combined with the Control quadrant leaders who score high on both Control and Create score higher on Relative Performance than leaders who score low on both Control and Create. In conclusion, the Create quadrant boosts the relationship between Control and Relative Performance**.**

Table 7.7: Hierarchical regression in the prediction of Compete and Create on Relative Performance

	Relative Performance			
	R^2	adj R^2	□ΔR^2	□□□□□β
Step 1	.05	.-05	.05	
Gender				-.06
Age				.01
Level				-.08
Functional Background				-.05
Qualifications				.05
Leadership Tenure				-.03
Current Leadership Tenure				.05
Step 2	.19	.08.	14	
Compete				.17*
Create				.15†
Step 3	.23	.11	.05	
Interaction between Compete and Create				.10*

N=118 † $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$
Note: The values presented are the unstandardised β coefficients at each stage of the regression equation. Due to rounding off R^2 may differ .01 from the sum of R^2*change.*

Figure 7.2 Interaction between Compete and Create on Relative Performance



The interaction plot (Figure 7.2) illustrates leaders high on the Create quadrant score higher on the Leadership Effectiveness outcome Relative Performance than leaders who score low on the Create quadrant. When combined with the Compete quadrant leaders who score high on both Compete and Create score higher on the Leadership Effectiveness outcome Relative Performance than leaders who score low on both Compete and Create. In conclusion, the Create quadrant boosts the relationship between the Compete quadrant and Relative Performance.

The same analytical procedure was conducted to explore the combined effects of the Competing Values (in dyads) as enablers of: Absolute Performance, Ability to Lead Change, Influence and Judgment – as shall now be outlined.

Hypothesis 1.b. states proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Absolute Performance. This hypothesis was partially accepted since only two out of the four hypothesised quadrants, Collaborate and Create, enabled this outcome of leadership effectiveness. In view of this finding it was decided to explore whether Collaborate and Create interact to promote Absolute Performance. Moderated regression analysis was performed, where Collaborate and Create were entered at Step 2 and the product if the pair entered at Step 3.

The results of this analysis are presented in table 7.8 and illustrate in figure 7.3 - indicating the Create-Collaborate dyad enables Absolute Performance.

Table 7.8: Hierarchical regression in the prediction of Collaborate and Create on Absolute Performance

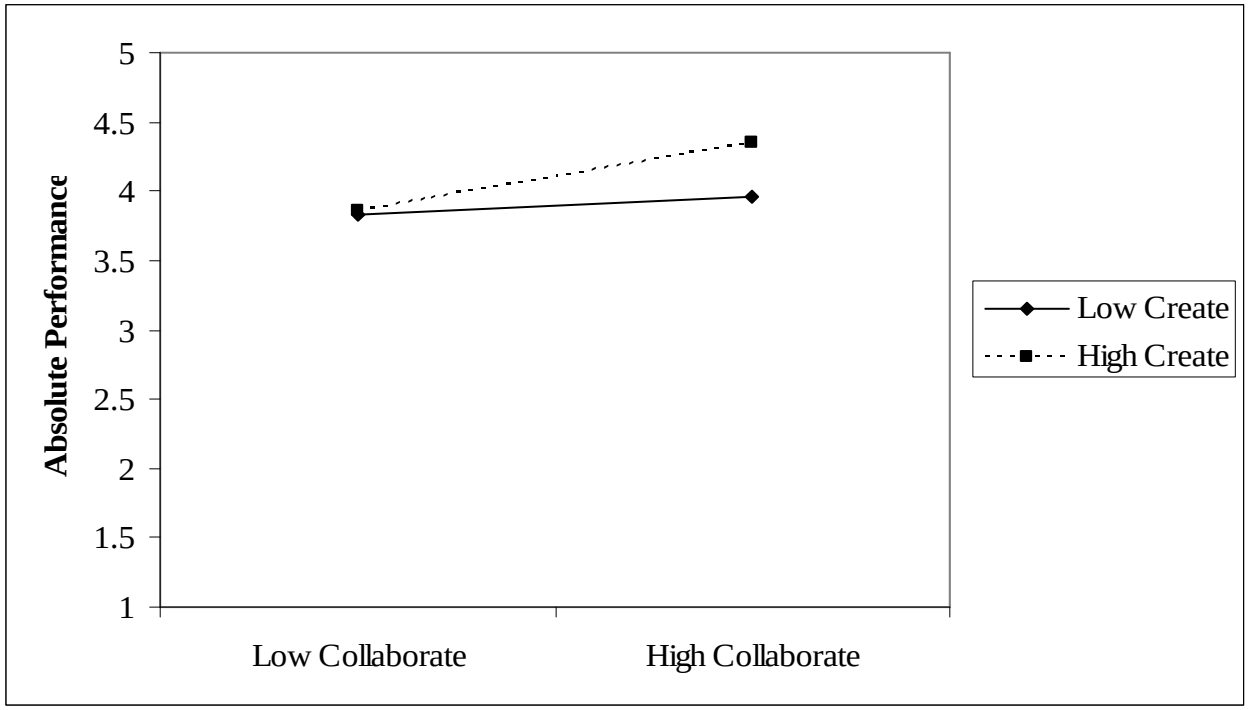
	Absolute Performance			
	R^2	adj R^2	□ΔR^2	□□□□□β
Step* 1	.01	.-00	.01	
Gender				.05
Age				.01
Current Leadership Tenure				.04
Step 2	.13	.10	.12	
Collaborate				.12*
Create				.12*
Step 3	.17	.13	.04	
Interaction between Collaborate and Create				.09*

N=118 † $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

Note: The values presented are the unstandardised β coefficients at each stage of the regression equation. Due to rounding off R^2 may differ .01 from the sum of R^2*change.*

* Control variables: Level, Functional Background Qualifications and Leadership Tenure were not loaded into Step 1 of the regression because direct effect analysis indicates that these four control variables significantly influence Absolute Performance.

Figure 7.3 Interaction between Collaborate and Create on Absolute Performance



The interaction plot (Figure 7.3) illustrates leaders high on Create quadrant score higher on Absolute Performance than those who score Low on the Create quadrant. When combined with the Collaborate quadrant leaders who score high on both Collaborate and Create score higher on Absolute Performance than leaders who score low on both Collaborate and Create. In conclusion, the Create quadrant boosts the relationship between Collaborate and Absolute Performance.

Hypothesis 2 states behaviours in the Create quadrant of the Competing Values Framework are needed for change. Accordingly, Create will have strongest magnitude of the quadrants in relation to Ability to Lead Change. This hypothesis was partially accepted because Collaborate and Control were also demonstrated to enable this outcome of leadership effectiveness. In view of this finding it was decided to explore whether any interactions existed between these behaviours in promoting Ability to Lead Change using moderated regression analysis.

A summary of the findings are presented in Table 7.9.

Table 7.9 Summary of the Competing Values Framework quadrants (Collaborate, Control and Create) in dyads as enablers of Ability to Lead Change

Dyads	Ability to Lead Change
Collaborate and Control	N/S
Create and Control	N/S
Create and Collaborate	Yes, $p \leq .01$ (See Table 7.10)

N/S = Not Significant.

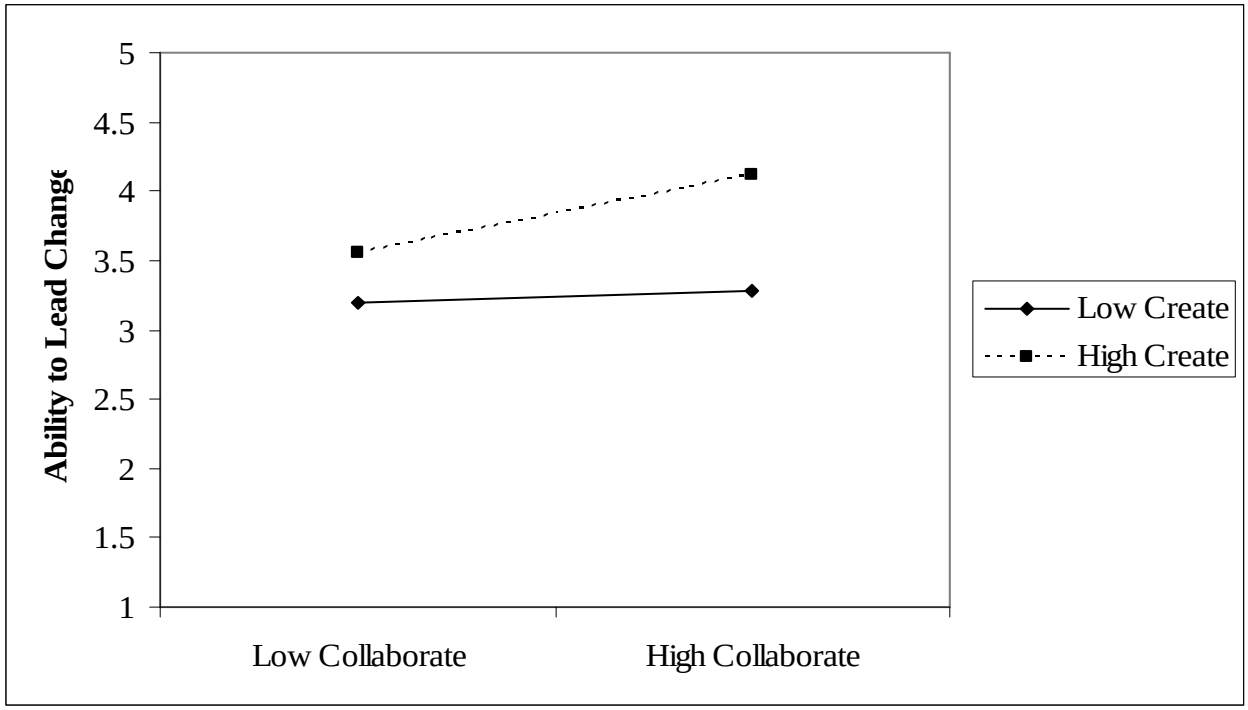
The only dyad that was demonstrated to enable Ability to Lead Change was the Create and Collaborate dyad (see table 7.10 and figure 7.4).

Table 7.10: Hierarchical regression in the prediction of Collaborate and Create on Ability to Lead Change

	Ability to Lead Change			
	R^2	adj R^2	ΔR^2	β
Step* 1	.01	.00	.01	
Gender				-.08
Age				.05
Functional Background				-.07
Current Leadership Tenure				.02
Step 2	.33	.31	.31	
Collaborate				.11†
Create				.32***
Step 3	.38	.35	.05	
Interaction between Collaborate and Create				.12**

N=118 † $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$
Note: The values presented are the unstandardised β coefficients at each stage of the regression equation. Due to rounding off R^2 may differ .01 from the sum of R^2*change.*
* Control variables: Level, Leadership Tenure and Qualifications were not loaded into Step 1 of the regression because direct effect analysis indicates that these three control variables significantly influence Ability to Lead Change.

Figure 7.4 Interaction between Collaborate and Create on Ability to Lead Change



The interaction plot (Figure 7.4) illustrates leaders high on the Create quadrant score higher on Ability to Lead Change than leaders who score low on the Create quadrant. When combined with the Collaborate quadrant leaders who score high on both Collaborate and Create score higher on Ability to Lead Change than leaders who score low on both Collaborate and Create. In conclusion, the Create quadrant boosts the relationship between Collaborate and Ability to Lead Change**.**

Hypothesis 3.a and 3b states proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Influence (a) and Judgement (b). While three of the four quadrants of the Competing Values Framework (Collaborate, Create and Compete) are important in enabling the Leadership Effectiveness outcome, Influence, and Collaborate and Create have the strongest effect on Judgement, none of the pairs of Competing Values indicated any interactive effect with either of these performance outcomes.

The purpose of this section was to explore possible advantages of imbalances across the quadrants, when certain Competing Values enable more favourably specific outcomes of leadership effectiveness. Analyses using hierarchical regression analysis explored the effects of the quadrants in combined 'dyads' based on the proposition if a single behaviour can enable leadership effectiveness can combined behaviours even better enable leadership effectiveness? Such a question ties into the underlying idea of the importance of a large behavioural repertoire in promoting leadership effectiveness.

The findings indicate not all of the dyads significantly predict outcomes of leadership effectiveness but there are a couple which do merit interest, particularly as the Competing Value Create was shown to most frequently act as the moderator in such relationships, to be exact: High scores on Create and Control enhanced Relative Performance; likewise, combined high scores on Create and Compete also enhanced this outcome of leadership effectiveness; combined high scores on Create and Collaborate dyad enable Absolute Performance and in addition to Ability to lead Change.

Having explored the extent to which Behavioural Complexity is an enabler of Leadership Effectiveness, the next section will infer the extent to which Behavioural Complexity is moderated by Organisational Complexity and ultimately see how this contextual factor influences Leadership Effectiveness.

7.4. RESULTS: STUDY TWO – EXPLORING ORGANISATIONAL COMPLEXITY AS A MODERATOR OF BEHAVIOURAL COMPLEXITY AND LEADERSHIP EFFECTIVENESS

Having explored the extent to which the Competing Values impact on leadership effectiveness. In line with the next stage of the conceptual model, it is important now to explore the impact of organisational context on this relationship. This section therefore addresses the second aim of this research namely:

To establish the extent to which Organisational Complexity moderators Behavioural Complexity and Leadership Effectiveness

Once again the four Competing Values Framework dimensions of Behavioural Complexity are related to leadership effectiveness, but this time with the addition of the Organisational Complexity measures (Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation) as potential moderators of these relationships. The specific hypotheses addressed here are:

Hypothesis 4: High Structural Complexity decreases Leadership Effectiveness, the effects of Structural Complexity can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create), that in turn contributes to improved Leadership Effectiveness.

Hypothesis 5: High Organisational Size decreases leadership effectiveness, the effects of Organisational Size can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create), that in turn contributes to improved Leadership Effectiveness.

Hypothesis 6: High Environmental Uncertainty decreases Leadership Effectiveness, the effects of Environmental Uncertainty can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create), that in turn contributes to improved Leadership Effectiveness.

Hypothesis 7: High Innovation decreases Leadership Effectiveness, the effects of Innovation can be reduced by proficiency in any quadrant of the Competing Values Framework (Control,

Compete, Collaborate and Create), that in turn contributes to improved Leadership Effectiveness.

7.4.1. Organisational Complexity as moderators of the Behavioural Complexity Leadership Effectiveness relationships

Hypothesis 4 states high Structural Complexity decreases Leadership Effectiveness. The effects of Structural Complexity can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) that in turn contributes to improved leadership effectiveness. In view of this hypothesis, Structural Complexity was analysed using a series of moderated regression analyses where each of the Competing Values quadrants were entered separately with Structural Complexity at Step 2 and the product of each pairing at Step 3. The process was repeated with each Leadership Effectiveness outcomes replaced as a separate dependent variable.

A summary of this analysis is presented in Table 7.11. As only one moderator relationship (Structural Complexity and Collaboration as an enabler of Absolute Performance) turned out to be statistically significant Hypothesis 4 is partially accepted. However, this relationship merits consideration.

Table 7.11 Summary of the Competing Value Framework Quadrants and Structural Complexity as enablers of Leadership Effectiveness

Moderations	Relative Performance	Absolute Performance	Ability To Lead Change	Influence	Judgement
Structural Complexity and Control	N/S	N/S	N/S	N/S	N/S
Structural Complexity and Compete	N/S	N/S	N/S	N/S	N/S
Structural Complexity and Collaborate	N/S	Yes, $p \leq .10$ (Table 7.12)	N/S	N/S	N/S
Structural Complexity and Create	N/S	N/S	N/S	N/S	N/S

N/S = Not Significant.

Entering an interaction term of Collaborate X Structural Complexity at the second step increased the proportion of variance in absolute performance by 2%, which is a borderline significant increase. The results of this test are given in table 7.12 and illustrated in figure 7.5.

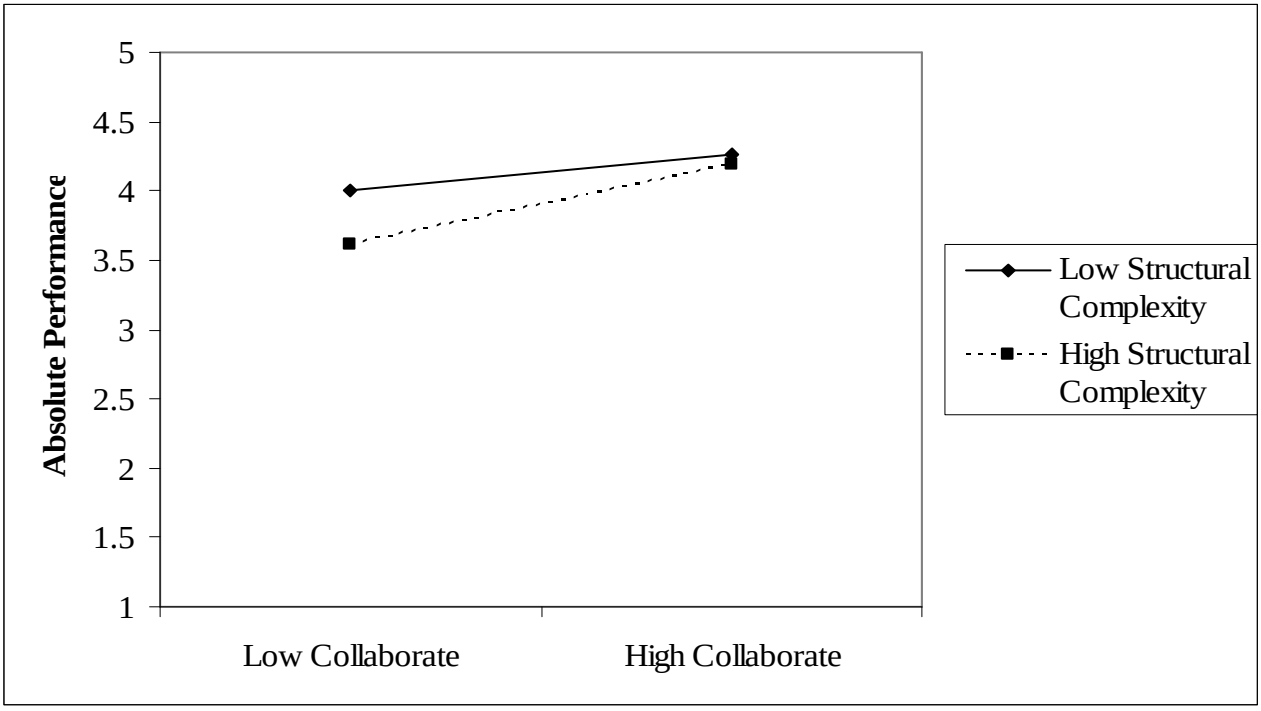
Table 7.12: Hierarchical regression in the prediction of Collaborate and Structural Complexity on Absolute Performance

	Absolute Performance			
	R^2	adj R^2	ΔR^2	β
Step 1	.14	.13	.14	
Collaborate				.20***
Structural Complexity				-.11*
Step 2	.16	.14	.02	
Interaction between Collaborate and Structural Complexity				.08†

N=118 † $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

Note: The values presented are the unstandardised β coefficients at each stage of the regression equation. Due to rounding off R^2 may differ .01 from the sum of R^2*change.*

Figure 7.5 Interaction between Collaborate and Structural Complexity on Absolute Performance



The interaction plot (Figure 7.5) illustrates leaders in contexts of low Structural Complexity score higher on Absolute Performance than leaders operating in contexts of high Structural

Complexity. However, the negative effects of Structural Complexity on Absolute Performance can be reduced when leaders adopt high Collaborate behaviours.

Hypothesis 5 states Organisational Size decreases leadership effectiveness. The effects of Organisational Size can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create), that in turn contributes to improved Leadership Effectiveness. However, repeating the analytical strategy described above for Structural Complexity indicated no statistically significant interaction. Therefore Hypothesis 5 was rejected. This result could be attributed to all participants being surveyed from the same organisation, hence the lack of variability in Organisational Size.

Hypothesis 6 states high Environmental Uncertainty decreases Leadership Effectiveness, the effects of Environmental Uncertainty can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) that in turn contributes to improved Leadership Effectiveness. As with Structural Complexity, only one interaction effect was found to be significant (see table 7.13), that being Environmental Uncertainty and Collaboration as an enabler of Absolute Performance.

Table 7.13 Summary of the Competing Value Framework Quadrants Environmental Uncertainty as enablers of Leadership Effectiveness

Moderations	Relative Performance	Absolute Performance	Ability To Lead Change	Influence	Judgement
Environmental Uncertainty and Control	N/S	N/S	N/S	N/S	N/S
Environmental Uncertainty and Compete	N/S	N/S	N/S	N/S	N/S
Environmental Uncertainty and Collaborate	N/S	Yes, $p \leq .01$ (Table 7.14)	N/S	N/S	N/S
Environmental Uncertainty and Create	N/S	N/S	N/S	N/S	N/S

N/S = Not Significant.

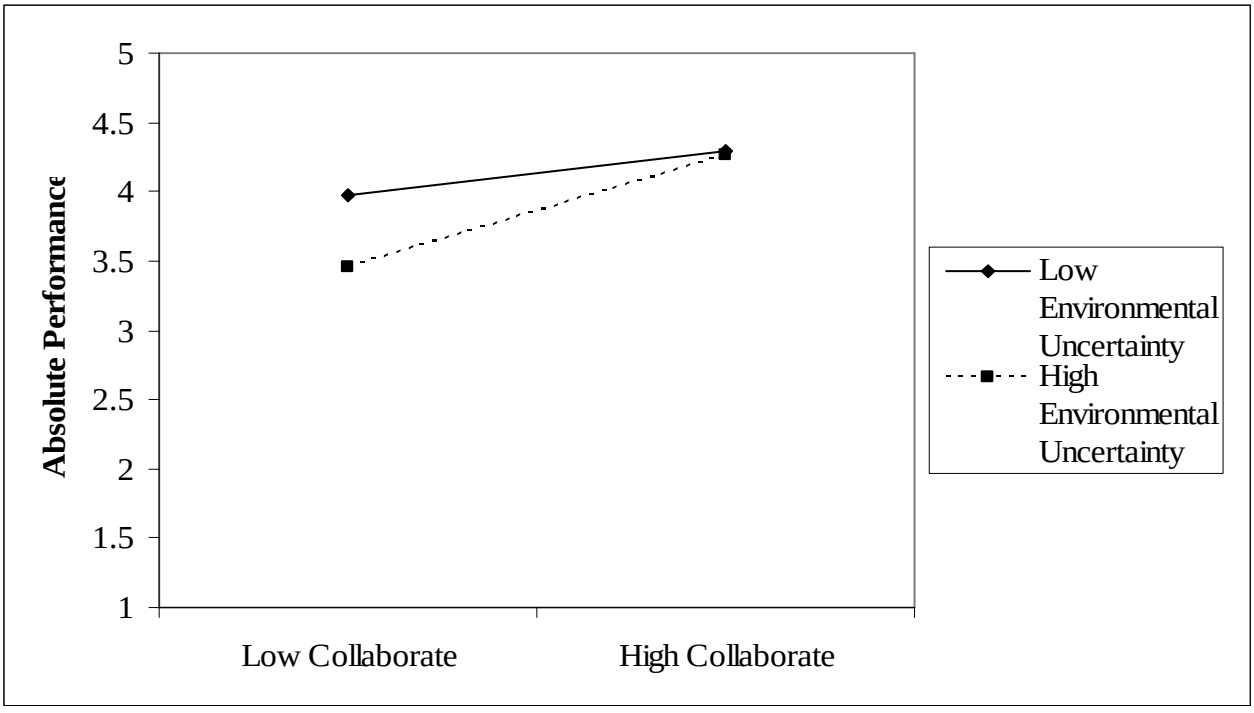
As can be seen in Table 7.14, the interaction term increased the proportion of variance accounted for in Absolute Performance by 5% (see figure 7.6). The interaction plot suggests that Environmental Uncertainty boosts the relationship between Collaborate and Absolute Performance.

Table 7.14: Hierarchical regression in the prediction of Collaborate and Environmental Uncertainty on Absolute Performance

	Absolute Performance			
	R^2	adj R^2	□ΔR^2	□□□□□β
Step 1	.14	.12	.14	
Collaborate				.23***
Environmental Uncertainty				-.10†
Step 3	.19	.17	.05	
Interaction between Collaborate and Environmental Uncertainty				.13**

N=118 † $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$. *Note*: The values presented are the unstandardised β coefficients at each stage of the regression equation. Due to rounding off R^2 may differ .01 from the sum of R^2*change.*

Figure 7.6 Interaction between Collaborate and Environmental Uncertainty on Absolute Performance



The interaction plot (Figure 7.6) illustrates leaders in context of low Environmental Uncertainty score higher on Absolute performance than leaders operating in contexts of high Environmental Uncertainty. However, the negative effects of Environmental Uncertainty on Absolute Performance can be reduced when leaders adopt high Collaborate behaviours.

Hypothesis 7 states high Innovation decreases Leadership Effectiveness, the effects of Innovation can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create), that in turn contributes to improved Leadership Effectiveness.

Once again this hypothesis was not strongly supported by the data (see table 7.15). Only Innovation and Create in combination improved the prediction of as an enabler of Relative Performance, adding 5% to the variance explained by the variables separately (see table 7.16 and figure 7.7)

Table 7.15 Summary of the Competing Value Framework Quadrants and Innovation as enablers of Leadership Effectiveness

Moderations	Relative Performance	Absolute Performance	Ability To Lead Change	Influence	Judgement
Innovation and Control	N/S	N/S	N/S	N/S	N/S
Innovation and Compete	N/S	N/S	N/S	N/S	N/S
Innovation and Collaborate	N/S	N/S	N/S	N/S	N/S
Innovation and Create	Yes, $p \leq .05$ (Table 7.16)	N/S	N/S	N/S	N/S

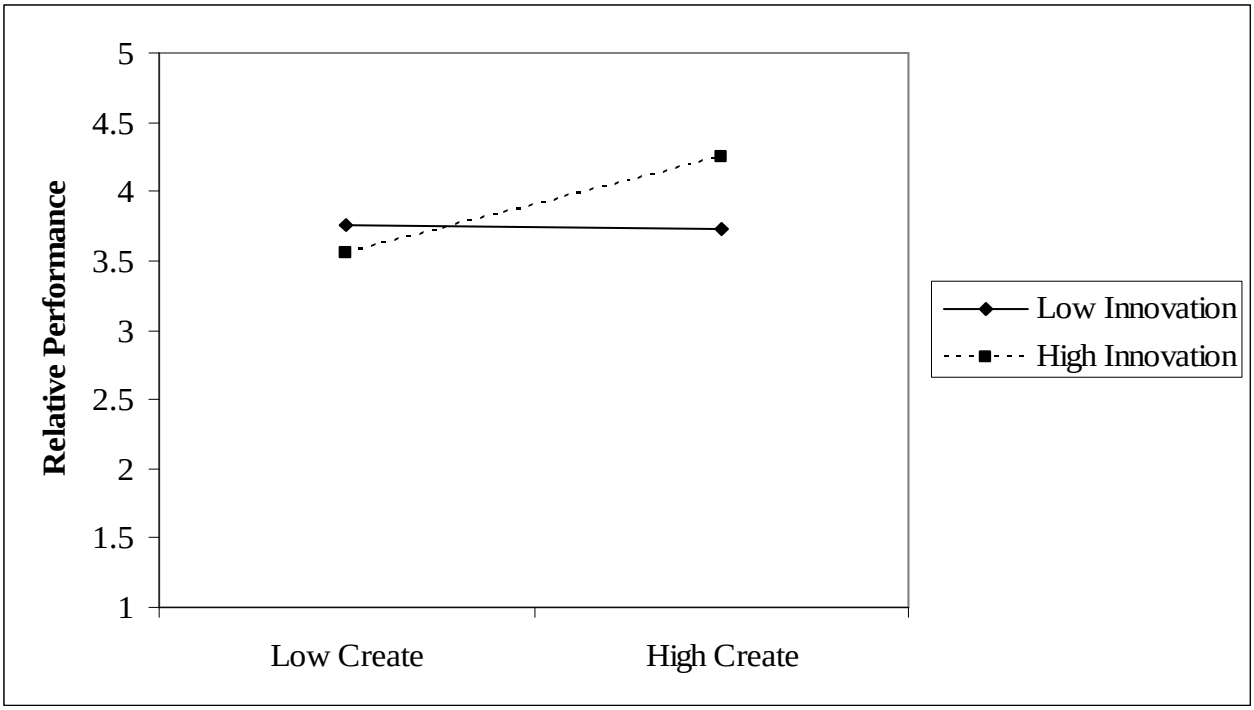
N/S = Not Significant.

Table 7.16: Hierarchical regression in the prediction of Create and Innovation Create on Relative Performance

	Relative Performance			
	R^2	adj R^2	ΔR^2	β
Step 1	.10	.08	.10	
Create				.16**
Innovation				.12*
Step 2	.15	.12	.05	
Interaction between Create and Innovation				.18*

N=118 † $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$
Note: The values presented are the unstandardised β coefficients at each stage of the regression equation. Due to rounding off R^2 may differ .01 from the sum of R^2*change*.

Figure 7.7 Interaction between Create and Innovation on Relative Performance



The interaction plot (Figure 7.7) illustrate that leaders who score low in Create perform better in environments of low Innovation that those operating in contexts of high Innovation. However, when high Innovation is combined with high Create behaviours the result is enhanced Relative Performance.

The purpose of this study was to establish the extent to which Organisational Complexity (in terms of Structural Complexity, Organisational Size, Environmental Uncertainty and

Innovation) moderates Behavioural Complexity (in terms of the Competing Values: Control, Compete, Collaborate and Create) and enables Leadership Effectiveness (in terms of Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgment). A series of hypotheses were tested relating to Organisational Complexity; and how high Organisational Complexity decreases outcomes of Leadership Effectiveness but how these effects can be reduced by proficiency in any of the quadrants of the Competing Values Framework that in turn improves leadership effectiveness. The results indicate the effects of Organisational Complexity is a lot more exclusive that originally hypothesized, with the Organisational–Behavioural Complexity relationship only being applicable to a select number of leadership effectiveness outcomes that will now be summarised.

Leaders in contexts of low Structural Complexity score higher on Absolute Performance than leaders operating in contexts of high Structural Complexity. Accordingly, the negative effects of Structural Complexity on Absolute Performance can be reduced when leaders adopt high Collaborate behaviours in responses to this contextual factor. . Leaders in context of low Environmental Uncertainty score higher on Absolute performance than leaders operating in context of high Environmental Uncertainty. However, the negative effects of Environmental Uncertainty on Absolute Performance can be reduced when leaders adopt high Collaborate behaviours. Leaders who score low in Create perform better in environments of low Innovation that those operating in contexts of high Innovation. However, when high Innovation is combined with high Create behaviours the result is enhanced Relative Performance.

The findings of this study provide support for the idea of behavioural differentiation, where effective leaders apply an appropriate behaviour to the demands of the situation in order to enable effectiveness. Such an idea is central to the study of leadership for the perceptive of Complexity Theory in view of the underlying principle that organisations are dynamic and complex; and so too should their leaders be.

7.5 CONCLUSION

Study one explored Behavioural Complexity as an enabler of Leadership Effectiveness. It was hypothesised that no one quadrant of the Competing Values Framework is more important in enabling Leadership Effectiveness; however, the results indicate that in general Collaborate and Create impact with a stronger magnitude than do Compete and Control - suggesting there maybe something about the healthcare environment that makes these behaviours more favourable.

Study two explores whether Behavioural Complexity is altered by the presence of Organisational Complexity, defined in terms of Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation. The results in Study Two indicated Structural Complexity decreases Absolute Performance but the effects of Structural Complexity can be reduced when leaders Collaborate; likewise, Environmental Uncertainty also decreases Absolute Performance but the effects of Environmental Uncertainty can also be reduced when leaders Collaborate. High Innovation can reduce Relative Performance when Leaders score low on the Create quadrant, however, when leaders score high on the Create quadrant they can better utilise the Innovation in the environment and increase their Relative Performance.

These findings add empirical support for Osborne, Hunt and Jauch's (2002) conceptual proposition that leadership is influenced by the situation in which it exists where leaders need to be sensitive to changes in their environment by reacting with the right combination of behavioural repertoire and behavioural differentiation in order to be effective.

Chapter 8: Study Three - Exploring the impact of leadership training and Behavioural Complexity on Leadership Effectiveness

8.1 CHAPTER SUMMARY

Study One demonstrated that Behavioural Complexity, operationalised through the four quadrants of the Competing Values Framework (Control, Compete, Collaborate, and Create) both combined and individually enable leadership effectiveness. In view of the benefits identified in Study One linking Behavioural Complexity to leadership effectiveness, this study explores if leadership training develops Behavioural Complexity. If so, it is anticipated this would impact upon the Leadership Effectiveness outcomes: Overall Performance and Ability to Lead Change.

The study was designed to incorporate a training intervention oriented around leadership. Measures of Behavioural Complexity were taken from those who attended the training intervention at the start and end of the course. The intervention was the participating healthcare organisation's own initiative, aimed at developing its junior leaders. Such an initiative is important within the healthcare sector where operating leaders typically enter the profession as medical professionals, not as leaders, and are often put into a leadership role because they demonstrate a high degree of competence within their chosen profession rather than for the leadership qualities they possess. Consequently, mapping the progression of such individuals from medical professional to leader becomes a topic of interest.

The chapter begins with an overview to the method (discussed fully in Chapter Five), and includes details of the training intervention. Hypotheses are then represented. The chapter continues by presenting the results of the analysis and finally the chapter concludes with a discussion of the findings. Overall, the results indicate leaders exposed to training will show greater increases on each of the Competing Values than leaders not exposed to leadership training and that these increases contribute to improved leadership effectiveness.

8.2. METHOD

This section presents details relating to the study method, including: sample characteristics, research design overview and materials. The Introduction to Leadership and Management training intervention is discussed, followed by the study procedure.

8.2.1 Sample Characteristics

Primary data were collected from eighty-one junior National Health Service (NHS) Acute Hospital leaders, from one of two groups. Group 1 was trained (experimental group) and a matched group who did not undergo training was included as a control.

The principal inclusion criteria for the training group (n=39) applied to all participants undergoing the organisational provided training programme, Introduction to Leadership and Management. The training programme targeted first level managers from clinical and non-clinical disciplines, many of whom had received no prior management or leadership training.

A staff list of all potential individuals who came under the principle inclusion criteria was supplied to the researcher by the Human Resource department of the organisation. The sample for the training group was a population sample that reflects all possible members of the group from which the sample was taken, explicitly, all staff attending the training.

The non-training group (n=42) was drawn from a population sample, from an email distributed to all first level managers working in the hospital that had not yet been listed by the organisation to attend the training but would do so the following year. Group allocation was arranged by the organisation, since this study was integrated into an organisational training programme.

The demographic characteristics of the training and non-training group showed little significant variation: Both groups were female dominated (training group 85%, non-training group 88 %.); the modal age range of both groups was from 30 to 40 years old (training group 47%, non-training group 45%); the main functional background of both groups was clinical (training group 78%, non-training group 82%) and the majority of participants were university educated (training group 85%, non-training group 89%.).

8.2.2 Research Design Overview

The aim of this study was to establish the extent to which leadership training supports Behavioural Complexity in contributing to Leadership Effectiveness. It was intended that this study provides evidence for organisations on whether to engage in similar practices of leadership development.

To this end the study was designed to incorporate a leadership training intervention, targeted at junior leaders. A longitudinal design was adopted for data collect. Measures of Behavioural Complexity and Leadership Effectiveness were taken at two points in time. For the training group this timeframe was marked by the start and end date of the eight month leadership training intervention and for the non-training group by an eight month timeframe.

This research again builds upon Lawrence, Lenk and Quinn's (2009) work which linked Behavioural Complexity to the Leadership Effectiveness outcomes, Ability to Lead Change and Overall Performance. Note that in this study Overall Performance has not been broken down into the sub-dimensions of Relative Performance and Absolute Performance, the reason for this is keeping in consistency with Lawrence et al's original study which is taken a step further in this study by exploring Behavioural Complexity from the perspective of leadership training.

8.2.3 Materials

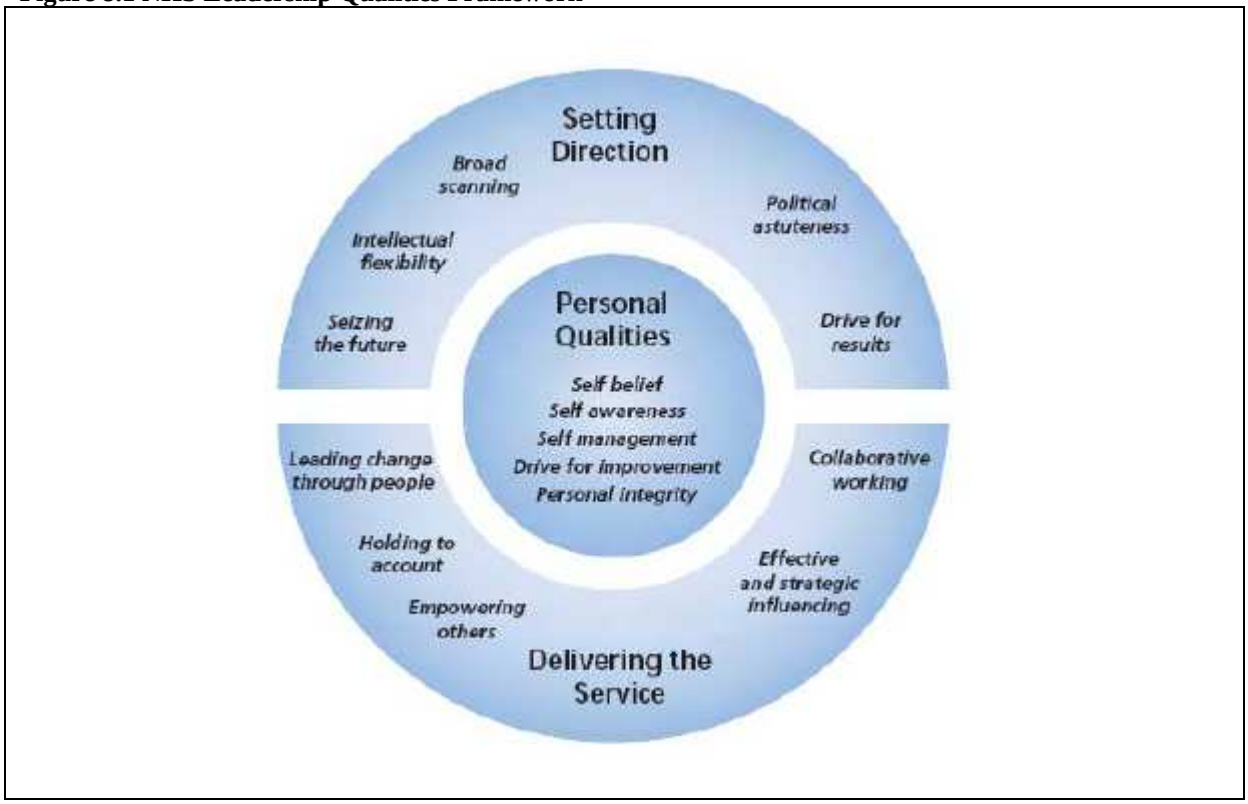
Behavioural Complexity and Leadership Effectiveness was captured using the pre-publication copy of Lawrence, Lenk and Quinn's (2009) Competing Values Framework described earlier. The framework measures the degree to which an individual scores on the four quadrants of Behavioural Complexity (1) Control (2) Compete (3) Collaborate and (4) Create; and two outcomes of Leadership Effectiveness (1) Overall Performance and (2) Ability to Lead Change (see Chapter Five for more specific details of these scales).

8.2.4 Introduction to Leadership and Management training course

A sample of junior healthcare leaders (referred to as the training group) was selected by the organisation to take part in an in-house, leadership training course, titled Introduction to Leadership and Management. The course ran over 8 months and was aimed at individuals working in a leadership role but still considered to be in the early part of their leadership career. It sought to provide such leaders/managers and potential leaders/managers with an understanding of the basic roles and skills involved in first line management/leadership and the management of NHS-related issues.

Introduction to Leadership and Management is underpinned by the NHS Leadership Qualities Framework (LQF). The LQF sets the standard for exemplary leadership within the NHS. There are fifteen qualities within the LQF, arranged in three clusters: Personal Qualities, Setting Direction and Delivering the Service (See Figure 8.1).

Figure 8.1 NHS Leadership Qualities Framework



Source: NHS Leadership Centre (2002) *NHS Leadership Qualities Framework* (London: NHS Leadership Centre)

By gaining an understanding of the basic roles and skills involved in first line NHS management and leadership, Introduction to Leadership and Management aimed to develop these fifteen qualities amongst those who attended the course.

Introduction to Leadership and Management was aimed at new or aspiring managers/leaders, team/shift leaders, supervisors and those in an 'acting up' role, plus where management/leadership knowledge and skills have been identified at the Personal Development Review (PDR).

The course consisted of fifteen modules. Each module was 3/3.5 hours; apart from module 5 which was 6 hours (1 day). Albeit each module could standalone, participants were advised it was more appropriate to sign up to the whole programme as it aids continuity. Leaders on the course attended two modules each month over the eight month period. To support busy staff, one day per month was set aside for attendance. Course attendance was identified as essential or desirable, not statutory or compulsory

Facilitator-taught modules were supported by active participation from the course attendees. Examples of this include involvement through presentation, facilitation, practical exercises, role play and scenarios. The aim of this structure was to encourage application of the theoretical elements of course.

The fifteen modules that comprise the Introduction to Leadership and Management course are outline and detailed in Table 8.2. Each module was completed in a single 9am to 5 pm day and delivered on site at the organisation's Education Centre.

Table 8.2 Introduction to Leadership and Management training course modules

Module Number	Module Title/Name	Topics included in the module
Module 1	Your role as manager	NHS Code of Conduct for managers/leaders Managing for excellence in the NHS Function and Responsibilities of managers/leaders Kaizen Product v Process Trust Ambition and Strategic themes Authority/ Accountability/Responsibility Managers/Leaders: differences
Module 2	Personal Development	Identify your preferred learning style to support your personal development Analyse you SWOT and know how to produce a SWOT analysis Produce personal objectives for yourself Identify how to produce personal objectives for others
Module 3	Communication Interpersonal and influence	Transactional Analysis Barriers, Breakdowns and Blockages Handling Conflict Influencing Styles [hard and Soft]
Module 4	Stress Management	What is stress? Healthy/Unhealthy Stress Triggers Implications Strategies for managing and Controlling stress Emotional Intelligence/Emotional Quotient
Module 5	Managing and Developing	Managing Individuals Managing teams Healthy teams Delegation and Empowerment KSF and Manager Skills in the process Learning, Training and Development Motivation and Delegation Monitoring and Recording Setting Goals and Objectives Health and Safety Link up and learn – Public service shadowing opportunity
Module 6	Managing your time and priorities	Managing your time more effectively Recognise time stealers Prioritise your workload Assertive communication Say NO when you need to Prioritisation tools ABC method of prioritisation Managing your diary Planning ahead to become more effective
Module 7	Problem solving and decision making	Models [CPA, brainstorming, mind mapping, force field analysis, SWOT Influencing (Hard and Soft Styles)

		Action learning Sets (brief) Focus Groups PDSA
Module 8	Personal development and review	Personal development and review
Module 9	Managing sickness absence	Managing sickness absence
Module 10	Discipline/Capability and Grievance	Discipline/Capability and Grievance
Module 11	Dignity at work	Dignity at work
Module 12	Recruitment	Recruitment
Module 13	Finance	Finance
Module 14	Governance Support training	Governance Support training
Module 15	Governance Support training	Governance Support training

The course contained no formal assessment. However, participants were informally assessed throughout the programme with a variety of questionnaires and feedback. Introduction to Leadership and Management was designed by the organisation's training and development team. The facilitators who delivered the training were made up of in-house training team staff, all of whom held a directorate or senior positions within the organisation. Modules 1 to 7 were delivered by the Directorate of Governance and Education; Modules 8 to 12 was delivered by the Directorate of Human Resources; Module 13 delivered by the Directorate of Finance and Modules 14 to 15 by the Directorate of Health, Safety and Security.

8.2.5 Procedure

The Competing Values Framework was administered to both the Control and Experimental groups to collect measures of their Behavioural Complexity and associated outcomes of Leadership Effectiveness before and after an eight-month timeframe. For the training group the eight months were marked by the beginning and end of the leadership training course.

Mixed-mode survey administration was adopted. A paper-based survey was administered to the training group, as the researcher was able to attend the first and last day of the training course to deliver and collect the surveys in person. A web-based survey was administered to the non-training group, since these participants needed to be approached separately as they did not have the training course to bring them together in one location where the researcher could deliver the survey in person. The same administration method was used at each time point. Both types of survey were accompanied by a cover-letter that outlined the aims of the study, confidentiality, anonymity, and possible dissemination of results, estimated time to complete the survey and details on how to answer the questions (Appendix A). Participants were informed that participation was completely voluntary and that they could withdraw from the research at anytime. The contact email and telephone number of the researcher was also

provided to the participants in case they had any queries about the survey or project during data collection. The survey took approximately 15 minutes to complete.

8.3 HYPOTHESES

The purpose of the study to establish the extent to which leadership training supports Behavioural Complexity in contributing to leadership effectiveness in view of findings presented earlier in the thesis linking Behavioural Complexity to outcomes of Leadership Effectiveness.

The following hypotheses were tested in the current study.

Hypothesis 8: Leadership training has a positive effect on leaders' capacity on each of the four Competing Values

Hypothesis 9: Leaders exposed to training will show greater increases on each of the Competing Values than leaders not exposed to leadership training.

Hypothesis 10: Leadership training has a positive effect on the development of leadership effectiveness

Hypothesis 11: Leaders exposed to training will show greater increases in leadership effectiveness than leaders not exposed to leadership training.

Hypothesis 12: The Competing Values will mediate the relationship between training and leadership effectiveness

The proceeding section presents results that aim to test these hypotheses.

8.4. RESULTS

This section presents the results of analyses that explore the link between leadership training and Behavioural Complexity as enablers of Leadership Effectiveness. In view of hypotheses that investigate the extent to which leadership training has a positive effect on leaders' capacity on each of the four Competing Values that in turn contribute to outcomes of leadership effectiveness. The Competing Values are then considered as potential mediators in the relationship between leadership training and leadership effectiveness.

8.4.1 Leadership training and the development of Behavioural Complexity

The first stage of analysis was to establish a baseline for comparison using multivariate analysis of variance (illustrated in Table 8.3). The results indicate there were no statistically significant differences between the training and non-training group on each of the Competing Values at Time One (prior to the training intervention).

Table 8.3 Between-subjects effects of the Competing Values for the training and non-training group at Time One

		Between subjects effects of the training and non training group at Time One	
Variable	**Time**	T	P
Control	1	0.225	.823
Compete	1	-0.079	.937
Collaborate	1	0.356	.723
Create	1	0.386	.701

Since this study was concerned with exploring the impact of a leadership training intervention on the development of Behavioural Complexity a second comparison baseline against the non-training Control group needed to be established. T-test analysis provided this by investigating the within-subject effects within the non-training group at Time One and Time Two (before and after an eight month timeframe). The results indicate that there were no statistically significant differences within the non-training group, on the four Competing Values between Time One and Time Two (illustrated in Table 8.4).

Table 8.4 Within-subjects effects of the Competing Values for the non-training group at Time One and Time Two

Variable	Time	Mean	Mean difference	s.d	T
Control	1	3.53	0.01	0.02	1.57
	2	3.54			
Compete	1	3.46	0.02	0.11	1.39
	2	3.48			
Collaborate	1	3.89	0.01	0.04	1.51
	2	3.90			
Create	1	3.19	0.01	0.02	1.13
	2	3.20			

Within-subjects t-test comparison of the training group was established to assess the impact of the training intervention on the Competing Values, between Time One and Time Two (before and after the training intervention). The results indicate statistically significant differences within the training group on each of the four Competing Values, between Time One and Time Two (illustrated in Table 8.5).

Table 8.5 Within-subjects effects of the Competing Values for the training group at Time One and Time Two

Variable	Time	Mean	Mean difference	s.d	t
Control	1	3.55	0.17	0.34	3.08**
	2	3.72			
Compete	1	3.45	0.17	0.48	2.21*
	2	3.62			
Collaborate	1	3.93	0.26	0.37	4.36**
	2	4.19			
Create	1	3.25	0.24	0.56	2.64**
	2	3.49			

*$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

Multivariate analysis of variance investigated the between subject effects of the Competing Values for the training and non-training group at Time Two. The results indicate statistically significant difference between the training group and non-training group for three of the four Competing Values: Control, Collaborate and Create. (illustrated in Table 8.6), which indicates that the training group showed a statistically significant improvement on three of the four Competing Values compared with the non-training group between Time One and Time Two.

Table 8.6 Between-subjects effects of the Competing Values for the training and non-training group at Time Two

		Between subjects effects of the training and non training group at Time Two	
Variable	**Time**	t	P
Control	2	2.562	.012**
Compete	2	1.326	.189
Collaborate	2	3.152	.002**
Create	2	2.143	.035*

Multivariate analysis of variance investigated the mean differences between the training and non-training group, for the Competing Values, between Time One and Time Two. The results indicate statistically significant difference between the training group and non-training group for each of the four Competing Values difference scores (illustrated in Table 8.7). This result supports:

Hypothesis 8: Leadership training has a positive effect on leaders' capacity on each of the four Competing Values; and

Hypothesis 9: Leaders exposed to training will show greater increases on each of the Competing Values than leaders not exposed to leadership training. Figures 8.2 to 8.5 visually illustrate these results.

Table 8.7 Between-subjects effects of mean score differences in the Competing Values for the training and non-training group at Time One and Time Two

	Between subjects effects of the mean difference in scores between the training and non-training group	
Variable	t	P
Control diff	3.278	.002**
Compete diff	1.951	.055*
Collaborate diff	4.51	.000***
Create diff	2.667	.009**

† $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

Figure 8.2 Comparison of the Competing Values Control scores for the training and non-training group at Time One and Time Two

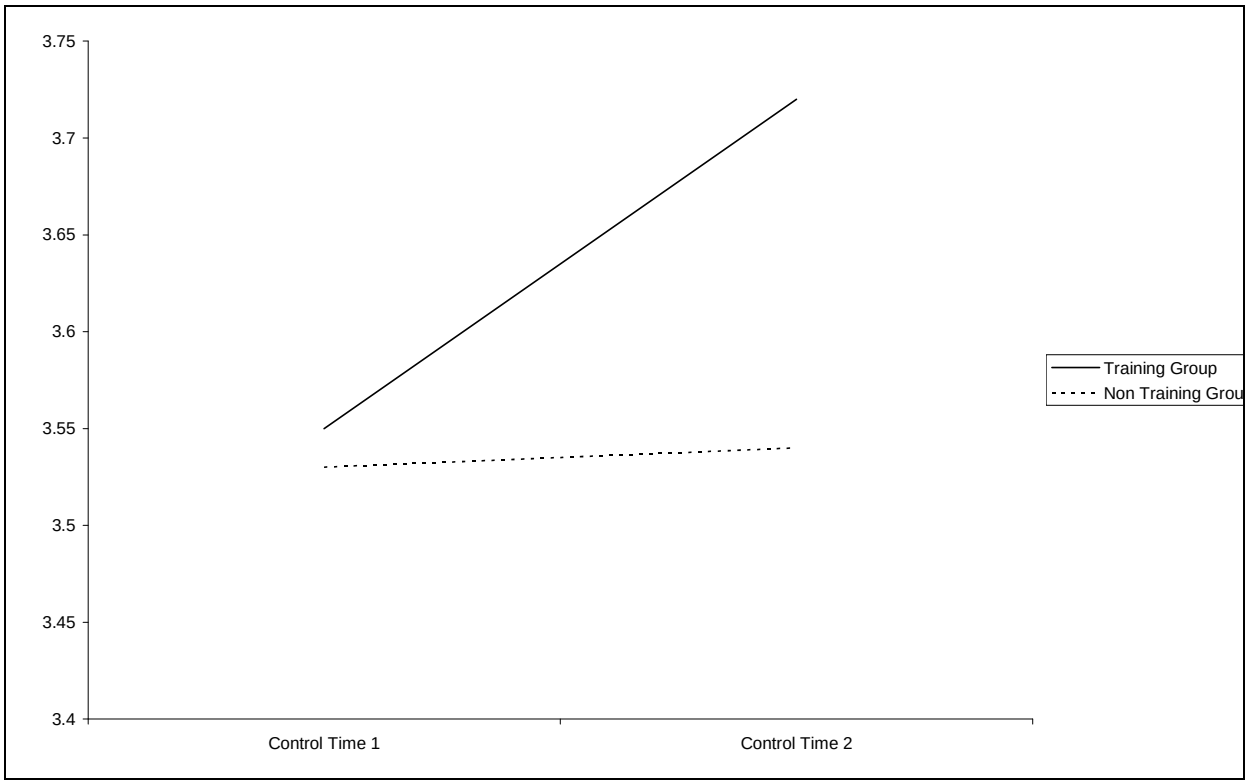


Figure 8.3 Comparison of the Competing Values Compete scores for the training and non-training group at Time One and Time Two

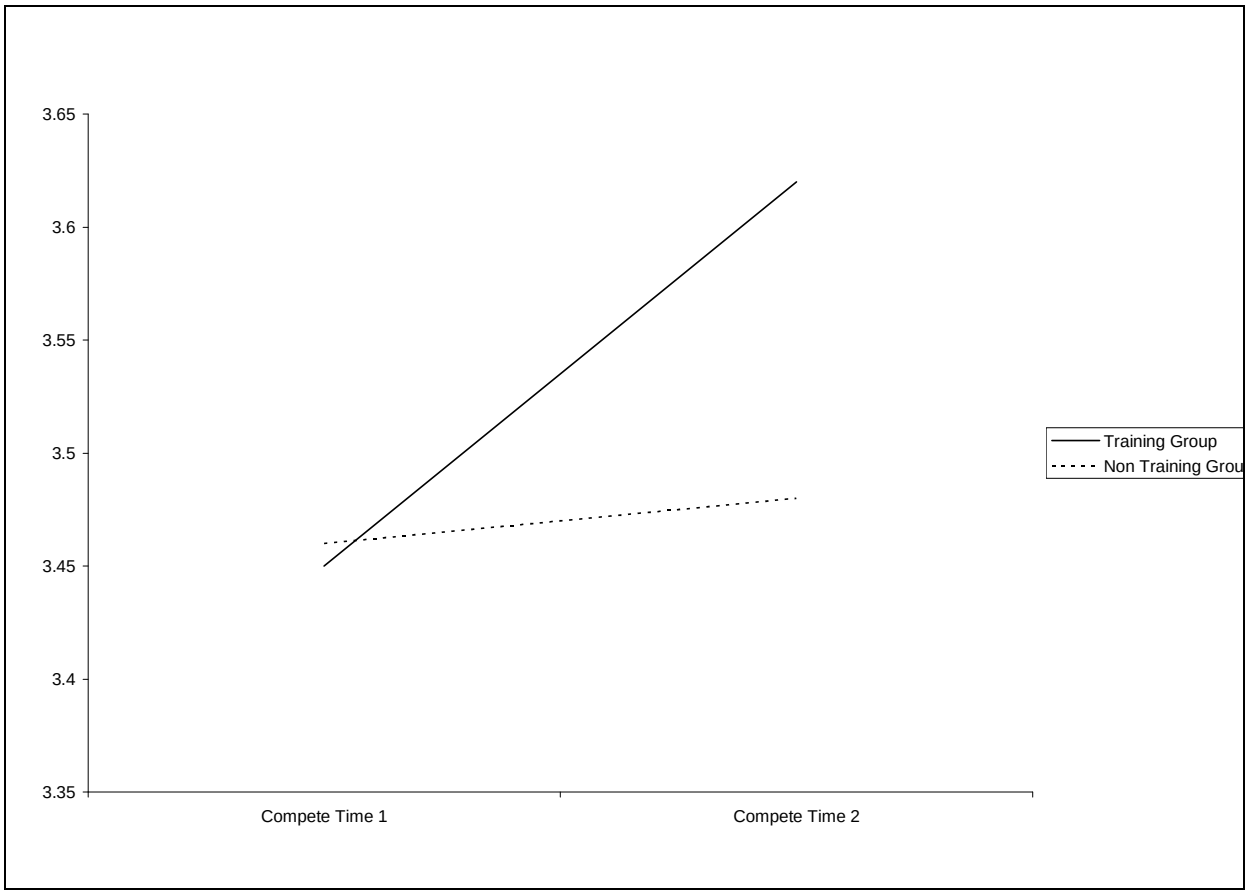


Figure 8.4 Comparison of the Competing Values Collaborate scores for the training and non-training group at Time One and Time Two

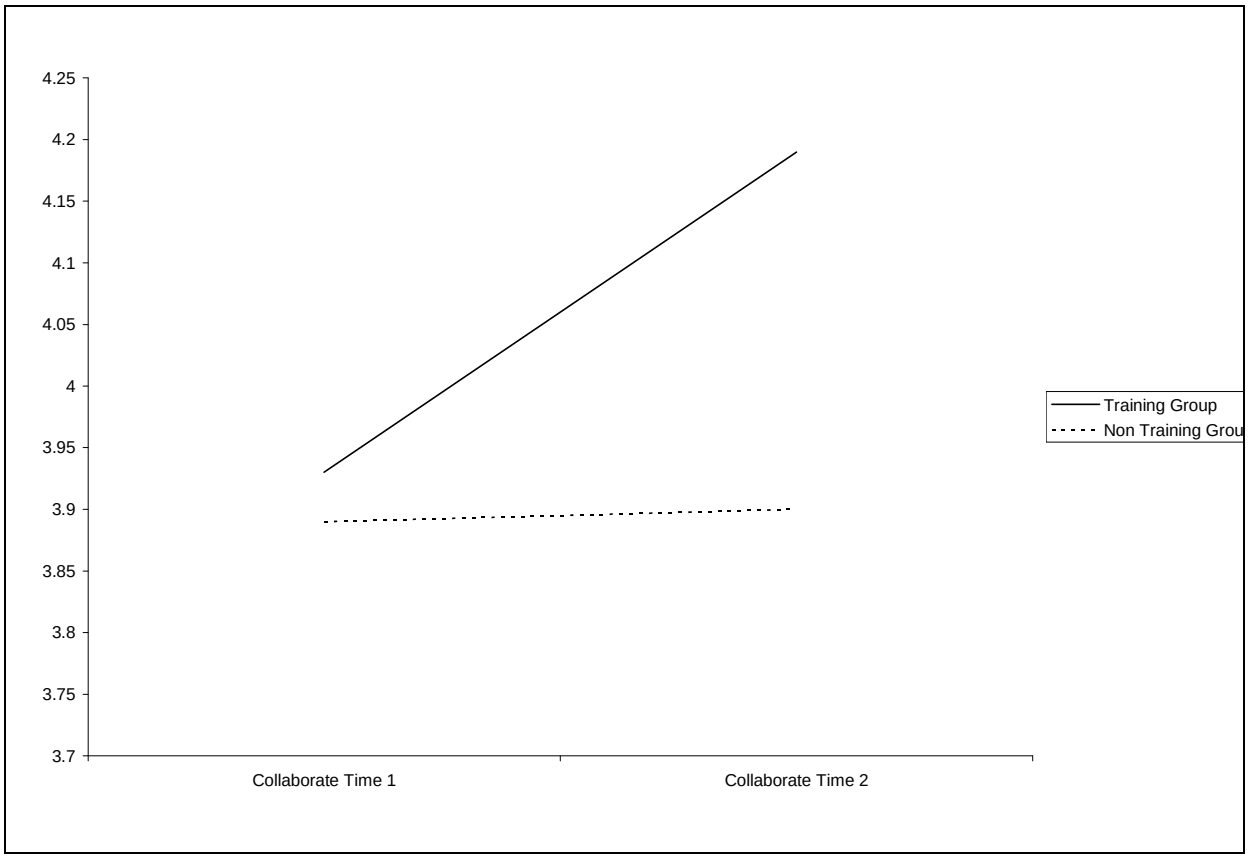
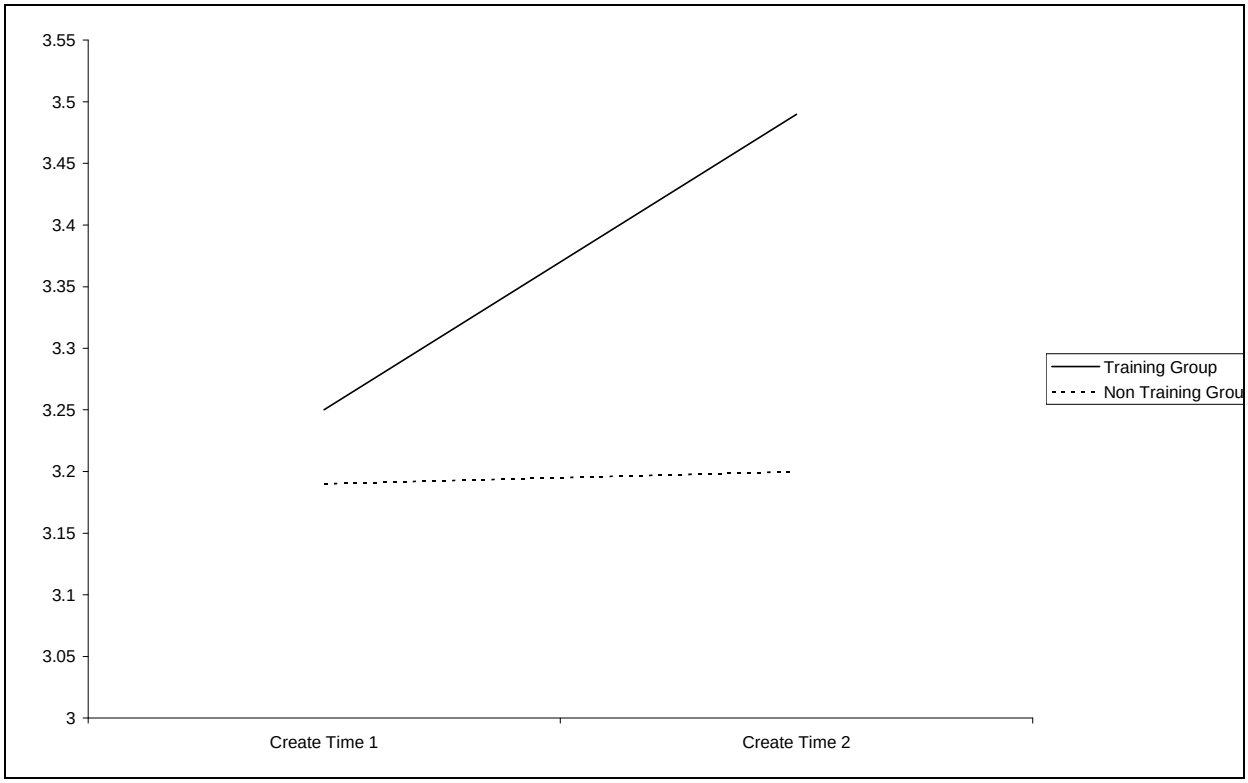


Figure 8.5 Comparison of the Competing Values Create scores for the training and non-training group at Time One and Time Two



8.4.2 Leadership training and the development of Leadership Effectiveness

Having established that the training had positive effects on Behavioural Complexity the next phase of the analysis was to investigate the effects of this on Leadership Effectiveness. The first stage of analysis was to establish a baseline for comparison between training and non-training group at Time One using multivariate analysis of variance (illustrated in Table 8.8). The results indicate there were no statistically significant differences between the training and non-training group, on either of the Leadership Effectiveness outcomes of Overall Performance and Ability to Lead Change at Time One (prior to the training intervention).

Table 8.8 Between-subjects effects of Leadership Effectiveness for the training and non-training group at Time One

		Between subjects effects of the training and non training group at Time One	
Variable	**Time**	**T**	**P**
Overall Performance	1	0.205	.838
Ability to Lead Change	1	-0.013	.990

Since this study was concerned with exploring the impact of a leadership training intervention on the development of Leadership Effectiveness a second comparison baseline against the non-training Control group needed to be established. Paired samples t-test analysis provided this by investigating the within-subject effects of the non-training group at Time One and Time Two (before and after the eight month timeframe). The results indicate that there were no statistically significant differences within the non-training group for either Leadership Effectiveness outcome between Time One and Time Two (illustrated in Table 8.9).

Table 8.9 Within-subjects effects of Leadership Effectiveness for the non-training group at Time One and Time Two

Variable	Time	Mean	Mean dff	s.d	T
Overall Performance	1	3.62	0.03	0.14	1.35
	2	3.65			
Ability to Lead Change	1	3.19	0.04	0.17	1.50
	2	3.23			

† $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

Within-subjects paired samples t-test comparison of the training group was established to assess the impact of the training intervention on Leadership Effectiveness, between Time One and Time Two (before and after the training intervention). The results illustrated in Table 8.10 signify there are statistically significant differences within the training group for Leadership Effectiveness, between Time One and Time Two, indicating the training group

showed a statistically significant improvement on Overall Performance and Ability to Lead Change following the training intervention.

Table 8.10 Within-subjects effects of Leadership Effectiveness for the training group at Time One and Time Two

Variable	Time	Mean	Mean dff	s.d	T
Overall Performance	1	3.64	0.29	0.54	3.21**
	2	3.93			
Ability to Lead Change	1	3.19	0.38	0.67	3.52**
	2	3.57			

† $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

Multivariate analysis of variance investigated the between subject effects of Leadership Effectiveness, for the training and non-training group at Time Two. The results indicate statistically significant difference between the training group and non-training group in Leadership Effectiveness (illustrated in Table 8.11).

Table 8.11 Between-subjects effects of Leadership Effectiveness for the training and non training group at Time Two

		Between subjects effects of the training and non training group at Time Two	
Variable	**Time**	T	P
Overall Performance	2	2.891	.005**
Ability to Lead Change	2	2.626	.010**

† $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

Multivariate analysis of variance investigated the mean differences between the training and non-training group for Leadership Effectiveness between Time One and Time Two. The results indicate statistically significant difference between the training group and non-training group for Leadership Effectiveness (illustrated in Table 8.12). This result adds supports to:

Hypothesis 10: Leadership training has a positive effect on the development of leadership effectiveness; and *Hypothesis 11*: Leaders exposed to training will show greater increases in leadership effectiveness than leaders not exposed to leadership training.

Figures 8.6 and 8.7 visually illustrate these results.

Table 8.12 Between-subjects effects of mean score differences in Leadership Effectiveness for the training and non-training group at Time One and Time Two

	Between subjects effects of the mean difference in scores between the training and no training group	
Variable	t	P
Overall Performance diff	3.123	.003**
Ability to Lead Change diff	3.319	.001***

† $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

Figure 8.6 Comparison of Overall Performance scores for the training and non-training group at Time One and Time Two

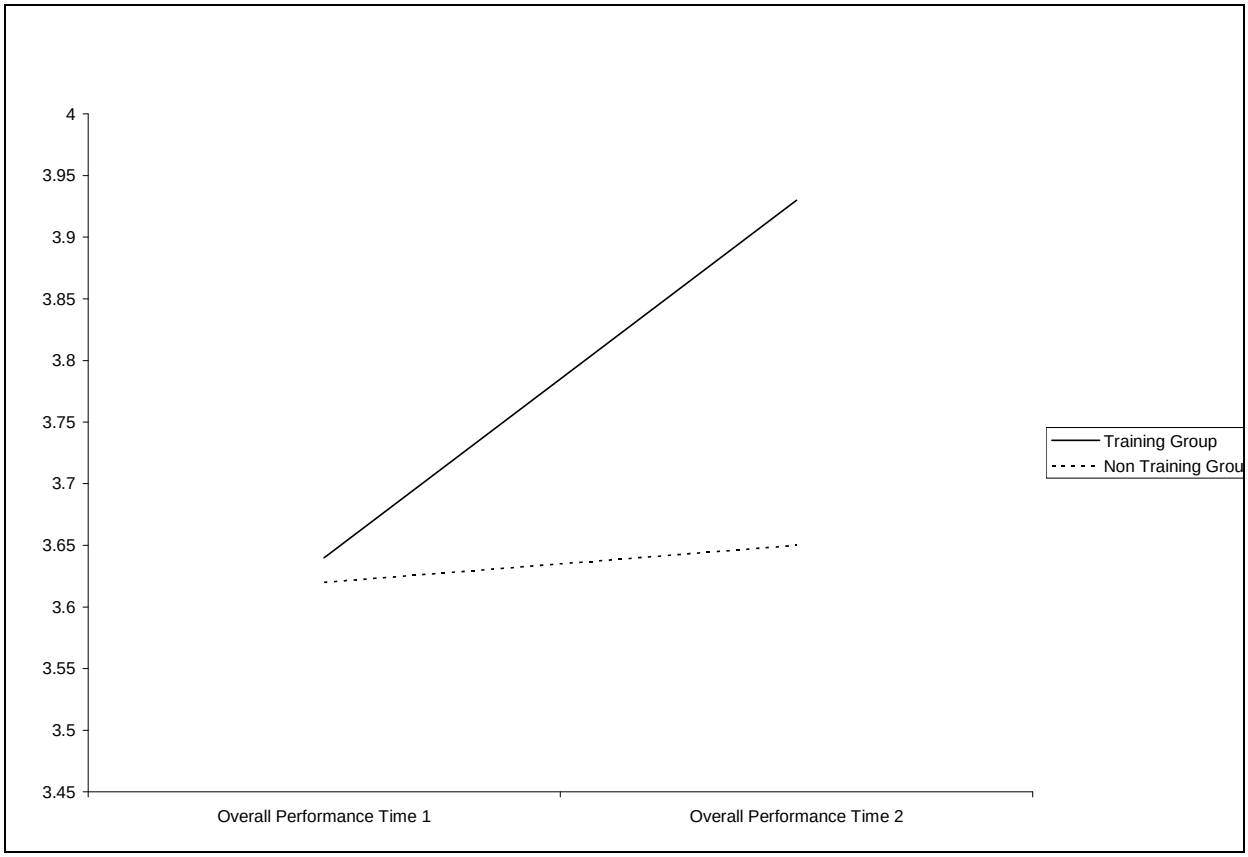
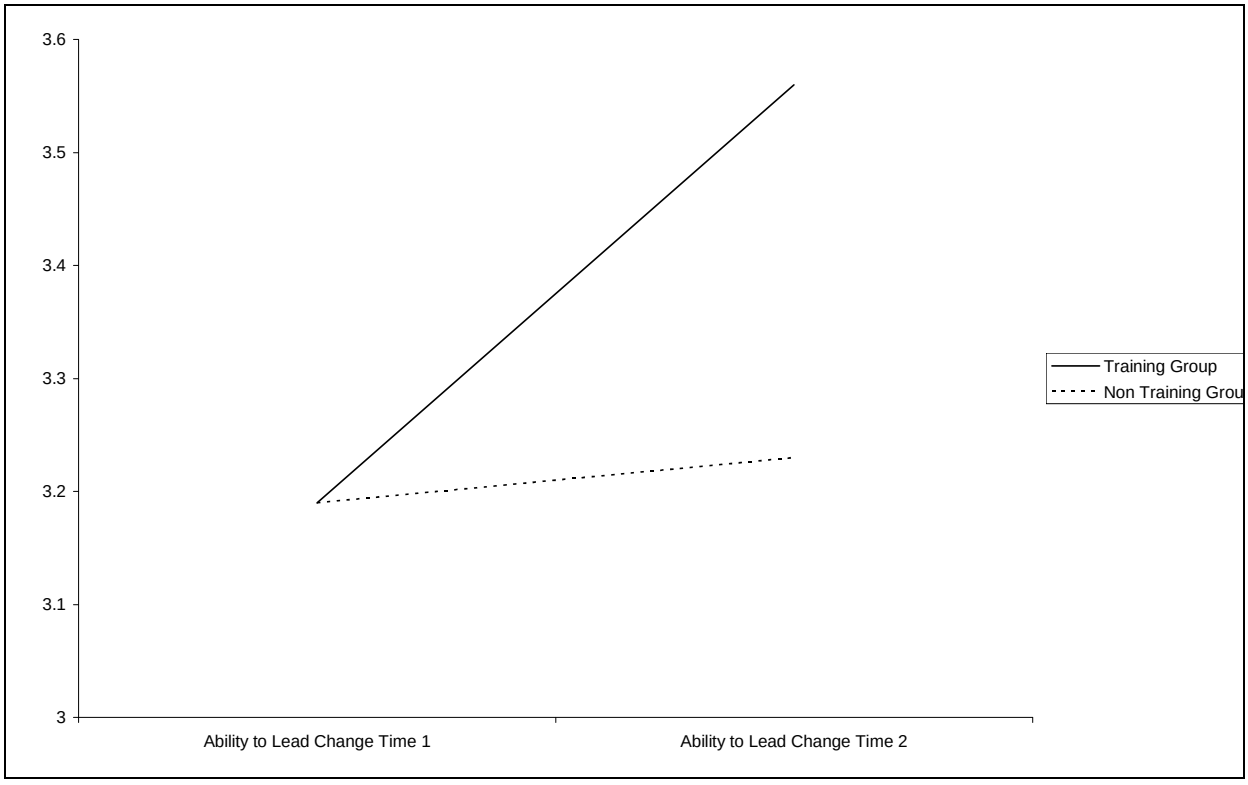


Figure 8.7 Comparison of Ability to Lead Change scores for the training and non-training group at Time One and Time Two



8.4.3 Combined effects of leadership training and Behavioural Complexity on Leadership Effectiveness.

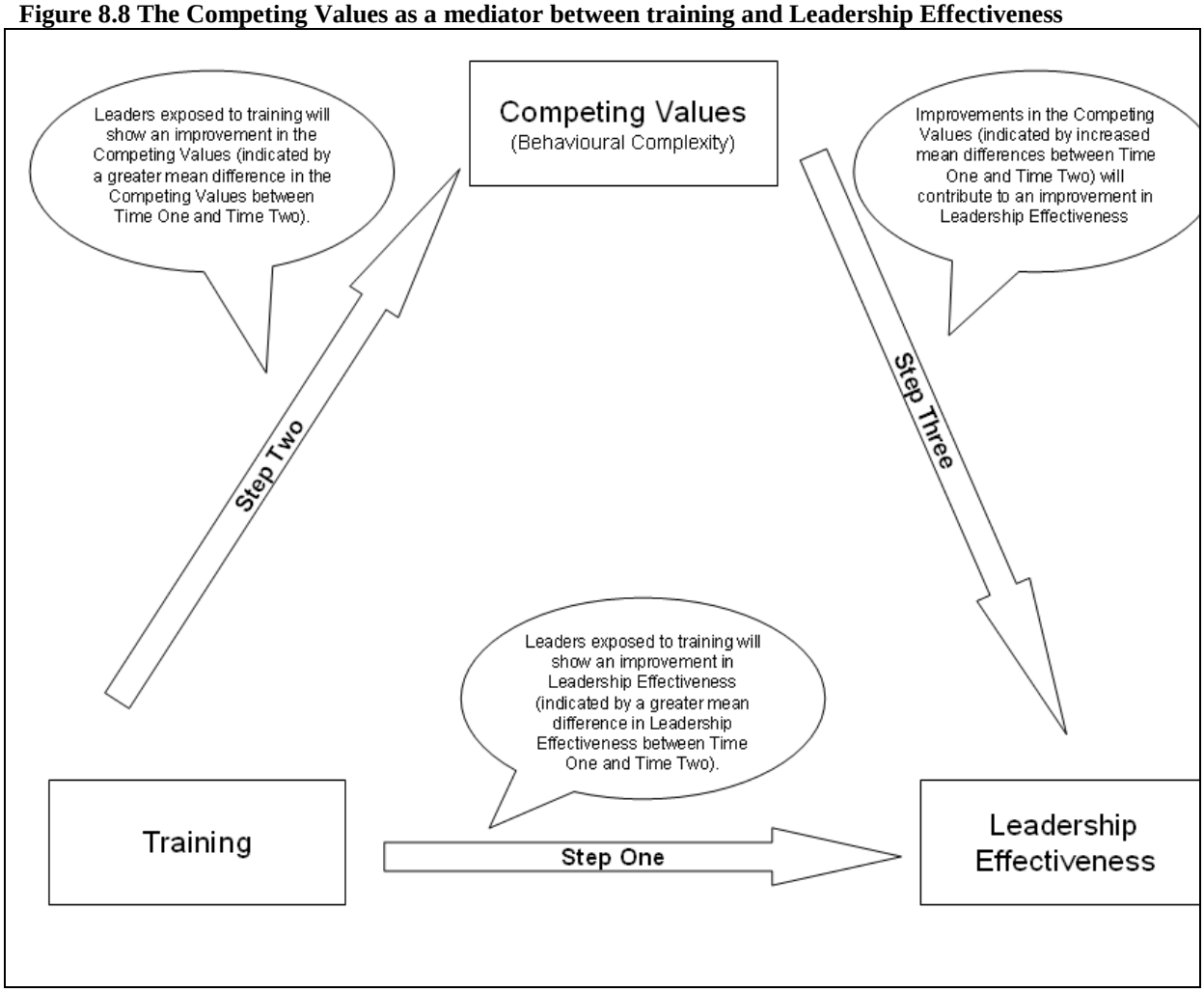
The proceeding section presents the results of analyses that explore the effect of leadership training on Behavioural Complexity and Leadership Effectiveness. This final section looks to integrate these three variables into a single model to test the Hypothesis that:

Hypothesis 12: Increases in the Competing Values will mediate the relationship between training and improved leadership effectiveness.

The next set of analyses, using three-step mediation analysis, explore the effects of the mean differences (between Time One and Time Two) in each of the Competing Values and the impact these differences have upon the mean differences in the outcomes of Leadership Effectiveness (also between Time One and Time Two).

It is proposed that leadership training will contribute to greater mean differences in the Competing Values and outcomes of leadership effectiveness (between Time One and Time Two ; Step 1); that training will contribute to greater mean differences (between Time One and Time Two) in the Competing Values (Step 2); and that increased mean differences on each of the Competing Values (between Time One and Time Two) will contribute to increased mean differences (between Time One and Time Two) in Leadership Effectiveness (Step 3). This proposition is illustrated in Figure 8.8.)

Figure 8.8 The Competing Values as a mediator between training and Leadership Effectiveness



Leadership Effectiveness refers to Overall Performance and Ability to Lead Change. With this description in mine Hypothesis 12 is split into parts a and b to reflect the two constructs that underlie Leadership Effectiveness, specially:

Hypothesis 12a: Increases in the Competing Values will mediate the relationship between training and improved Overall Performance.

Hypothesis 12b: Increases in the Competing Values will mediate the relationship between training and improved Ability to Lead Change.

8.4.3.1 Competing Values and training as a predictor of Overall Performance

Regression analysis (see Table 8.13) indicates training contributes to increases in participants' scores on the Cometign Value Control and Compete and this improvmemtn carries over to improved Overall Performance.

This relationship was further explored using mediation analysis, as shall now be discussed.

Table 8.13: Regression Analysis – The Competing Values and training as a predictor of Overall Performance

	Overall Performance			
	R^2	**adj R^2**	**□ΔR^2**	**□□□□□β**
	.06	.04	.32	
Group (training / non-training) mean difference				.17† (p= .063)
Collaborate mean difference				.09 (p= .629)
Create mean difference				.16 (p=.233)
Control mean difference				.61**(p=.004)
Compete mean difference				.40** (p=.013)

† $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

Note: The values presented are the unstandardised β coefficients at each stage of the regression equation. Due to rounding off R^2 may differ .01 from the sum of R^2*change.*

Hypothesis 12a stated that the increases in Competing Values would mediate the relationship between training and Overall Performance. There are four steps to establish mediation that are outlined by Baron and Kenny (1986), and Judd and Kenny (1981). The first step is to show that the independent variable is correlated with the dependent variable. That is, leadership training in absolute predicts increased mean differences Time 1 and Time 2 in Overall Performance. Next, the independent variable, training in the current case, needs to correlate with increased mean differences, between Time One and Time Two, in the Competing Values.

The third step must show that increased mean differences in the Competing Values, between Time 1 and Time 2, contribute to increased mean differences in Overall Performance. In this step both training and the Competing Values will be correlated against Overall Performance; this rules out the possibility that the Competing Values and Overall Performance are correlated because they are both caused by training. Therefore, training is controlled for in this step. The last step is performed to establish that increases in the Competing Values completely mediate the relationship between training and increases in Overall Performance. Here, the effect of training on Overall Performance, when controlling for the Competing Values should be zero. To test hypothesis 12a, a series of regression analyses (Cohen and Cohen, 1983) were conducted in SPSS, with each of the four Competing Values (Control, Compete, Collaborate and Create) presented as mediators. Hypothesis 12a is subdivided into four sub-hypothesis to reflect the Competing Values as separate mediators, namely:

Hypothesis 12.a.a An increase in the Competing Value Collaborate will mediate the relationship between training and improved Overall Performance.

Hypothesis 12.a.b An increase in the Competing Value Create will mediate the relationship between training and improved Overall Performance.

Hypothesis 12.a.c An increase in the Competing Value Control will mediate the relationship between training and improved Overall Performance.

Hypothesis 12.a.d An increase in the Competing Value Compete will mediate the relationship between training and improved Overall Performance.

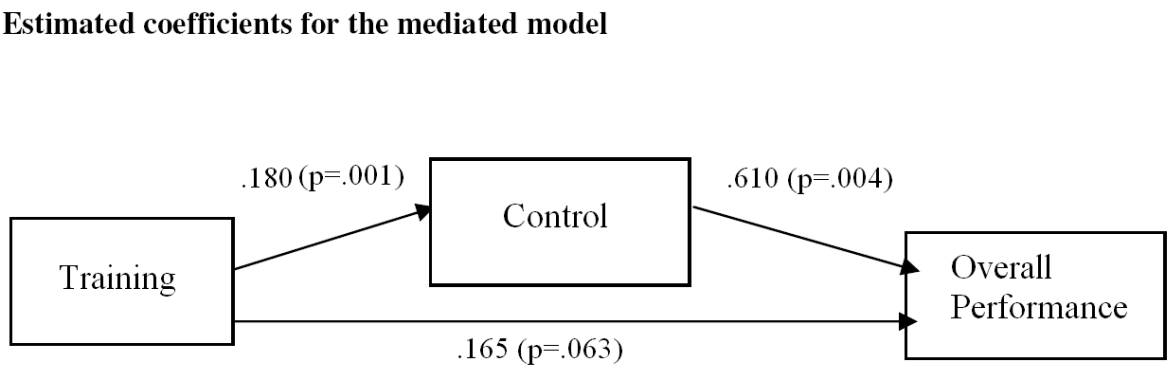
Hypothesis 12.a.a. stated that increases in the Competing Value Collaborate would mediate the relationship between training and improved Overall Performance. Training was significantly related to improved Overall Performance ($\beta = 0.17$, $p = 0.063$) at Step 1; Training was also significantly related to increases in the Competing Value Collaborate ($\beta = 0.27$, $p = 0.000$) at Step 2. However, increases in the Competing Value Collaborate was not significantly related to improved Overall Performance ($\beta = 0.09$, $p = 0.629$). Therefore, Hypothesis 12.a.a. was rejected.

Hypothesis 12.a.b stated that increases in the Competing Value Create would mediate the relationship between training and Overall Performance. However, the results were non-significant. Therefore, Hypothesis 12.a.b. was rejected. Training was significantly related improved to Overall Performance ($\beta = 0.17$, $p = 0.063$) at Step 1; Training was also significantly related to increased Create ($\beta = 0.24$, $p = 0.007$) at Step 2. However, increased Create was not significantly related to improved Overall Performance ($\beta = 0.155$, $p = 0.233$). Therefore, Hypothesis 12.a.b. was rejected.

Hypothesis 12.a.c. stated that increases in the Competing Value Control would mediate the relationship between training and improved Overall Performance. Results indicated that the relationship between training and improved Overall Performance was partially mediated by increases in the Competing Value Control after the steps described by Baron and Kenny (1986) were followed.

Figure 8.9 illustrates, Training was significantly related to increases in the Competing Value Control ($\beta = 0.18$, $p = 0.001$), and increases in Control was significantly related to improved Overall Performance ($\beta = 0.61$, $p = 0.004$), when Controlling for training.

Figure 8.9 Training and Control as a predictor of Overall Performance



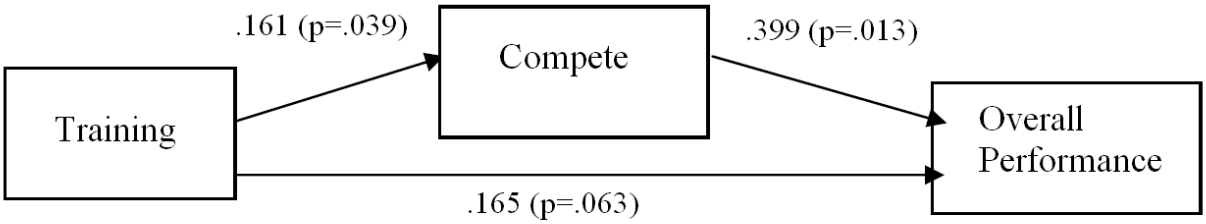
N.B. Unstandardised regression coefficients are reported.

A more rigorous test to assess the indirect effect of mediation is the Sobel test (Sobel, 1982; Preacher and Hayes, 2004). This tests whether a mediator carries the influence of an independent variable across to a dependent variable, that is, it assesses the indirect effect of training on Overall Performance, via Control. The Sobel test was found to be significant (t = 2.26, p = 0.02) indicating that increases in the Competing Value Control significantly carries the influence of training to improved Overall Performance. Hypothesis 12.a.c.could therefore be accepted.

Hypothesis 12.a.d. stated that increases in the Competing Value Compete would mediate the relationship between training and improved Overall Performance. Results indicated that the relationship between training and improved Overall Performance was partially mediated by increases in the Competing Value Compete. As Figure 8.10 illustrates, Training was significantly related to increases in the Competing Value Compete (β = 0.16, p = 0.039), and increases in Compete was significantly related to improvements in Overall Performance (β = 0.399, p = 0.013), when Controlling for training.

Figure 8.10 Training and Compete as a predictor of Overall Performance

Estimated coefficients for the mediated model



N.B. Unstandardised regression coefficients are reported.

The Sobel test was again found to be significant (t = 1.61, p = 0.1) indicating that increase in the Competing Value Compete significantly carries the influence of training to improved Overall Performance. Hypothesis 12.a.d.could therefore be accepted.

In summary, this section has demonstrated that training has a direct effect on Overall Performance and that training significantly improves each of the four Competing Values: Control, Compete, Collaborate and Create. However, increases in only two out of the four hypothesised Competing Values, Control and Compete, predict improvements in Overall Performance above the effect of training

8.4.3.2. Competing Values and training as a predictor of Ability to Lead Change

The procedure described above was then replicated but taking Ability to Lead Change as the dependent variable instead of Overall Performance. Regression analysis (see Table 8.14) indicates training and increases the Competing Values Control and Compete predict improved Ability to Lead Change.

Table 8.14: Regression Analysis – The Competing Values and training as a predictor of Ability to Lead Change

	Ability to Lead Change			
	R^2	adj R^2	ΔR^2	β
	.06	.04	.36	
Group (training or non-training) mean difference				.32** (p= .003)
Collaborate mean difference				.03† (p= .148)
Create mean difference				.37** (p=.021)
Control mean difference				.42† (p=.097)
Compete mean difference				.88*** (p=.000

† $p \leq .10$ *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$
Note: The values presented are the unstandardised β coefficients at each stage of the regression equation. Due to rounding off R^2 may differ .01 from the sum of R^2*change.*

Hypothesis 12b states increases in the Competing Values will mediate the relationship between training and improved Ability to Lead Change. Hypothesis 12.b. was tested using the steps of mediation outlined by Baron and Kenny (1986), using a series of regression analyses (Cohen and Cohen, 1983) conducted in SPSS, where each of the four Competing Values (Control, Compete, Collaborate and Create) were presented as mediators. Hypothesis 12b is subdivided into four sub-hypothesis to reflect the Competing Values as separate mediators, namely:

Hypothesis 12.b.a. Increases in the Competing Value Collaborate will mediate the relationship between training and improved Ability to Lead Change.

Hypothesis 12.b.b. Increases in the Competing Value Create will mediate the relationship between training and improved Ability to Lead Change.

Hypothesis 12.b.c. Increases in the Competing Value Control will mediate the relationship between training and improved Ability to Lead Change.

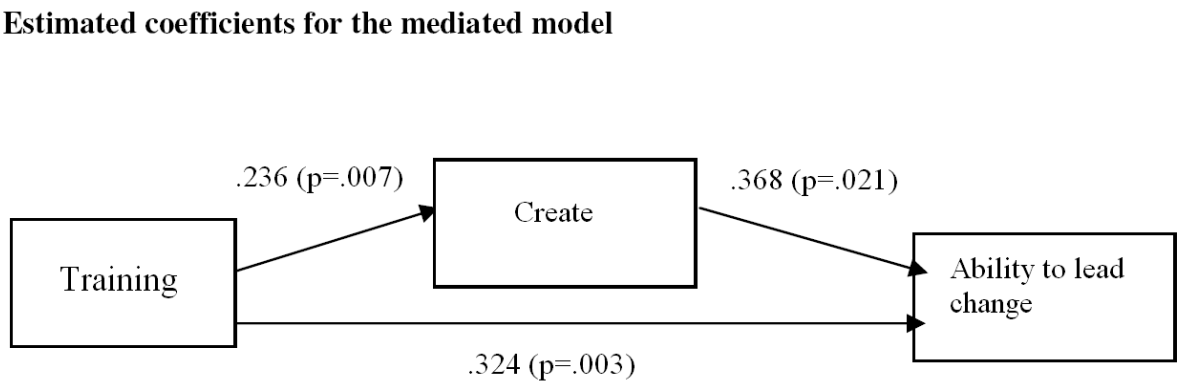
Hypothesis 12.b.d. Increases in the Competing Value Compete will mediate the relationship between training and improved Ability to Lead Change.

Hypothesis 12.b.a stated that increases in the Competing Value Collaborate would mediate the relationship between training and improved Ability to Lead Change. Training was significantly related to improved Ability to Lead Change ($\beta = 0.32$, $p = 0.003$) at Step 1; Training was also significantly related to improved Collaborate ($\beta = 0.27$, $p = 0.000$) at Step 2. However, Collaborate was not significantly related to Ability to Lead Change ($\beta = 0.148$, $p = 0.148$). Therefore, hypothesis 12.b.a. was rejected.

Hypothesis 12.b.b. stated that increases in the Competing Value Create would mediate the relationship between training and Ability to Lead Change. Results indicated that the relationship between training and improved Ability to Lead Change was partially mediated by increases in Create after the steps described by Baron and Kenny (1986) were followed.

As Figure 8.11 illustrates, Training was significantly related to increases in Create ($\beta = 0.24$, $p = 0.007$), and increases in Create was significantly related to improvements in Ability to Lead Change ($\beta = 0.37$, $p = 0.021$), when Controlling for training.

Figure 8.11 Training and Create as a predictor of Ability to Lead Change

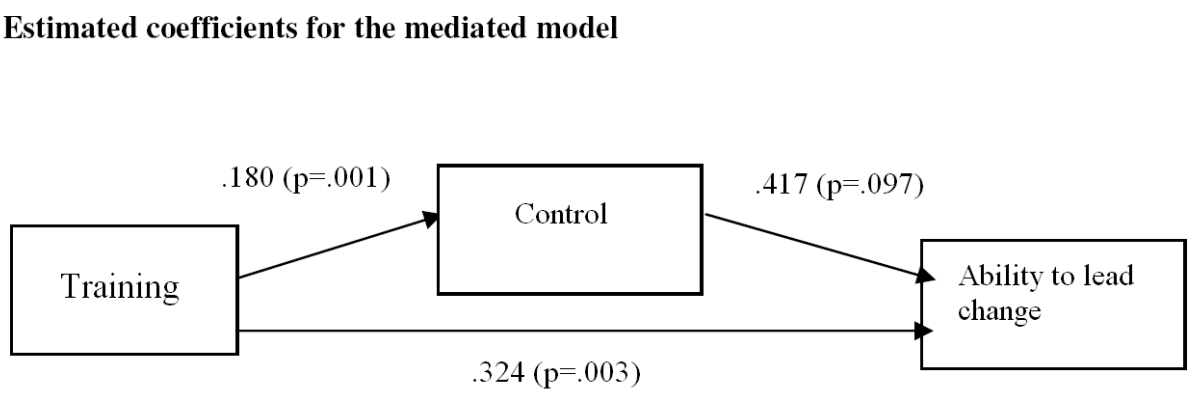


N.B. Unstandardised regression coefficients are reported.

The Sobel test was found to be significant (t = 1.79, p = 0.07) indicating that increases in Create significantly carries the influence of training to improved Ability to Lead Change. Hypothesis 12.b.b.could therefore be accepted.

Hypothesis 12.b.c. stated that increases in the Competeing Value Control would mediate the relationship between training and improved Ability to Lead Change. Results indicated that the relationship between training and improved Ability to Lead Change was partially mediated byincreases in Control, albeit weakly. As Figure 8.12 illustrates, Training was significantly related to Control (β = 0.18, p = 0.001), and the increase in Control was significantly related to Ability to improved Lead Change (β = 0.417, p = 0.097), when Controlling for training.

Figure 8.12 Training and Control as a predictor of Ability to Lead Change

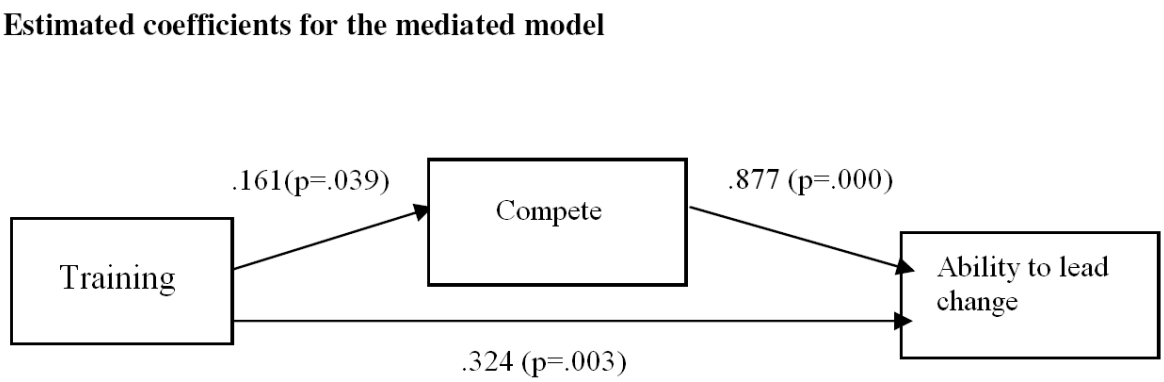


N.B. Unstandardised regression coefficients are reported.

The Sobel test was found to be significant (t = 1.51, p = 0.13) indicating that increases in Control significantly carries the influence of training to improved Ability to Lead Change. Hypothesis 12.b.c. could therefore be accepted.

Hypothesis 12.b.d. stated that increases in Compete would mediate the relationship between training and improved Ability to Lead Change. Results indicated that the relationship between training and improved Ability to Lead Change was mediated by increases in the Competing Value Compete. As Figure 8.13 illustrates, Training was significantly related to increases in Compete (β = 0.17, p = 0.039), and the increase in Compete was significantly related to improved Ability to Lead Change (β = 0.88, p = 0.000), when Controlling for training.

Figure 8.13 Training and Compete as a predictor of Ability to Lead Change



N.B. Unstandardised regression coefficients are reported.

The Sobel test was found to be significant (t = 1.90, p = 0.05) indicating that increases Compete significantly carries the influence of training to improved Ability to Lead Change. Hypothesis 12.b.d could therefore be accepted.

In summary, this section has demonstrated that training has a direct effect on improved Ability to Lead Change and that training significantly improves each of the four Competing Values: Control, Compete, Collaborate and Create. However, increases in only three out of the four hypothesised Competing Values, Create, Control and Compete, predict improvements in Ability to Lead Change.

This section has provided evidence to suggest leadership training can contribute to improved outcomes of Leadership Effectiveness, in terms of Overall Performance and Ability to Lead Change. Leadership training enhances each of the four Competing Values: Control, Compete, Collaborate and Create. However, not all of the increases in the increases in the Competing Values improved outcomes of Leadership Effectiveness. Increased Collaborate for instance does not predict improved Overall Performance or Ability to Lead Change; and Create does not predict improved Overall Performance. In contrast, increases in both Control and Compete contribute to the Leadership Effectiveness outcomes Overall Performance and Ability to Lead Change.

8.5 CONCLUSION

This study demonstrated that each of the four Competing Values of Behavioural Complexity: Control, Compete, Collaborate and Create; plus their associated outcomes of Leadership Effectiveness, Overall Performance and Ability to Lead Change can improve in a relatively short space of time with the support of leadership training.

The training intervention adopted in this piece of research required participants to attended two modules each month over an eight month period. Each module was completed in a single day and delivered on-site so that it could be run around the participants' working schedule.

Comparison of the mean differences in scores showed an increase in the training group for Control, Compete, Collaborate, Create, Overall Performance and Ability to Lead Change. In comparison the non-training group remained unchanged on each of these six dimensions between Time One and Time One.

The Compete variable did not show a statistically significant improvement, between Time One and Time Two, and between the training group and non-training group.

Mediation analysis indicated increases in both Control and Compete partially mediated the relationship between training and improved Overall Performance; and also training and Ability to Lead Change. One could attribute this finding to the stage in career of the participants.

Increases in the Competing Values Control, Compete and Create were demonstrated to enable improvements in the Leadership Effectiveness outcome, Ability to Lead Change, although the effect of the Competing Value Control was substantially weaker than Compete and Create. Mediation analysis indicated increases in Control, Compete and Create partially mediated the relationship between training to improved Ability to Lead Change. Increases in Collaborate were not demonstrated to predict improvements in Ability to Lead Change. One could attribute this finding to the stage in career of the participants, as relatively junior leaders the participants may show a reluctance to Collaborate as they hold on to the behaviours that offer jurisdiction.

Training was demonstrated to improvements in predict improvements in the Leadership Effectiveness outcomes Overall Performance and Ability to Lead Change. These relationships are boosted when combined with increases in the Competing Values, Control and Compete for enhanced Overall Performance; and with Control, Compete and Create for improved

Ability to Lead Change. Such findings provide some evidence for organisations to invest in leadership training because of the direct link between training and improved Leadership Effectiveness, in terms of Overall Performance and Ability to Lead Change. This recommendation is of particular interest to new or aspiring leaders (who may not have received prior leadership training, or had the opportunity to develop their own leadership behavioural repertoire) as it provides a starting block for such individuals to become effective as leaders, which ultimately benefits their organisation.

This study has taken an underlying behavioural theorist approach to the study of leadership. Behavioural theory focuses on what leaders do in terms of action. Behavioural theory is based upon the belief that leaders can be made and developed, not just born. With this is mind, this study explored the possibility of whether Behavioural Complexity can be developed through leadership training and provided evidence to suggest that leadership training can contribute to Leadership Effectiveness.

Chapter 9: Discussion and Conclusion

9.1 CHAPTER SUMMARY

This chapter provides an overall discussion of the findings drawn from the thesis. A brief summary of the main aim of this research, along with the major findings from across the studies is firstly reported. Focused discussions relating to each study are provided within the respective sections throughout the thesis. These discussions should be kept in mind when interpreting the overall findings presented here. Following this, discussion centres on the contribution to knowledge that the thesis provides. This includes both theoretical and methodological contributions to the literature on leadership, as well as practical contributions that can be used to inform leaders and organisations. Overall limitations of the research are considered before outlining some of the main areas for future research. The chapter closes with conclusions drawn from the thesis.

9.2 MAIN FINDINGS

Leadership from the perspective of Complexity Theory is a topic that has received much theoretical and conceptual discussion. The idea is simple and makes initiative sense; if organisations are themselves dynamic then so must their leaders be. However, this idea had received limited empirical testing which the thesis seeks to remedy.

Leadership from the perspective of Complexity Theory recognises leaders cannot control the future because complex and unpredictable contextual factors will often determine future organisational conditions. Such thinking moves away the “romance of leadership” (Meindl, 1985) where much that constitutes leadership is attributed to the individual ‘in-charge’. Leadership from the perspective of Complexity Theory acknowledges that leadership does not exist in a vacuum and is instead is a product of the individual and the context where the two mutually affect one another.

Marion and Uhl Bien (2001) maintain that effective leaders learn to capitalise on the Complexity that exists in the environment by themselves becoming complex. Hooijberg, Hunt and Dodge (1997) provide a conceptual model of what it is to be complex, with respect the Leaderplex model. The Leaderplex model integrates the cognitive and social aspects of leadership that manifest in behaviour and underlie complex leadership, which helps explain how leaders can be versatile and responsive to the demands and responsibilities of their role,

the people they lead and the environment in which they operate. The thesis empirically tested the Leaderplex model and linked it to outcomes of leadership effectiveness. The thesis focused specifically on the behavioural aspect of the Leaderplex – Behavioural Complexity, since it is through behaviour that Cognitive and Social Complexity manifest.

The aims of the thesis were threefold:

1. To establish the extent to which Behavioural Complexity is an enabler of Leadership Effectiveness
2. To establish the extent to which Organisational Complexity moderates Behavioural Complexity and Leadership Effectiveness
3. To establish the extent to which leadership training supports Behavioural Complexity in contributing to Leadership Effectiveness.

These aims were achieved by exploring leadership and organisations from the perspective of Complexity Theory whilst contributing to the evolving process of moving the study of Complexity from the arena of metaphor to something real and operational. Hooijberg, Hunt and Dodge's (1997) conceptual propositions provide the theoretical underpinning of these aims, namely, organisations are dynamic and complex, where leaders are required to respond to the many demands that they encounter by being behaviourally complex. Behavioural Complexity is a combination of behavioural repertoire (range of behaviours) and behavioural differentiation (the capacity to apply appropriate behaviour as the situation dictates).

The behavioural repertoire aspect of Behavioural Complexity was operationalised using Lawrence, Lenk and Quinn's (2009) Competing Values Framework which captures the extent to which leaders demonstrate four behaviours (Control, Compete, Collaborate and Create) argued to be critical to all types of organisational leadership. Behavioural differentiation was explored in terms Organisational Complexity (a new measure developed in Chapter Six) and the extent to which this contextual factor moderates Behavioural Complexity and leadership effectiveness.
The results of these research aims will now be discussed in more detail.

9.2.1. Aim One: To establish the extent to which Behavioural Complexity is an enabler of leadership effectiveness

Study One presented evidence linking Behavioural Complexity, operationalised through Competing Values Framework, to measures of Leadership Effectiveness (specifically, Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgement).

Hypothesis 1 stated that proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) would be equally important in enabling Leadership Effectiveness in terms of Overall Performance.
Overall Performance is a subsection of Lawrence, Lenk and Quinn's (2009) Leadership Effectiveness measure. Factor Analysis (conducted in Chapter Six) separated this measure into two factors:

1. Relative Performance, defined as individual performance relative to others and targets, e.g. performance relative to meeting performance standards; and performance in comparison to one's professional peers
2. Absolute Performance, defined as an indication of ones own individual performance, e.g. performance as role model and professional success.

In view of these two new factors Hypothesis 1 was refined and replaced with two new hypotheses, Hypothesis 1.a. and 1.b. which state:

Hypothesis 1.a.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Relative Performance.
Hypothesis 1.b.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Absolute Performance.

Both Hypothesis 1.a. and 1.b. are based on the same theoretical assumptions that informed Hypothesis 1. The findings relating to each of these hypotheses shall now be presented.

All four quadrants of the Competing Values Framework contribute to the Leadership Effectiveness outcome Relative Performance (Hypothesis 1.a. can be accepted).
Despite being a statistically significant predictor of Relative Performance, Collaborate had the least strong effect of the four quadrants on this outcome of Leadership Effectiveness. In contrast, the Create quadrant has the strongest effect on Relative Performance. It could be

assumed that this finding is due to the rivalrous nature of Relative Performance, where evaluations of performance are benchmarked against peers and the achievement of targets, where collaborative behaviours maybe least favourable in the achievement of this outcome of Leadership Effectiveness. In contrast, the findings suggest that the ability to behave creatively maybe the most influential of the Competing Values in terms of enabling Relative Performance.

Nonetheless, proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) acts as an enabler of Leadership Effectiveness in terms of Relative Performance. The insight is that the impact of the Competing Values is not equal; some Competing Values have a stronger magnitude on Relative Performance than do others.

In view of these imbalances across the quadrants, subsequent analyses explored the effects of the quadrants in combined 'dyads'. Put simply, if a single behaviour can enable Relative Performance can combined behaviours even better enable Relative Performance? Such a question ties into the underlying idea of the importance of a large behavioural repertoire in promoting leadership effectiveness. This question explored, using hierarchical regression analysis, the interaction effects between the Competing Values as combined enablers of leadership effectiveness. As previously mentioned, the Create quadrant had the strongest effect of the Competing Values on Relative Performance. Create also acts as a moderator that boosts Relative Performance when combined with Compete and Control. In summary, whilst all four Competing Values enable Relative Performance, imbalances across the quadrants are evident and also favourable.

Only two out of the four Competing Values: Collaborate and Create contribute to the Leadership Effectiveness outcome Absolute Performance. Control and Compete did not predict Absolute Performance. Compared with Relative Performance, Absolute Performance is a less competitively driven Leadership Effectiveness outcome since the benchmark of comparison is not evaluated against others or targets. Instead, performance is monitored against the individual's evaluation of their own professional success, which could account for the less competitive/controlling focus of this outcome of Leadership Effectiveness because performance from this perspective is not dependent on others. Since proficiency in two out of the four hypothesised Competing Values act as enablers of Absolute Performance, subsequent analysis explored if Collaborate and Create combined interact to boost their relationship with Absolute Performance. The findings supported this proposition lending further support to the suggestion that deliberate imbalances across the quadrants maybe more common than originally expected.

Behaviours in the Create quadrant are needed by leaders to ably lead change. Hypothesis 2 proposed this by stating "Behaviours in the Create quadrant of the Competing Values Framework are needed for change - Accordingly, Create will have the strongest magnitude of the quadrants in relation to Ability to Lead Change." Whilst this is true, Hypothesis 2 was only partially accepted because Collaborate and Control also contribute to this outcome of Leadership Effectiveness, with Collaborate having an equally strong effect as Create on Ability to Lead Change. The combined effects of Collaborate and Create on Ability to Lead Change were explored. The results indicate that these two quadrants interact to boost their relationship with Ability to Lead Change.

Hypothesis 3 stated that proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) would be equally important in enabling Leadership Effectiveness in terms of Influence.
The measure of Influence was originally a single factor scale developed by the P.H.I. Group (Dickinson, 2001). Factor Analysis (conducted in Chapter Six) separated this measure into two factors: (1) Influence defined as the capacity of an individual to produce effects on the actions, behaviours, options, etc of others and (2) Judgment, defined as the political awareness of the leader to recognise the situational factors that contribute to influence.
In view of these two new factors Hypothesis 3 was refined and replaced with two new hypotheses, Hypothesis 3a and 3b which state:

Hypothesis 3.a.: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Influence.
Hypothesis 3b: Proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create) will be equally important in enabling Leadership Effectiveness in terms of Judgment.

Only two out of the four Competing Values: Collaborate and Create, contribute to the Leadership Effectiveness outcome Influence. Control was demonstrated to not predict Influence, suggesting controlling behaviours maybe ineffective in influencing others. Engaging the support of others seems to be a more effective way of influencing, for example, Collaborate had the strongest effect of the quadrants on Influence, suggesting what intuitively makes sense that cooperative interaction with others is fundamental to this outcome of Leadership Effectiveness. The combined effects of these quadrants on Influence were explored to see if combined proficiency in more than one quadrant is an even better enabler of

Influence. However, no interaction effects between the Competing Values were evident possibly signifying that leaders who effectively influence need to be consistent in the type of behaviour they apply to a situation.

Only two out of the four Competing Values: Collaborate and Compete, contribute to the Leadership Effectiveness outcome Judgment. Such a finding could be attributed the nature of these behaviours since Collaborate and Compete both require a level of interaction with others, which complements the leadership effectiveness outcome Judgement, as this outcome of leadership effectiveness about being attuned to reading the reactions of others. No interaction effects were found between Collaborate and Compete when combined as an enabler of Judgement, signifying that leaders who effectively judge the situation need to be consistent in the type of behaviour they adopt.

Study One aimed to establish the extent to which Behavioural Complexity is an enabler of Leadership Effectiveness. As previously discussed Behavioural Complexity is a combination of behavioural repertoire and behavioural differentiation. The results of Study One indicated behavioural repertoire (or breadth of behaviour) is important in contributing to Leadership Effectiveness but not all of the behaviours captured by the Competing Values are favourable to all types of Leadership Effectiveness. There are some quadrants, for example Collaborate, which are more favourable than others in enabling: Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgment. Likewise, there are some outcomes of Leadership Effectiveness, specifically: Relative Performance, Absolute Performance and Ability to Lead Change that are enhanced by combined proficiency in more than one quadrant. In such instances the Competing Value Create most frequently acts as a moderator to boost the relationship between the other Competing Values and Leadership Effectiveness. In conclusion, imbalances across the Competing Values are important. There are leadership effectiveness outcomes where not all of the Competing Values are useful but this does not mean that these behaviours should be removed completely from a leader's behavioural repertoire. Instead, such behaviours should be temporally 'de-activated' until they are needed and then're-activated' in the pursuit of more suitable leadership effectiveness outcomes. Such behaviour taps into the idea of behavioural differentiation - the capacity to apply appropriate behaviour as the situation dictates.

The next section explores behavioural differentiation in terms Organisational Complexity and the extent to which this contextual factor moderates Behavioural Complexity and leadership effectiveness.

9.2.2. To establish the extent to which Organisational Complexity moderates Behavioural Complexity and Leadership Effectiveness

Study Two investigated Organisational Complexity as an enabler of Behavioural Complexity and leadership effectiveness. Organisational Complexity was explored through the developed of a new and extended theoretical construct which could be operationalised into a short, valid and reliable scale of 0.7.

Damanpour (1996) conducted an extensive meta-analysis that explored the different facets of Organisational Complexity. The themes derived from the meta-analysis became the items in the Organisational Complexity scale. The need for an Organisational Complexity scale was identified because no previous scale existed that adequately captured Organisational Complexity other than measures of Perceived Environmental Uncertainty, many of which were developed in the 1970's and 1980's when organisations were still typically defined by the manufacturing industry and consequentially such measures had become outdated.

The thesis therefore provided a new measure of Organisational Complexity, defined by four dimensions: Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation. Based upon theoretical deductions and the incorporation of recent conceptual trends in Organisational Complexity research, these four dimensions capture the key characteristics that define Organisational Complexity in the literature. Following the presentation of the theoretical model, a validation study was conducted to explore the structure and properties of the Organisational Complexity scale. Analysis was based on a sample of 118 healthcare leaders. In terms of the psychometric soundness of this scale, initial reliability results are encouraging; with the average coefficient alpha for the nine-item scale exceeding 0.7. Each item was measured on a 1 to 5 Likert scale.

Study Two established initial support for the predictive validity of the Organisational Complexity scale, through the testing of hypotheses that shall now be discussed in terms of the four dimensions that underlie Organisational Complexity: Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation.

Hypothesis 4 states that high Structural Complexity decreases Leadership Effectiveness and that the effects of Structural Complexity can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create), that in turn contributes to improved Leadership Effectiveness (in terms of Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgement). Hypothesis 4 was partially accepted because Structural Complexity was only seen to moderate the relationship between the Competing Value Collaborate and the Leadership Effectiveness outcome Absolute Performance, signifying that in complex organisational structures collaboration can contribute to Leadership Effectiveness. This finding is consistent with Study One which also demonstrated that Collaborate contributes to Absolute Performance. Again, this finding is attributed to nature of Absolute Performance. As a less competitively driven benchmark Absolute Performance is monitored against the individual's evaluation of their own professional success. In contexts of high Structural Complexity (which refers to the number of hierarchical levels and occupational specialists within the organisation) leaders are better able to evaluate themselves if they increase their awareness of others around them by collaborating and interacting.

Hypothesis 5 states high Organisational Size decreases leadership effectiveness and that the effects of Organisational Size can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create), that in turn contributes to improved Leadership Effectiveness.
In view of this hypothesis Organisational Size was analysed with each of the Competing Values as combined enablers of the Leadership Effectiveness outcomes: Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgment - none of which turned out to be related. Hypothesis 5 was rejected. This result could be attributed to all participants being surveyed from the same organisation, hence the lack of variability in Organisational Size.

Hypothesis 6 states that high Environmental Uncertainty decreases leadership effectiveness and that the effects of Environmental Uncertainty can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create),

that in turn contributes to improved Leadership Effectiveness (in terms of Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgement).
Hypothesis 6 was partially accepted because Environmental Uncertainty was seen to only moderate the relationship between the Competing Value Collaborate and the leadership effectiveness outcome Absolute Performance. This finding is consistent with Study One which also demonstrated that Collaborate contributes to Absolute Performance. Again, this finding is attributed to nature of Absolute Performance. As a less competitively driven benchmark Absolute Performance is monitored against the individual's evaluation of their own professional success. In contexts of high Environmental Uncertainty a leader is better able to evaluate his or her self if they reduce uncertainty by collaborating and interacting with others.

Hypothesis 7 states that high Innovation decreases leadership effectiveness and that the effects of Innovation can be reduced by proficiency in any quadrant of the Competing Values Framework (Control, Compete, Collaborate and Create), that in turn contributes to improved Leadership Effectiveness (in terms of Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgement).

Hypothesis 7 was partially accepted because Innovation was only seen to moderate the relationship between the Competing Value Create and the leadership effectiveness outcome Relative Performance. This finding is consistent with Study One which also demonstrated that Create contributes to Relative Performance. This finding is attributed to rivalrous nature of Relative Performance where evaluations of performance are benchmarked against peers and the achievement of targets, where those who behave creatively maybe more influential in terms of enabling Relative Performance than those less creative.

Combined, Hypotheses 4 to 7 provide support for the idea of behavioural differentiation, where effective leaders apply an appropriate behaviour to the demands of the situation in order to enable effectiveness. Such an idea is central to the study of leadership for the perceptive of Complexity Theory in view of the underlying principle that organisations are dynamic and complex; and so too should their leaders be.

9.2.3. To establish the extent to which leadership training supports Behavioural Complexity in contributing to Leadership Effectiveness

Study Three explored if leadership training could support Behavioural Complexity in enabling the Leadership Effectiveness outcomes: Overall Performance and Ability to Lead Change. To this end, the study was designed to incorporate a leadership training intervention. In view of the benefits, outlined in Study One, associated with Behavioural Complexity enabling Leadership Effectiveness; Study Three demonstrated, amongst a sample of junior leaders, that each of the four Competing Values: Control, Compete, Collaborate and Create, and associated outcomes of Leadership Effectiveness, Overall Performance and Ability to Lead Change, could be developed with the support of leadership training. Such findings provide some evidence for organisations to invest in leadership training because of the direct link between training and leadership effectiveness in terms of Overall Performance and Ability to Lead Change. This is of particular interest to new or aspiring leaders (who may not have received prior leadership training, or had the opportunity to develop their own leadership behavioural repertoire) as it provides a starting block for such individuals to become effective as leaders, which ultimately benefits their organisation.

Measures of the participants' Behavioural Complexity were taken pre and post training. Comparison of scores showed an increase in the training group for each of the four Competing Values: Control, Compete, Collaborate, Create and two outcomes of Leadership Effectiveness: Overall Performance and Ability to Lead Change, in comparison to the non-training group who remained generally unchanged within a parallel eight-month timeframe. Improvments in the Competing Values Control and Compete were seen to contribute to improvements in the Leadership Effectiveness outcomes Overall Performance - defined as performance in relation to oneself and others. Improvements in the Competing Values Collaborate and Create did not mediate the relationship between training and improvements in Overall Performance. However, mediation analysis indicated both Control and Compete significantly mediated the relationship between training and improvements in Overall Performance. These findings could be attributed to the stage in career of the participants. Ambition could contribute to effectiveness through competitiveness; and inexperience promoting behaviours of Control as the junior leaders lack the confidence or ability to delegate.

Improvments in the Competing Values: Control, Compete and Create were demonstrated to predict improvements in the Leadership Effectiveness outcome, Ability to Lead Change -

defined as conceiving and leading change that has impact. Mediation analysis indicated improvements in Control, Compete and Create significantly mediated the relationship between training and improvements in Ability to Lead Change. Consistent with the finding relating to Overall Performance, the increases in Collaborate post training did not carry over to predict increases in Ability to Lead Change. Again, one could attribute this finding to the stage in career of the participants, as relatively junior leaders the participants may show a reluctance to Collaborate as they hold on to the behaviours that offer jurisdiction.

The findings of Study Three provide some interesting contrasts with Study One. For instance, on the leadership effectiveness outcome Ability to Lead Change, the leaders in Study One adopt all four Competing Values as enablers of Ability to Lead Change; however, the leaders in Study Three adopt only three out of the four Competing Values, with the exclusion of Collaborate. This contrast is attributed to the seniority of the participants. The leaders in Study One were experienced leaders, more keen to Collaborate and Create in the pursuit of Leadership Effectiveness than their Study Three junior colleagues, who more frequently adopt behaviours of Control and Compete in the accomplishment of Leadership Effectiveness. The thesis has demonstrated that each of these four behaviours are conducive to leadership effectiveness, adding support to Lawrence, Lenk and Quinn (2009) proposition that the Competing Values are critical to all types of organisational leadership. What is interesting is that we see evidence that suggests leaders may rightly perceive a bias towards certain behaviours at a given point in time in their career.

This section has briefly discussed the main findings from across the three studies that form the thesis, the contribution of the research to the study of leadership and organisations will now be considered.

9.3 CONTRIBUTIONS OF THE THESIS TO THE STUDY OF LEADERSHIP AND ORGANISATIONS

9.3.1 Theoretical contributions

The thesis presents the following theoretical contributions:

Lawrence, Lenk and Quinn (2009) maintain that proficiency in any quadrant of the Competing Values Framework are all equally important in enabling Leadership Effectiveness (in terms of Overall Performance), amongst a sample that included middle to senior level leader managers from an international information services organisation and a sample of executive MBAs. The thesis contributed to knowledge by testing these assertions in a healthcare context. Exploratory and Confirmatory Factor analysis were conducted to refine the scale structures that meant Lawrence, Lenk and Quinn's Overall Performance scale was divided into two subscales that represented (1) Relative Performance, defined as performance in relation to others and targets, e.g. performance relative to meeting performance standards and performance in comparison to one's professional peers; and (2) Absolute Performance, defined as an indication of ones own individual performance, e.g. performance as a role model and professional success. The findings of the thesis indicate that all four quadrants of the Competing Values Framework contribute to the Leadership Effectiveness outcome Relative Performance. Collaborate, although a statistically significant predictor of Relative Performance had the least strong effect of the four quadrants on this outcome of Leadership Effectiveness. As previously discussed, this finding could be attributed to the competitive nature of Relative Performance, particularly as it benchmarks performance in relation to others, which give this variable a competitive rather than collaborative focus. The Create quadrant has the strongest effect on Relative Performance and also acts as a moderator to boost Relative Performance when it is combined with Compete and Control.

Competing Values, Collaborate, Create and Compete were demonstrated to predict Absolute Performance. Compete though a statistically significant predictor of Absolute Performance had the least strong effect of these three Competing Values on this outcome of Leadership Effectiveness, presumably because reflection of ones own performance depends less on competition with others than is the case for Relative Performance. Collaborate and Create interact to boost the relationship with Absolute Performance. Notably, the Create quadrant acts as a moderator for both Relative and Absolute Performance, suggesting there maybe

something about the Create behaviour that is favourable to Leadership Effectiveness a healthcare context.

The link between Behavioural Complexity and both Overall Performance and Ability to Lead change had been previously empirically tested by Lawrence, Lenk and Quinn (2009). However, the link between Behavioural Complexity and Influence, although conceptually discussed (Boal and Hooijberg, 2001), had not been empirically tested. The thesis filled that gap, the results indicating that Collaborate, Create and Compete, contribute to the Leadership Effectiveness outcome Influence but the Control quadrant had no effect on this outcome of Leadership Effectiveness. Collaborate has the strongest effect suggesting what intuitively makes sense that cooperative interaction with others is fundamental to the Leadership Effectiveness outcome Influence.

Behavioural Complexity is a combination of behavioural repertoire (range of behaviours) and behavioural differentiation (the capacity to apply appropriate behaviour as the situation dictates). Aspects of the thesis that explore the link between the Competing Values and Leadership Effectiveness tap into the behavioural repertoire part of Behavioural Complexity. However, Kenny and Zaccaro (1983) maintain not only should we concern ourselves with the study of leader behavioural repertoire, but also should consider how leaders achieve effective functioning across a variety of situations. That is, perceiving the needs and goals of the situation but also adjusting one's personal approach to action accordingly. Behavioural Complexity is not just about thinking in complex ways, it is about acting and implementing complex behaviours appropriate to the context (Boal & Whitehead, 1992). Behavioural Complexity requires an appropriate level of judgement, so that an individual utilises their behavioural repertoire and applies it to the appropriate context through behavioural differentiation (Hooijberg, 1996; Hooijberg, Hunt and Dodge 1997). The thesis acknowledged the influence of contextual factors by exploring Organisational Complexity in terms of four dimensions: Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation; and their impact of on Behavioural Complexity and leadership effectiveness. The results indicate Innovation moderates the relationship between the Competing Value Create and the leadership effectiveness outcome Relative Performance; Structural Complexity moderates the relationship between the Competing Value Collaborate and the leadership effectiveness outcome Absolute Performance; Environmental Uncertainty moderates the relationship between the Competing Value Collaborate and the Leadership Effectiveness outcome Absolute Performance. In conclusion, such findings present evidence

supporting behavioural differentiation, where leaders who are effective apply the right behaviour to the right context.

The thesis has taken an underlying behavioural theorist approach to the study of leadership. Behavioural theory focuses on what leaders do in terms of action. Behavioural theory is based upon the belief that great leaders can be made and developed, not just born. With this is mind, the thesis explored the possibility of whether leadership training supports Behavioural Complexity in contributing to leadership effectiveness. A research question previously not empirically tested. The results were positive, with a sample of participant junior leaders all showing improvements in Behavioural Complexity and leadership effectiveness following their attendance on an eight month leadership training course, which provides some evidence for organisations to invest in leadership training.

9.3.2 Methodological contributions

The primarily methodological contribution for this work is the development of the Organisational Complexity Scale. No previous scale adequately captured this contextual factor other than scales of Perceived Environmental Uncertainty, many of which were outdated and did not adequately reflect today's working world. The availability of a short and validated measure of Organisational Complexity therefore has important implications for future research.

The Organisational Complexity Scale offers researchers a valid measure which can inform them about the Complexity of the organisations they choose to study, and to what extent these organisations are complex on four dimensions: Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation. This short nine-item scale can be administered in combination with other organisational scales. The Organisational Complexity Scale could also be controlled for in a researcher's analysis, in order to rule out any effects that it might have in explaining the variance in the dependent variable(s). Incorporating a measure of Organisational Complexity could also help to further explain the relationships found in a dataset by treating it as a moderating or mediating variable in a larger theoretical model. For example, the relationship between human resource practices and performance might be moderated by Organisational Complexity. Researchers might also wish to create categorical variables based on the Organisational Complexity scores, and explore more closely dependent variables which fall into the upper quartile for example. Alternatively, they may wish to omit cases in the lowest quartile from the analysis to ensure that they are not drawing important

conclusions in their research based on data from low complexity organisations. Overall, the availability of the Organisational Complexity scale provides researchers with a new methodological choice with regards to identifying samples of complex organisations for study, as well as accounting for the fundamental characteristics of Organisational Complexity in their analysis.

9.3.3 Practical contributions

Exploring leadership and organisations from the perspective of Complexity has various implications for informing work performance measurement. Work performance measurement is the practice of collating information regarding the functioning of an organisation, group or individual, through the study of processes and outcomes relating to the target of focus (Behn, 2003). Measurement of performance requires statistical modelling of work processes and/or outcomes to determine results. Behn (2003) explains that organisational performance in its entirety is something that can never be obtained because the performance of certain elements associated with an organisation cannot be directly measured but instead must be estimated through indirect assessment of other organisational elements - a phenomenon which parallels the study of complex systems within the complexity sciences.

Behn (2003) offers eight reasons why organisations should adopt work performance measures:

1. To evaluate the performance of the agency; such practice allows one to determine the extent to which the target of interest is accomplishing what it is supposed to accomplish by comparing actual performance data to expected benchmark data.
2. To control. Performance measurement allows organisations to assess whether actions are executed to the required standard, compliant with expectations.
3. To budget. Efficiency can be determined by observing performance. Efficiency indicators include productivity per person and cost, which combined determines system viability.
4. To motivate. Goals can motivate and encourage performance. Goals focus thinking and provide a sense of accomplishment when achieved.
5. To celebrate. Organisations need to acknowledge their accomplishments; such practice motivates staff and provides a sense of achievement that can boost performance.
6. To promote. Performance measures provide organisations with an indicator of achievement; which can provoke confidence in them from others.
7. To learn and identify what works. Performance measures allow organisations to depict the reasons behind good or bad performance.

8. To improve. Performance measures can be linked to an improvement process that allows organisations to identify areas within their corporation that are in need of improvement.

The diagnostic nature of the Competing Values Framework makes is an apt tool for measuring work performance. Leaders in organisations could learn a lot about their behavioural strengths (and weaknesses) by completing the Competing Values Framework. Feedback from the Competing Values Framework can be used to identify leaders with the potential to be effective, in terms of performance, leading change and influence based upon the findings of the thesis that have linked the Competing Values to these outcomes of Leadership Effectiveness. The thesis also provides a benchmark that could be used for recruitment and selection purposes that matches certain behaviours from the Competing Values Framework as particular enablers of Leadership Effectiveness, specifically, organisations looking for leaders who perform well in relation to others could perhaps look for individuals who score high on the Create quadrant; alternatively, organisations wanting to recruit high achieving leaders, focused on Absolute Performance, could select individuals who score high on the Compete quadrant; organisations in the process of change or transition may benefit from appointing leaders who score high on the Create quadrant; and organisations seeking a leader with the potential to influence may possibly look for individuals who score high on the Collaborate quadrant.

The thesis has demonstrated that Behavioural Complexity can be improved through leadership training, making the Competing Values Framework a very useful tool for developmental purposes. As the framework is measured on a continuum if a leader perceives that it is possible that they can progress on each quadrant of the framework then they are more likely to put in some effort into improving that aspect of their behavioural repertoire. Organisations are recommended to invest in leadership training programmes as these can assist in developing the behavioural repertoire of their leaders. Investment in such training programmes can increase performance, in addition to Ability to Lead Change and Influence. The impact of training on outcomes of Leadership Effectiveness will consequentially be advantageous to the individuals and the organisations who invest in such initiatives.

The Organisational Complexity Scale can be used by organisations to identify the contextual factors that influence leader behaviour and leadership effectiveness. The Organisational Complexity scale could be used by organisations to gain an overall picture of the state of Organisational Complexity across the organisation or in particular a department, whilst considering the consequences this contextual factor has for those who lead in its presence.

The thesis identified three contextual factors of Organisational Complexity that interact with the different facets of Behavioural Complexity to enable Leadership Effectiveness, namely: Innovation interacts with the Competing Value Create to boost Relative Performance: Collaborate enhances Absolute Performance in the presence of high Structural Complexity; and in environments of high uncertainty the Competing Value Collaborate promotes Absolute Performance. By understanding Organisational Complexity organisations can develop human-resource management (HRM) practices which promote leadership effectiveness when the right behaviour is applied to the right context.

The scales adopted in the thesis have useful and practical implications for organisational development, particularly given their short and straightforward design. The small item pool allows for a convenient and unobtrusive data collection process, which would be highly appealing to organisations who do not want their staff spending too much time completing a questionnaire. Given the size and simplicity of the scales, it is likely that respondents would be very willing to complete them on a multiple number of occasions without becoming fatigued, thus enabling researchers to gather highly reliable repeated measures of Behavioural Complexity, Leadership Effectiveness and Organisational Complexity in a longitudinal design. Further, as more data is collected from a larger number of individuals in a variety of organisational contexts, these scales will not only be tested further for their generalisability and psychometric properties, but there will also be a larger set of norm data available, against which participating individuals can be compared on the basis of their scale scores.

9.3.4 Contributions to complexity

At the heart of complexity theory is the idea of emergence. Emergence is the way complex systems and patterns arise out of a multiplicity of relatively simple interactions. Goldstein (1999) defined emergence as the arising of novel and coherent structures, patterns and properties during the process of self-organisation in complex systems. Self-organization in its purest form describes how order arises without deliberate intervention or control. Yet, we as researchers go to great lengths to discover how we might explain such processes, when to define them does not do them justice. These efforts are themselves a challenge because of the multitude of factors that underlie these processes. Marion and Uhl-Bien (2001) use the analogy of physics to explain this, with reference to the trajectories of physical particles. Physical particles are prohibitively impossible to track. Even if one had the means for such a task they would then have to combine the different trajectories into a coherent whole in order to understand the behaviour of a system of particles. The same is true of organisational life where a multitude of factors (people, resources, competition, technology, relationships, power dynamics, finances, demand, etc), coupled with an unawareness of the initial starting conditions, makes it impossible to predict with certainty how events will play out.

However, if we are to advance the study of organisational life we need to make compromises in our research of complex systems so that we can make sense of them, rather than admitting defeat that they are too complex to study. To do this we need look for patterns of behaviour that repeat over time, in much the same way as meteorologists study the weather. So for example, while we cannot predict the exact behaviour of the weather on a given date, we can anticipate the path of activity it may take because of prior patterns of conduct. Complexity theorists explain such a phenomenon with reference to the Lorenz Attractor. The Lorenz Attractor measures stable systems; stable because the patterns never exactly repeat themselves, whilst being restricted to two conditions that are not changed by perturbations.

The Lorenz Attractor is used to study physical systems, whilst a useful comparison, how do we apply this information to our study of social systems? Social systems carry information about their past, they can anticipate the future and can reproduce. They differ from physical systems, such as the Lorenz attractor, because they carry information about their past and adjust accordingly. Social systems are subject to the affects of external activity that change the course of events. This process is referred to a Bifurcation, by which the slightest change in circumstances can have a big affect on events, a phenomena referred to as the ‘butterfly effect’. Kauffman (1995) upholds that stable patterns are not randomly generated but are

instead drawn from within the system. Kauffman continues to assert that whilst organised behaviours emerge from localised rules, structure need not be co-ordinated to exist; order is for free, it just happens.

Kauffman's assertion has major implications for our understanding of organisational life. Implications that would bring horror to the heart of many a chief executive or managing director (as I found in the early stages of designing this research) at the suggestion organisational structure need not be co-ordinated to exist; order is for free, it just happens. Taken literally this perspective undermines the role of organisational leadership and management, in addition to much of the research that attempts to explain it. Could organisational structure and order emerge without deliberate co-ordination? I do not know and I doubt there are many organisations that would allow this hypothesis to be tested. However, we do see subtle glimpses of emergent order in our study of organisations, specifically: the manifestation of culture, the emergence of leadership and the utilisation of employee autonomy. Yet, we question whether this emergent order would cease to exist had there not been some deliberate pre co-ordination, e.g.: the purchase of the building, the furnishing of the office, the contract of work, the recruitment of the staff.

It is plausible that the answer may rest somewhere between emergent and planned co-ordination, where some initial starting conditions, such as the physical resources in the working environment need to exist before unplanned behaviour can emerge. Certainly, such a perspective would challenge traditional 'command and control' styles of leadership, in favour of one that promotes interaction. Marion and Uhl Bien (2001) endorse this, maintaining leaders should focus their efforts on the behaviours that enable organisational effectiveness, as opposed to determining or guiding effectiveness. This assertion makes Lawrence, Lenk and Quinn's (2009) Competing Value 'Control' potentially obsolete, if the leader's role is that of an enabler (we shall return to this idea later in the section). Marion and Uhl-Bien (2001) use an oxymoron to explain the actual role of organisational leaders – 'to manage dynamic systems and interconnectivity' (p.389). To 'manage' assumes a level of control, which complexity theorists oppose.

Reflecting upon the results of this study it becomes apparent why behaviours in the Collaborate quadrant, the opposing behaviour to the Control quadrant of the Competing Values Framework (Lawrence, Lenk and Quinn, 2009) is the most instrumental dimension in promoting outcomes of leadership effectiveness. Collaboration promotes interaction and engagement from those operating in the system by: encouraging participation, developing

people and acknowledging personal needs. Collaboration moves away from centralised control by one person, to instead encourage participation from all who are involved in the system.

Earlier it was mentioned that 'order for free' makes the Competing Value 'Control' potentially obsolete. Control is concerned with eliminating error by optimisation and increasing consistency and regularity through: clarifying policies, expecting accurate work and controlling projects. Is Control a behaviour that is obsolete in complex systems such as organisations? No. In complex systems we still observe consistency and regularity but not through deliberate co-ordination, it just happens.

Consistency and regularity create stability, which is just a much a part of complex systems as is chaos. Chaos is useful for generating transformation and ingenuity but it is unhealthy for systems to always to be in a state of chaos or constant change. We need only look to the recent banking crisis for evidence of this, where constant change sent the financial world into turmoil. Healthy systems must experience periods of stability to allow for recovery, whilst making time for new ideas and initiatives to take root and grow. However, what complexity theorists question is the amount of influence an individual 'leader' has in attempting to control or direct the system, which opens the debate as to the direction of the relationship - does the leader influence the system or does the system influence the leader? To contemplate this question we must acknowledge that the leader and system are not separate entities. The leader is a part of the system and can influence or be influenced by it (Mowles, Van der Gaag and Fox, 2010). What the leader is unable to do is completely control the system.

Reflecting upon the results of this study we observe interaction effects between environmental innovation and the Competing Value Create. Here we question whether environments that support the initiation and implementation of innovation encourage those in a leadership role to be creative, or whether leaders who behave creativity (anticipating customer needs, initiating significant change and inspiring people to exceed expectations) help foster environments that are innovative. Likewise, in environments of high uncertainty we observe more collaborative behaviours amongst those present but we question whether uncertainty makes people more likely to collaborate, as they attempt to rationalise the situation, or whether collaborative behaviours make the environment feel more uncertainty as interacting individuals questions one another's beliefs or actions.

Collaboration in unpredictability mirrors the systems theory perspective of Coupling. In stable environments, characterised by traditional bureaucracy; organisational constraints; consistency; limited choice and increased predictability, the units are referred to as loosely coupled because the units are isolated from one another (e.g. interaction between the individuals is limited). Accordingly, changes in one part of the system tend to be contained, which means loosely coupled systems have little effect on one another (Weick, 1976). Loosely coupled systems run the risk of extinction because nothing changes. They do not respond to changes in their environment (e.g. competition, new technologies, customer demand), they do not adapt.

Incongruent with the notion of stability is the concept of chaos, which Herman (1969) identifies as a state of unpredictability. From a systems theory perspective, such systems are described as tightly coupled. Tightly coupled systems are chaotic because the units are so tightly connected with one another that an action in one part of the system tends to cascade throughout the whole system, which ultimately means tightly coupled systems are highly sensitive one another's activities (Pfeffer and Salancik, 1978). Tight coupling between the units could symbolise collaboration between individuals reacting to the uncertainty. We observe this phenomenon through the results of this study where collaboration in the presence of uncertainty increases performance.

Systems theory activity could appear completely automated but remember we are dealing here with social systems that carry information about their past, they can anticipate the future and can reproduce. Social systems learn from experience, hence why we observe fluctuations from the expected norm or pattern. Divergent patterns are evident across the difference levels of the organisational hierarchy and levels of leadership. In this study of experienced and junior level leaders, we detect differences in the behaviours both groups utilise. Using the Competing Values Framework (Lawrence, Lenk and Quinn, 2009) as the measure of behaviour, we observe experienced leaders frequently use behaviours from the Collaborate and Create quadrant to promote outcomes of leadership effectiveness, whereas junior level leaders more often adopt behaviours from the Control and Compete quadrants. Such activity could be explained by a combination of one of two reasons:

1. Obsorn and Marion (2009) maintain that leaders of units experiencing high uncertainty need to work with subordinates to discover what information is important for improving the

system and should connect with subordinates to create a broad variety of potential information sources. However, this recommendation is not without apprehension, those involved often raise concerns over the protection of intellectual property. Such anxiety is likely to be more apparent around junior level leaders (as opposed to experienced leaders) as they aim to establish their career and decipher who they can trust.

2. Alternately, Osborn, Hunt and Jauch (2002) remark that lower organisational levels are more stable than those higher in the hierarchy. Lower levels are typically overseen by junior leaders who occupy managerial roles, rather than positions of actual leadership. The positions of leadership are instead savoured by those in the upper echelons of the organisation, where the conditions are less stable. The difference between leaders and managers makes it plausible that people who occupy such positions would adopt distinct behaviours. Yukl (2006) describes this difference, explaining, the manager's role is generally defined as transactional as they seek to produce predictability, value stability, order and efficiency. In contrast, the leadership role is transformational, concerned with producing change and creating vision. Leader's value flexibility, innovation and adaptation, all the qualities needed to promote healthy complex systems. Edwards and Gill (2012) observe, transformational leadership is effective across all levels of the organisational hierarchy but transactional leadership is not. Transactional leadership is effective at lower organisational levels but not at the uppermost hierarchical levels. This research helps explain why behaviours which promote stability (e.g. control) are instrumental at lower organisational levels amongst junior (transactional) leaders but not amongst experienced leaders operating in more senior roles.

9.4 LIMITATIONS

The thesis has contributed to our understanding of Behavioural Complexity in terms of its association with leadership effectiveness, susceptibility to Organisational Complexity and development through training. However, as with all pieces of research, there are a number of limitations that should be acknowledged.

The sample represents leaders from only one organisation, which may limit generalisability and restrict the range of variability in the key constructs of interest. However, it is also recognised that no study is completely generalisable (Mook, 1983). As previously discussed, one organisation was deliberately targeted to mirror the way Complexity is studied within the natural sciences, where scientists will often sample one pool or ecosystem to explore the Complexity contained within (Holland, 1998). It would be interesting to consider the extent to which the findings of the thesis are applicable in other organisational contexts. The organisation that forms the focus of the thesis is a relatively complex organisation, future research would benefit from exploring whether the same findings apply within a simple/non-complex organisation using the Organisational Complexity Scale (which taps into some of the contextual factors that influence the behaviours adopted by leaders) as a key independent or moderating variable.

Leadership research has been criticised for using male dominated samples that have resulted in predominantly male biased attitudes, views and methods contributing to the body of knowledge in this area of research (Bell, 1988). Inadvertently the sample that formed the focus of this research was predominately female. This observation was not unique to the sample but reflective of the overall demographic of the organisation. This provided a unique opportunity to explore the extent to which Lawrence, Lenk and Quinn's (2009) research applied to a female dominated sample, particularly as Lawrence et al acknowledge a limitation in their own research as being male dominated. Statistical analysis of gender as a control variable indicated there were no statistically significant effects of gender on the main findings for this study, indicating a level of compatibility between the female dominated sample of the thesis and Lawrence et al's male dominated sample.

The results offered support in favour of collaboration as a behaviour that most commonly enables leadership effectiveness. Collaboration is a gender role typically associated with females. Opinions diverge whether observed differences in behaviours between the genders are due entirely or partly to: culture, socialisation, biology or physiological differences. In keeping with the behaviourist perspective, on which the thesis is based, we take the

perspective that behaviours are learned regardless of gender but this is not to say that there are not socially constructed expectations as to the ways males and females should behaviour that create self-fulfilling prophecies as to the types of behaviour both genders develop. Socially constructed traditions and stereotypes include the expectation that males form friendships with other males based upon common interest, whilst females build friendships with other females based upon mutual support. Context is also important in such exchanges. For example, men are expected to compete in their friendships, evade communicating weaknesses and vulnerability, whilst avoiding communicating personal and emotional concerns. In contrast, females are considered more likely to communicate weaknesses and vulnerability, at the same time seeking out friendships that provide support in relation to such matters because communication can enhance self-esteem and personal growth, in addition to offering validation and comfort. Gender roles begin in childhood. According to Maltz and Broker (1982) research has showed that the games children play contribute to socialising children into masculine and feminine roles. For example, girls playing house promotes personal relationships, and playing house does not necessarily have fixed rules or objectives. Boys, however, tended to play more competitive team sports with different goals and strategies. These differences as children contribute to gender stereotypes about the expected rules of behaviour for males and females. Meaning some could attribute the strong influence of collaborative behaviours presented in this research to a predominantly female sample. However, this is something we can only speculate upon.

Lawrence et al acknowledge a limitation of their research with the sample being solely US drawn. The predominance of American models of leadership is a frequent criticism of leadership research. Whilst this study has taken an American model of leadership and found a strong level of comparison in a UK context, in the future it would interesting to explore the generalisability of the findings within a non Angelo-American context.

It is recognised that the sample size in each of the datasets although reasonable enough for the research restricts the statistical power for hypotheses testing. Unfortunately low participant recruitment is a common problem faced by most researchers. This problem is further inflated when the sample pool is restricted to one organisation as was the case for this study. Study One and Two represent 26% of the organisation's leaders, where out of a possible 438 leaders who were invited to take part in the study, 118 agreed to participate. The 80 (39 training and 41 non-training group) leaders who took part in Study Three represented the complete population of potential participants either undergoing or later to undergo the Introduction to Leadership and Management training programme. Accordingly, such a limitation could only

be removed by sampling from more than one organisation for Study Three; and increasing the potential sample pool for Study One and Two.

With regards to establishing causality between Behavioural Complexity and leader effectiveness, data on the dependent variables relating to leader performance were collected from the leaders themselves, thus increasing the threat of common method bias. Future study could include more complex designs including assessment from peers, external performance data, etc which would also enable other questions to be asked and other relationships to be tested.

In view of these limitations that following future research possibilities are presented in the following section.

9.5 REFLECTION

Leadership research has been criticised for neglecting the complexities of the context and the nature of the leadership role (Hunt, 1999). Prigogine (1997) asserts that this has led to a trend in leadership research associated with problems of reductionism, where leadership is studied in isolation of the context in which it occurs and determinism, the belief events are caused by preceding events and by knowing enough about the preceding events on can predict the future with certainty. To avoid the problems of reductionism and determinism Marion and Uhl-Bien (2001) recommend exploring leadership from the perspective of Complexity Theory.

(Chapter 1; Section 1.2)

Although the phenomenon of leadership has been around since antiquity (Bass, 1990) the systematic social scientific study of leadership did not begin until the early 1930s. The extract from Chapter 1 above captures the concerns some scholars have with the systematic study of leadership. On reflection, it was perhaps naïve of me, as a first year doctorial student, to assume that I could solve the problems associated with the last seventy years of leadership research with my doctorial thesis on the bases of Marion and Uhl-Bien's (2001) recommendation advocating the exploration of leadership from the perspective of Complexity Theory as a solution to the problems of reductionism and determinism associated with existing leadership research.

To recap, Complexity Theory explains the behaviour of complex systems. A complex system is one comprised of interconnected parts that as a whole exhibit one or more properties not obvious from the properties of the individual parts. Leadership is a phenomenon greater than the individual who occupied the 'official role' and needs to be explored in relation to all elements that contribute to it, something that research often fails to do in totality. This is why leadership research has been criticised for being reductionistic. However, I now appreciate that eradicating reductionism is a near impossible challenge due to the relentless number of factors that contribute to leadership as a complex system and the reality that complex systems are boundary-less.

The boundary-less nature of complex systems is compromised when such systems are studied and a cut off point (boundary) is created when the observer stops observing. It is at this point that the observation becomes reductionisitc because inevitability there will be connected parts of the system that get neglected. From this perspective we cannot control for all the potential

factors that could influence the system because in a boundary-less system the number of connections between parts is potentially infinite. A lot of leadership research rests at the polar opposite of this perspective focused upon the leader as an individual in isolation of everything else. As a middle ground between both perspectives, many debates within contemporary leadership research call for a greater emphasis on the context in which leadership exists. Osborne and Marion (2009) call for research that treats context as the prime consideration, rather than an afterthought, accentuating the idea that leadership takes place within a context, not a vacuum.

The thesis eventually steered toward this middle ground, which acknowledged that we cannot control for all the contextual factors that influence leadership but we can at least begin to acknowledge some of them, rather than studying leadership in a vacuum. Accordingly, the Organisational Complexity scale was developed to test the moderating effects of context on leader behaviour and leadership effectiveness; however, by attempting to explore this feature (in albeit a small way) another feature of complex systems was sacrificed that of non-linearity.

Complex systems are non-linear, meaning events within complex systems do not follow direct sequences. Complex systems are generally unpredictable. On the basis of this premise, my early research design included no predictor variables because if complex systems were unpredictable then predictor variables were redundant. At the time I was more interested in exploring processes than outcomes, however two things caused this to change: (1) conformity with the subject field - in line with occupational psychology's interest in performance measurement and (2) recruitment - the organisation requested that performance benchmarks be included as a condition of their involvement in the study.

Whilst sacrificing one of the main features of complexity theory, I am now thankful that I was swayed towards a linear model of research. Whilst I do not claim that this model predicts with absolute certainty which leadership behaviours, under which conditions, will determine leadership effectiveness. I instead make the suggestion that these findings be considered as a patterns of activity as the types of behaviours that are more likely to act as enablers of leadership effectiveness under certain environmental conditions.

9.6 FUTURE RESEARCH

The thesis has advanced our understanding of Behavioural Complexity. The finding that leadership effectiveness is associated with higher scores on the Competing Values Framework reinforces the importance of a wide array of behavioural strengths. This suggests that the cultivation of behavioural repertoire (i.e., developing all four quadrants) may improve Leadership Effectiveness by allowing leaders to draw on a broad array of behaviours as the situation dictates. However, we can also see that people in different areas of responsibility or with different challenges may need to emphasize certain sets of behaviours. For example, the results show junior leaders have a greater emphasis on behaviours of Control and Compete than established leaders who demonstrate behaviours of Collaborate and Create in the pursuit of Leadership Effectiveness. This could also be a function of the leadership roles they have, given that junior leaders have more simple tasks to lead than experienced leaders, which is a topic that warrants future research.

The results also show that that people with an emphasis on Create quadrant had higher scores for Ability to Lead Change. This would suggest that future research should consider to what extent such deliberate imbalances are effective perhaps by capturing these behavioural shifts over time. Meaningful questions might include: What individual qualities, contextual characteristics, or circumstances facilitate the development of behavioural repertoire? How does behavioural repertoire vary at different life stages or different organisational levels? How do leaders balance roles?

It is recognised that Behavioural Complexity research may be confounded by the effects of work demands, such that leaders may perceive a bias towards certain behaviours at a given point in time, even when that leader's repertoire over the span of a career has been broadly developed. Future research could recognise this by adding evaluative measures that would capture the Behavioural Differentiation components of Behavioural Complexity, enabling assessment of the fit between behaviour and situation. Behavioural Differentiation could be captured by calculating difference scores with a parallel set of measures worded to evaluate the nature of the situation. For example, a second set of Competing Value items could begin with something like “The following behaviours are important for my current situation….” In this way, researchers could compare behaviours to the circumstances.

The thesis has considered six outcomes of Leadership Effectiveness – Overall Performance, Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgement. However, these three outcomes are not the sum total of what constitutes

leadership effectiveness. Future research could examine how different performance outcomes are associated with each quadrant of the Competing Values Framework. Also, since this research was based primarily on self-rated measures of leadership effectiveness as a future direction it would be interesting to observe if the same assumptions held true with external performance data.

Finally, given the quantitative focus of the research, qualitative work might be conducted to explore the barriers and facilitators to Behavioural and Organisational Complexity, in an effort to provide organisations with more practical guidance of how to utilise such phenomenon. After administering the Competing Values measure of Behavioural Complexity, individuals at both the top and bottom end of the continuum could be approached for in-depth interview and observational studies to explore the richer underlying reasons behind their scores. In terms of the Organisational Complexity scale, once a larger sample of norm data is accumulated leaders in organisations at each end of the continuum could also be interviewed to gain an insight into the aspects of the organisation that contribute to a presence or lack of complexity. Overall, qualitative research into Behavioural and Organisational complexity could offer fruitful avenues for developing our understanding of how, when and why individuals and organisations exhibit low/high levels of Complexity.

9.7 CONCLUSION

The thesis has presented evidence suggesting organisations who invest time and efforts to increase their awareness of Behavioural Complexity will ultimately reap the benefits. Behavioural Complexity is the capacity of an individual to enable Leadership Effectiveness through the appropriate application or differentiation of a versatile behavioural repertoire. Behavioural Complexity is operationalised using the Competing Values Framework. The Competing Values Framework encompasses four behaviours – Control, Compete, Collaborate and Create, argued to be contingent to all types of organisational leadership by allowing leaders to successfully rise to the demands of the situation.

The aims of the thesis were threefold:

Aim 1: To establish the extent to which Behavioural Complexity is an enabler of Leadership Effectiveness

Study One aimed to establish the extent to which Behavioural Complexity is an enabler of leadership effectiveness and in doing so identified the importance of behavioural repertoire, or breadth of leadership behaviour. Whilst not all leadership behaviours contribute to all types of leadership effectiveness, it is still important that leaders possess a wide repertoire of leadership behaviours, as such behaviours act as contingencies to the countless situations leaders encounter. The thesis has demonstrated that not all of the behaviours captures by the Competing Values Framework are favourable to all types of leadership effectiveness. For example, all four quadrants of the Competing Values Framework predict the Leadership Effectiveness outcome Relative Performance; however, there are some quadrants more favourable than others at enabling some of the other outcomes of Leadership Effectiveness. For instance, the Competing Values Collaborate and Create contribute to the Leadership Effectiveness outcome Absolute Performance but not Control and Compete. Likewise, the Competing Values: Collaborate and Create, contribute to the leadership effectiveness outcome Influence but as with Absolute Performance, Control and Compete has no effect on this outcome of leadership effectiveness.

The results of Study One also indicated that there are some quadrants, for example Collaborate, that more favourable than others at enabling the five outcomes of Leadership Effectiveness (that were explored in this study): Relative Performance, Absolute Performance, Ability to Lead Change, Influence and Judgment. Likewise, there are some

outcomes of Leadership Effectiveness, specifically: Relative Performance, Absolute Performance and Ability to Lead Change that are enhanced by combined proficiency in more than one quadrant. In such instances the Competing Value Create most frequently acts as a moderator to boost the relationship between the Competing Values and leadership effectiveness.

Study Three explored Behavioural Complexity as a predictor of leadership effectiveness amongst a sample of junior leaders, in contrast to Study One who were mainly experienced leaders. Note, that in Study Three, in keeping with Lawrence, Lenk and Quinn's (2009) original research, that Overall Performance was not divided into two dimensions representing Absolute Performance and Relative Performance as is the case for Study One and Two. The results of Study Three suggest improvements in the Competing Values Control and Compete enable improvements in Overall Performance. However, Collaborate and Create did not predict this outcome of Leadership Effectiveness amongst the junior leaders. Likewise, improvements in the Competing Values Control, Compete and Create enabled improvements in Ability to Lead Change. However, increases in Collaborate did not improve this outcome of Leadership Effectiveness. These finding suggest that people in different areas of responsibility and difference stages in their career may need to emphasize certain sets of behaviours. For example, the results show junior leader on average have a greater emphasis on behaviours of Control and Compete than established leaders who demonstrate more frequently behaviours of Collaborate and Create in the pursuit of leadership effectiveness.

Imbalances across the Competing Values are evident and important. There are Leadership Effectiveness outcomes where not all of the Competing Values are useful but this does not mean that these behaviours should be removed completely from the leader's Behavioural Repertoire. Instead such behaviours should be temporally de-activated until they are needed and then re-activated in the pursuit or more suited leadership effectiveness outcomes. Such a notion taps into the idea of Behavioural Differentiation - the capacity to apply appropriate behaviour as the situation dictates. Behavioural Differentiation is explored in the subsequent research aim in terms Organisational Complexity and the extent to which this contextual factor moderates Behavioural Complexity and Leadership Effectiveness.

Aim Two: To establish the extent to which Organisational Complexity moderators Behavioural Complexity and Leadership Effectiveness.

The thesis has demonstrated that Behavioural Complexity is moderated by Organisational Complexity. Using the Organisational Complexity scale developed in the thesis, this research

provides a new definition for measuring Organisational Complexity, arguing Organisational Complexity is defined by four key properties: Structural Complexity, Organisational Size, Environmental Uncertainty and Innovation. Each property is proposed to moderate the relationship between Behavioural Complexity and leadership effectiveness, as the results indicate:

1. Innovation was demonstrated to moderate the relationship between the Competing Value Create and the leadership effectiveness outcome Relative Performance.
2. Structural Complexity was seen to moderate the relationship between the Competing Value Collaborate and the leadership effectiveness outcome Absolute Performance.
3. Environmental Uncertainty moderates the relationship between the Competing Value Collaborate and the leadership effectiveness outcome Absolute Performance.

Study Two complements Study One in relation to the findings, specifically, Create enables Relative Performance which the strongest magnitude of the Competing Values on this outcome of Leadership Effectiveness. Likewise, Collaborate enables Absolute Performance with a stronger influence than the other Competing Values. Study Two suggests that different contextual factors influence Behavioural Complexity and ultimately Leadership Effectiveness. Meaning the effects of Organisational Complexity should not be ignored when studying leadership from the perspective of Complexity Theory. Leadership Effectiveness in contexts of Organisational Complexity relies on behavioural differentiation. Organisational Complexity could be considered a challenge for many leaders, hence applying the right behaviour to the right context is a fundamental survival strategy. To be able to apply to the right behaviour to the right context relies on the leader being behaviourally complex. As previously mentioned Behavioural Complexity is a combination of behavioural repertoire and behavioural differentiation. Given the benefits associated with Behavioural Complexity, research aim three explored the extent to which Behavioural Complexity and Leadership Effectiveness could be developed alongside leadership training.

Aim Three: To establish the extent to which leadership training supports Behavioural Complexity in contributing to leadership effectiveness

In view of associations linking Behavioural Complexity and Leadership Effectiveness the thesis presents evidence that suggests each of the four Competing Values: Control, Compete, Collaborate and Create, and associated outcomes of Leadership Effectiveness: Overall

Performance and Ability to Lead Change, could be developed with the support of leadership training. Building upon this:

1. Increases in the Competing Values Control and Compete were demonstrated to predict improvements in Overall Performance. In addition, leadership training was seen to directly improve this outcome of Leadership Effectiveness too. Mediation analysis indicated both Control and Compete significantly mediated the relationship between training and improvements in Overall Performance.
2. Improvements in the Competing Values Control, Compete and Create where demonstrated to predict improvements in Ability to Lead Change. Leadership training was also seen to directly improve this outcome of Leadership Effectiveness. Mediation analysis indicated improvements in Control, Compete and Create significantly mediated the relationship between training and improvements in Ability to Lead Change.

Such findings provide some evidence for organisations to invest in leadership training because of the direct link between training and Leadership Effectiveness that can benefit the individual and ultimately their organisation.

To conclude, most definitions of leadership come down to changing people's behaviour. Such definitions have contributed to a popularity of focus in leadership research intent on exploring how to elicit change in others when maybe some of the popularity of attention should have been on eliciting change in the leader themself. It is hoped that this research will provoke interest into the factors that cause behavioural change in leaders that in turn enable leadership effectiveness and in doing so contribute to a better understanding of leadership in organisations.

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Appendices

APPENDIX A

Aston Business School
Birmingham

Leadership Complexity Survey

Dear Participant

What is this survey and why are we asking you to complete it?

This is an independent survey of your experience of working in your organisation.

The overall aim is to assess the extent to which the leadership behavioural repertoire of an individual;

- Is applicable to different organisational contexts.
- Determines the people with whom one interacts in their organisation
- Determines organisational effectiveness

Please complete the survey for your current job, or the job you do most of the time. Please read each question carefully, but give your immediate response by ticking the box which best matches your personal view.

There is no right or wrong answer, so please attempt to answer all of the questions

Who will see my answers?

The survey is being conducted by Imelda McCarthy, on behalf of Aston University as part of her doctoral research.

Your answers will be treated in confidence. No one outside the research team - and certainly no one in your organisation - will be able to identify individual responses.

- The survey findings will be analysed by Imelda McCarthy at Aston University and the results will be presented in a summary report (which may lead to publications and conference presentations) but in which no individual answers or identity will be identifiable
- A summary report will be generated for xxxxxxxxx as an outcome of this study, aimed at evaluating the effectiveness of the Leadership Development Training Programme.
- Participation is purely voluntary, Participants are free to withdraw at anytime and will not suffer any negative consequences as a result of your non – participation or withdrawal

Please return this questionnaire within two weeks of receipt , in the envelope provided, to:

Imelda McCarthy
Work and Organisational Psychology Group
Aston Business School
Aston University
Aston Triangle
Birmingham
B47 7ET

For office use only

If you have any queries about this survey please contact Imelda McCarthy at Aston University on 0121 204 3375 or by email mccarthi@aston.ac.uk

Aston Business School
Birmingham

Consent Form

I here by agree to participate in the study conducted by Miss Imelda McCarthy, as part of her doctoral research at Aston University

I confirm that I have been informed and read the safeguards of participation (outlined below), in which all efforts will be made to assure:

- That participation is voluntary
- Confidentiality of results, with regard to the data collected and towards those who produce it.
- To ensure this the names of those participating will not be traceable to the data they provide and also their identity will not be revealed in the report write up.
- Privacy will also be ensured with participant data being accessible to no other persons other than Miss Imelda McCarthy and her project supervisors at Aston University
- Participants are informed of their right to access their own data at any time, as well as the option to withdraw from the study if they wish.
- Data will be stored in a secure location; it will not be used for any other purpose other than the study for which it was intended and it will be disposed of four years after the project completion date.

Signature _____

Date _____

Participant ID Number _____

I do/not request a summary copy of the findings generated from this study

If yes please provide an email _____

address _____

Aston Business School
Birmingham

Leadership Complexity Survey

We would like to know more about you so that we can compare the experiences of different types of manager.

About you				
Gender:	☐ Male	☐ Female		
Age:	☐ Under 30	☐ 30-40	☐ 41-50	☐ 51-65

Level in the management hierarchy:

☐ Executive Manager ☐ Senior Manager ☐ Middle Manager ☐ Junior Manager

Department	
Reporting Structures:	
Approximately how many people report to you?	
Approximately how many people do you report to?	
Management background	
What is your functional background (Clinical/Clerical)?	
Highest Educational Qualification?	
Have you ever received Leadership/management training? (if yes, please provide brief details)	

How many years have you worked in a management capacity?

☐ Less than 1 year	☐ 1-2 years	☐ 3-5 years
☐ 6-10 years	☐ 11-15 years	☐ More than 15 years

How many years have you worked in your current management capacity?

☐ Less than 1 year	☐ 1-2 years	☐ 3-5 years
☐ 6-10 years	☐ 11-15 years	☐ 16 -20 years
☐ 21-25 years	☐ 26-30 years	☐ More than 30 years

Listed below are some statements that describe potential leadership skills. You should indicate how applicable these behaviours are to your role as manager in the organisation by ticking one of the five options that relate to each question. Please note that there is no right or wrong answer, so please attempt to answer all of the questions

I would describe myself as being skilled in the following …	Strongly disagree	Disagree	Neither agree/disagree	Agree	Strongly agree
Making it legitimate to contribute opinions.	☐	☐	☐	☐	☐
Encouraging career development.	☐	☐	☐	☐	☐
Being aware of when people are burning out.	☐	☐	☐	☐	☐
Meeting with service users to discuss their needs.	☐	☐	☐	☐	☐
Initiating bold projects.	☐	☐	☐	☐	☐
Inspiring direct reports to be creative.	☐	☐	☐	☐	☐
Seeing that corporate procedures are understood.	☐	☐	☐	☐	☐
Emphasizing the need for accuracy in work efforts.	☐	☐	☐	☐	☐
Providing tight project management.	☐	☐	☐	☐	☐
Emphasizing the need to compete	☐	☐	☐	☐	☐
Showing an appetite for hard work.	☐	☐	☐	☐	☐
Getting work done quicker in the unit.	☐	☐	☐	☐	☐
Employing participative decision making.	☐	☐	☐	☐	☐
Seeing that everyone has a development plan.	☐	☐	☐	☐	☐
Encouraging people to have work/life balance.	☐	☐	☐	☐	☐
Identifying the changing needs of the service user.	☐	☐	☐	☐	☐
Starting ambitious programs.	☐	☐	☐	☐	☐
Encouraging direct reports to try new things.	☐	☐	☐	☐	☐
Insuring that company policies are known.	☐	☐	☐	☐	☐
Expecting people to get the details of their work right.	☐	☐	☐	☐	☐
Keeping projects under control.	☐	☐	☐	☐	☐
Developing a competitive focus.	☐	☐	☐	☐	☐
Modelling an intense work effort.	☐	☐	☐	☐	☐
Producing faster unit outcomes.	☐	☐	☐	☐	☐
Maintaining an open climate for discussion.	☐	☐	☐	☐	☐
Coaching people on career issues.	☐	☐	☐	☐	☐
Recognizing feelings.	☐	☐	☐	☐	☐
Anticipating what the service user will want next.	☐	☐	☐	☐	☐
Launching important new efforts.	☐	☐	☐	☐	☐
Getting unit members to exceed traditional performance patterns.	☐	☐	☐	☐	☐
Making sure formal guidelines are clear to people.	☐	☐	☐	☐	☐

Emphasizing accuracy in work efforts.	☐	☐	☐	☐	☐
Closely managing projects.	☐	☐	☐	☐	☐
Insisting on beating outside competitors.	☐	☐	☐	☐	☐
Demonstrating full exertion on the job.	☐	☐	☐	☐	☐
Providing fast responses to emerging issues.	☐	☐	☐	☐	☐

Listed below are some statements that describe measures effectiveness. Please rate your own job performance by ticking one of the five options on the scale that relate to each question.
Please note that there is no right or wrong answer, so please attempt to answer all of the questions

Meeting of performance standards	Below most standards	☐	☐	☐	☐	☐ Above most standards
Comparison to your professional peers	Worse than peers	☐	☐	☐	☐	☐ Better than peers
Performance as a role model	Poor role model	☐	☐	☐	☐	☐ Excellent Role model
Overall professional success	A professional failure	☐	☐	☐	☐	☐ A professional success
Overall effectiveness as a leader	Ineffective leader	☐	☐	☐	☐	☐ Effective leader
Conceiving change efforts	Pursues small, incremental changes	☐	☐	☐	☐	☐ Pursues large, quantum changes
Leading change	Pursues the status quo	☐	☐	☐	☐	☐ Leads in bold, new directions
Having impact	Has little impact	☐	☐	☐	☐	☐ Is responsible for profound changes

Listed below are some statements that relate to the degree of influence you have in the organisation. You should indicate how applicable these statements are to your role by ticking one of the five options that relate to each question

	Strongly disagree	**Disagree**	**Sometimes agree/sometimes disagree**	**Agree**	**Strongly agree**
Effectively represents the teams interests to upper management	☐	☐	☐	☐	☐
Involves the right people in decisions	☐	☐	☐	☐	☐
Has a good network of contacts	☐	☐	☐	☐	☐
Has an astute sense of organisational politics	☐	☐	☐	☐	☐
Recognizes some battles are not worth fighting	☐	☐	☐	☐	☐
Good at judging the reactions of others	☐	☐	☐	☐	☐
Effective at influencing upper management	☐	☐	☐	☐	☐
Good at selling an idea	☐	☐	☐	☐	☐
Negotiates persuasively	☐	☐	☐	☐	☐

Listed below are some statements that describe organisational Complexity. You should indicate how applicable these elements are to your organisation by ticking one of the five options on the scale that relate to each question. Please note that there is no right or wrong answer, so please attempt to answer all of the questions

1. Structural Complexity		
a.	The total number of units below the Chief Executive level in the organisation is…	Low 1☐ 2☐ 3☐ 4☐ 5☐ High
b.	The total number of occupational specialities in the organisation is…	Low 1☐ 2☐ 3☐ 4☐ 5☐ High
2. Organisational Size		
a.	The physical capacity of the organisation is…	Low 1☐ 2☐ 3☐ 4☐ 5☐ High
b.	The average work input of the organisation is…	Low 1☐ 2☐ 3☐ 4☐ 5☐ High
c.	The average work output of the organisation is…	Low 1☐ 2☐ 3☐ 4☐ 5☐ High
3. Environmental Uncertainty		
a.	The degree of turbulence in the organisation is…	Low 1☐ 2☐ 3☐ 4☐ 5☐ High
b.	The degree of competition in the organisation is…	Low 1☐ 2☐ 3☐ 4☐ 5☐ High
c.	The degree of variability in the organisation is…	Low 1☐ 2☐ 3☐ 4☐ 5☐ High
4. Innovation		
a.	The degree of initiated innovations in the organisation is… (note: initiated refers to innovations that are proposed but not implement) .	Low 1☐ 2☐ 3☐ 4☐ 5☐ High
b.	The degree of implemented innovations in the organisation is…	Low 1☐ 2☐ 3☐ 4☐ 5☐ High