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The relationship between personality and the capacity to think strategically

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Abstract

Effective leaders who can solve complex, strategic business problems are the key differentiator in the new world of work. As external environmental changes converge with internal organisational shifts, the need for a strong bench of leaders becomes critical in driving profitable growth. This study explores the relationship between personality and the ability to manage the complexity of the emerging environment.

Based on the CPI and CPA assessments of 256 managers and executives, correlations and multiple regressions were performed to identify the new strategic leadership profile. Anchored in Complexity Leadership Theory (CLT), this research builds on the leadership functions of CLT to provide new insight into the role of individual characteristics in the ability to think strategically.

The consolidated findings identified Dominance, Flexibility, Achievement via Independence, Psychological Mindedness and Self-Acceptance as key constructs in the ability to think strategically. These outcomes sharpen the new leadership profile and enable the development of tools that can directly improve the organisation's ability to identify, attract, select and develop leaders who are proficient in the emergent, complex context.

Further research can enhance the robustness of this leadership profile through supplementary exploration of the remaining constructs that determine the ability to think strategically.

Keywords

Strategic thinking; personality; complex adaptive systems; complexity leadership theory; strategic leadership

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

11 November 2013

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Date **Vanessa Crawford**

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"You may not be an angel, 'Cause angels are so few
But until the day that one comes along, I'll string along with you"

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CHAPTER 1: RESEARCH PROBLEM

1.1. Introduction

Talent is an increasingly critical discriminator of corporate performance. Organisations with the most effective talent bench enjoy almost double the rate of revenue and profit growth as their competitors (Corporate Executive Board (CEB), 2013). In a global labour market survey undertaken in 2013, the CEB reported that over 43% of companies failed to meet their financial targets as a direct result of ineffective leadership. For this reason, talent, and specifically succession management, are key concerns for Chief Executive Officers and Boards.

Heifetz, Grashow and Linsky (2009) claimed that leadership was in a permanent state of crisis, where the competencies that defined success in the past were failing to realise the same benefits as before. Leadership has shifted from its role of creating and maintaining certainty, to one of "leading through uncertainty" (Gwyer, 2010). This study will endeavour to obtain a deeper understanding of the ability to lead in the evolving landscape requiring complex thinking.

The quality of the executive talent pool is critical in maintaining organisational relevance in today's dynamic business environment. In addition to the dynamism of the competitive landscape, pressures to achieve excellence in the triple bottom line, the velocity with which the media scrutinise business decisions, and the immediacy of the burgeoning social media with its reputational consequences – all converge into a complex new world of work for executives. Given these increasing cognitive demands, the number of leaders comfortable and competent in this new setting is rapidly declining, just as the demand is increasing. The "war for talent" introduced by McKinsey in the late 1990's, has not relented as organisations compete fiercely to identify and attract individuals who generate value that enables the achievement of organisational objectives. Whilst the unemployment numbers may be rising worldwide, individuals who have the capacity to rapidly assume more complex roles remain in critical short supply, resulting in an aggressive barrier to growth (CEB, 2013).

1.2. 21st Century Context

The macro environmental impact on both organisations and individuals has never been more prolific and apparent as they are in the 21st century. The economic recession, technological evolutions, globalisation of industry, disintegration of industry, political instability and natural disasters are phenomena that direct attention to the complexity and ambiguity that define the current environment. The economic paradigm has shifted into the fast lane, where individuals and organisations must find more competitive differentiators faster, in order compete in the new complex environment. Effectiveness in this evolving business landscape requires highly competent leadership continuously driving high quality strategic decisions that enable adaptation to the changing environment.

The 'Black Swan' effect has grown in popularity since Taleb (2010) vividly illustrated the philosophy through the 2008 global financial collapse. He stated that the black swan effect had three core properties: it was a random event with a disproportionately large impact; when extrapolating from past data, it had a small probability of occurring; and it was completely unanticipated (Taleb, 2010). This theory served to describe improbable events in hindsight, ranging from the terrorist attacks on the world trade centre, to the more recent financial crisis. However, with the degree to which countries, governments, and companies encounter uncertainty in the 21st century, it is no longer relevant to refer to these events as outliers only. The global economic shifts have made these outliers less 'extreme' and more prevalent. The new framework in which we now live is fraught with change and uncertainty, both positive and negative, and successful and enduring leaders are embracing this new complex reality for differentiation and survival.

South Africa is not immune to these challenges as globalisation takes hold and South Africa's political and socio-economic landscape continues to grow in complexity. The proliferation of labour strikes is arguably causing irreparable financial damage to the economy (News 24, 2013), whilst the gini coefficient continues to expand (World Bank, 2013), broadening the chasm between the rich and the poor. Cumbersome bureaucracy and the reality post Marikana, is clearly indicating that a new level of problem solving and decision making is required to return the South African economy to growth.

In a speech delivered to the Bank of Uganda, Trevor Manuel called for new leadership in Africa to unlock its growth potential (Nyanzi, 2013). Manuel claimed that growth

would be realised through the development of effective links between decision making and implementation and delivery (Nyanzi, 2013). The current turbulent landscape, combined with the continents historical inefficiencies, provide a complex canvas on which to build a thriving region. South African organisations are already honing their focus on new strategies as they adjust to the new economic environment. These strategies will be realised through the new business leader, who will manage the complexities and ambiguities in the environment, and drive successful transformation of business.

1.3. 21st Century Leadership

History is peppered with examples of outstanding leadership, yet none more inspiring or relevant than Nelson Mandela. Considered a true strategist, Mandela successfully navigated South Africa through a time of uncertainty, conflict, confusion and change. Many events following Mandela's release from prison were unanticipated, they had a disproportionately large impact, and the country's harmonious union was considered a very small probability at the time. This positive manifestation of the black swan effect has exalted Mandela to global iconic status. As a result, there have been several publications documenting Mandela's unique leadership style. They refer to his courage, sacrifice, wisdom and nobility amidst 'complex societal forces' (Schoemaker, 2013), but most importantly, they emphasise his persistent focus on the future. He dismissed the past as it held no usable framework for the future. This ability to create a new vision for seemingly insurmountable problems, within an ambiguous and discordant context, displays a proficient ability to make strategic decisions and manage complexity.

It is not only iconic leaders who require this ability. In a national survey of business leaders in the USA, 93% of survey participants said that the ability to solve complex problems was the most important consideration in selecting graduates (Association of American Colleges and Universities, 2013). This ability to solve complex problems enables effectual strategic decision making. Therefore, as the business landscape grows increasingly more complex, the capacity to think with complexity becomes a minimum requirement for successful Leaders. This has a profound impact on an

organisation's talent management strategy, in their quest to acquire and develop a high potential executive talent pool who can meet these new demands.

Identifying these new leaders is problematic. If the past no longer holds the answers to the future, then the traditional processes of recruiting and selecting leaders may be questionable in the current environment. These traditional processes include competency based interview approaches, where an individual's past behaviour is intended to predict their future behaviour. Many organisations also utilise intelligence tests to evaluate the extent of cognitive power available to the individual in order to manage complicated organisational variables. More recently, personality assessments have permeated the recruitment landscape to enable an improved person-organisation culture fit. However, personality continues to be viewed as an additional construct worthy of evaluation in only the most progressive of companies. The role of personality is still seen as a 'new-age' methodology that has no place in the rational complexities of business. However, some insights into personality and the ability to competently make strategic decisions have been explored.

Kanter (2013) claimed that the "happiest people" were more likely to be able to solve the most difficult business problems. Kanter (2013) asserts that passion and purpose are at the core of successful leadership, and this drives happiness. In a qualitative study on the evolution of leadership of CEO's, Hofmeyr and van Melle Kamp (2013), extracted resilience, amongst many personality traits, as critical to being able to manage in the current environment of "relentless change and complexity". This lends some credence to the premise that personality has a role to play in complex problem solving, and in turn, strategic leadership.

Further evidence that a correlation between personality and complex thinking exists can be found in Hermann and Nadkarni's (2013) exploration into the influence of personality of the CEO. Through their sample of 120 small and medium sized enterprises, they found that personality attributes definitively shaped the manner in which CEO's interpreted and responded to the environment. The CEO's individual, unique analyses directly influenced their strategic choices, thereby offering a correlation between personality and strategic choices within a change environment (Herrmann and Nadkarni, 2013). However, this relationship is not widely leveraged, as evidenced by the number of CEO's who fail. According to Williams (2009), between 30% and 75% of Fortune 500 top executives fail to accomplish the objectives required of their role. By understanding the relationship between personality and the ability to

think strategically, organisations would be able to improve their leadership profile, by identifying particular personality traits that lend themselves to successful leadership.

1.4. 21st Century Talent Management Challenge

As external environmental changes converge with internal strategic shifts, the need for a strong bench of leaders becomes critical to avoid organisational extinction and drive profitable growth. A new level of leadership is required to manage the increasing complexity, as the framework of extrapolating from the past is no longer viable or compatible with today. Many progressive organisations have embraced these changes and endeavour to identify and select talent with the ability to not only thrive in the current environment, but have the potential to manage increasingly more complex situations throughout their careers. This talent is known as 'high potential'. According to the Stanford Graduate School of Business (2012), more organisations are hiring for potential than experience, as they seek to position themselves for the adaptations their organisations will require in the future. They claim that high potential individuals are in excessive demand, and given the small talent pool, the competition is fierce.

In addition, with the changing requirements of leadership competencies, it becomes evident that individual personality characteristics play an increasingly important role in navigating the complex organisational landscape. Hogan and Judge (2012) investigated the very nature of leadership to determine if leadership was a function of circumstance or a function of personal characteristics. They revealed that leadership was in fact inextricably linked to personality, and that leadership attributes could be considered personality attributes (Hogan and Judge, 2012). These talent management factors all unite as an acute challenge for business sustainability, and bring to the fore the importance of identifying a new profile of business leader: a leader who can personally manage the growing complexities through effective strategic decision making.

This research is intended to provide practical solutions to the talent management practices of Human Resource departments, by exploring the relationship between personality and the ability of leaders to think strategically. Firstly, this study will explore if an individual's capacity to manage complexity is aligned with the degree of complexity in their role. An exploration will then be undertaken to understand if there is a relationship between personality factors and the ability to manage complexity, and

finally, it will be determined if personality traits predict the ability to manage complexity. Understanding these factors of managing complexity will enable companies to better articulate the required leadership profile to:

- identify a talent pipeline that can be groomed for future leadership positions
- enhance strategic thinking profiles at the middle management level to deepen ability to manage change in the new organisational context
- to secure succession in provision of a level of talent stability into the future to bolster shareholder comfort

1.5. Chapter Summary

The war for talent continues to rage as the correlation between business performance and leadership becomes more evident. The 21st century context is filled with ambiguity, uncertainty, and complexity that persist in its intensity. These changes have a profound impact on organisations that require a new management philosophy to grow in these times. Leaders with the ability to navigate this complexity through competent and reliable strategic decisions are highly sought after. The past no longer offers a suitable framework with which to manage, and proficiency in managing the multiple, interdependent challenges and opportunities are needed. Learning through the hindsight of the black swan philosophy will not enable change fast enough to win in the current marketplace. At the same time, the power of personality and individual characteristics is emphasised as a critical requirement of successful leadership. This exploratory study will endeavour to understand if there is a distinct relationship between personality and the ability to manage complexity, in order to determine an appropriate leadership profile for the new organisational context.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This chapter will augment the understanding of 'complexity', as the fundamental construct to be researched. However, the multidimensional and interdependent notion of complexity does not align itself to a linear discussion. As such, this examination utilises *Leadership* as the framework through which to understand the issues inherent in the topic. An initial understanding of the construct of complexity will provide the leadership context in which organisations find themselves. This transitions into a debate of 'what leaders actually do', through a review of work content according to the stratified systems model. The discussion then turns to 'how leaders do what they do', through an analysis of complexity leadership theory. And finally 'what enables leaders to do what they do', is evaluated through scrutinising the underlying constructs of the individual. It is anticipated that this comprehensive review will create a satisfactory foundation with which to explore the relationship between personality and the ability to think strategically.

2.2. The Leadership Context

2.2.1. Defining Complexity

The reductionist approach to organisational functioning has made way for new interpretations, that better serve our purposes in making sense of the complex and dynamic environment in which we now live and work. Complexity science developed from a foundation in physics, where relationships were investigated that gave rise to collective system behaviours. This has lent itself to a new view of the organisation as multidimensional in nature, and focuses on the notions of interconnectedness and evolution (Schneider and Somers, 2006). The basic unit of analysis in this science is Complex Adaptive Systems (CAS) (Marion, McKelvey & Uhl-Bien, 2007), and are understood to be open, nonlinear dynamical systems, that adapt and evolve within a

constant state of instability (Schneider and Somers, 2006). Furthermore, CAS interacts with the environment in an inter-dependent manner, where nonlinear feedback results in adaption and emergent behaviours (Schneider and Somers, 2006).

The concepts of adaption and emergent behaviours are critical to our understanding of leadership. Not all interactions result in positive emergent behaviours, as leaders who fail to internalise complexity frequently fail to manifest adaption behaviours, resulting in poor decision making. The 2008 financial collapse is a clear illustration of poor decision making where several interconnected events, that individually appeared benign, or even positive and lucrative, resulted in an economic catastrophe. Sargut and McGrath (2011) unpacked these distinct events as: the relaxation of banking regulations; flexible monetary policies; and the development of instruments that shifted risk off the balance sheet. Individually, these events were complicated yet non-threatening, but together they were complex and catastrophic.

To further illuminate the construct of complexity, it is useful to define the construct of '*complicated'.* Whereas complication can also refer to problem solving of multiple components, this construct is primarily linear and stable in nature.

In quantifying cognitive complexity, Arend, Colom, Botella, Contreras, Rubio and Santacreu (2003) discovered a clear distinction between complexity and difficulty. For a problem solving task to be complex rather than merely difficult, they argued that the components must involve a qualitative change, that utilises both memory span and reasoning (Arend et. al., 2003), as opposed to merely linear reasoning. Perhaps an enhanced understanding can be found through Cilliers' (1998) study on complication. Cilliers (1998) suggested that complication refers to the description of a system through its individual elements, regardless of the volume of elements. In contrast, where these individual elements advance to interact with each other and the environment, the system is described as complex (Cilliers, 1998). An even simpler understanding may be found in the work of Sargut and McGrath (2011), who described a complicated system as one with several moving parts that operate in 'patterned ways'. This is unlike a complex system, that is infused with patterns that interact with each other to continuously change their patterns (Sargut and McGrath, 2011).

Critical to the notion of complexity is that of changing patterns. These changes happen over time, and so time is important when defining complexity. For the purpose of this study, therefore, complexity is defined as a system in which multiple independent agents interact with each other and change in numerous ways through time (Stamp, 1993).

A corollary to CAS is chaos theory that has been leveraged by the social science fraternity to express the manner in which humans, as complex adaptive systems, change and mature (Bussolari and Goodell, 2009). The addition of chaos theory enables the debate to take focused cognisance of the individual as integral to CAS. In Pryor and Bright's (2007) extrapolation of chaos theory to careers, they emphasised the self-organising and unpredictable nature of systems and its impact on the individual. They noted that a system was more than a sum of its parts, but rather a much more complex interaction where one small change can result in an amplified outcome. This has become known as the Butterfly Effect, and is easily illustrated through the eruption of Iceland's Eyjafjallajokull volcano in 2010. This single event caused a dust cloud, whose composition had never been previously encountered, resulting in the first shut down of the European air traffic control system (Sargut and McGrath, 2011). CAS and chaos theory provide a deeper rationale for the Black Swan Effect and offers a meaningful framework for comprehending the complexity of our actions.

2.2.2. Defining Decision Making

Perhaps the most relevant analogy of understanding complexity in the workplace is through the decision making process of leaders, or more specifically, the strategic decision making process. Decision making is primarily the purview of management, and is defined as the on-going process of evaluating alternatives and their respective outcomes (Harrison, 1996). In contrast to this complicated process, strategic decision making is complex. It involves understanding the organisation's relationship to the environment; utilising the organisation in its entirety as the unit of analysis; encompassing all functions yet constrained by costs and operational activities; and is long term in relation to its consequences (Harrison, 1996). It is clear how this definition aligns to the conceptualisation of complexity, where roles and responsibilities of leaders include strategic decision making to navigate the company through the changing competitive context over the longer term.

The fact that a decision is 'strategic' in nature, and acknowledges the broad interconnectedness of the landscape, does not predispose these decisions to being effective or successful. Such decisions can be unsuccessful as frequently as they are successful. The very nature of complexity with regard to its emergent and adaption properties means that accurate predictions are extremely problematic. This has a huge

influence on the reliability of strategic decision making in the organisation, and so understanding the underlying constructs that enable strategic decision making becomes more critical. The concept of strategic decision making is used throughout this literature review to illuminate the construct of complexity through leaders in the workplace. The ability to think with complexity, and the ability to think strategically, are used interchangeably throughout this document.

2.2.3. Organisational Complexity

The difference between complication and complexity within the organisational context has also been well researched. Ramirez and Vasconcelos (2011) differentiated between these constructs by defining complication as an algorithm, where rules were predetermined and simple reasoning satisfied these problems. On the other hand, they claimed complexity was a function of the degree to which no specific rules existed, an organisational state in which company values and ethics filter decisions. In hierarchical and bureaucratic companies, complexity is concentrated at the top of the organisation. As one filters down these organisations, one identifies less complexity but more complication (Ramirez and Vasconcelos, 2011). In the more flexible organisational structures, this top down approach has been altered to incorporate configurations that manage both complication and complexity. As such, Ramirez and Vasconcelos (2011) identified three types of decision making: efficient, routine and complicated decisions; complex, value-based decisions requiring wisdom; and interdependent complicated and complex decisions. They claimed that in order for an organisation to function well in today's environment, all three decision types were required.

Similarly, Pina e Cunha and Rego (2010) coined the term simplexity. To take cognisance of the current, dynamic landscape, they posited that clearly defined rules of simplicity must co-exist with the interdependent and unknown factors of complexity. This duality is the reality of organisational functioning.

It is evident that the landscape in which leaders function is a multifaceted one. Whilst complication and complexity are not necessarily the same paradigm, both are required in making decisions appropriate to organisational growth and profitability. The intent of this research is to understand the construct that underlies the ability to think with complexity, where complexity is a multifaceted system of compounded interactions through time.

2.3. Levels of leadership

2.3.1. The Law of Requisite Complexity

When delving deeper into the notion of complexity, one begins to appreciate the emerging requirements of leadership behaviour in an organisation. Ashby's Law of Requisite Complexity (Marion et. al., 2007) suggests that only complexity can defeat complexity. This implies that a level of homeostasis is required between the organisation and the competitive environment. As the environment grows in complexity, it stands to reason that the organisation must then raise its level of complexity to that of the environment to reach equilibrium. As organisations are not merely bricks and mortar, but rather the talent that deliver the work therein, it is this talent that must manage the equilibrium of complexity between the organisation and the environment. When organisational challenges exceed the capabilities within the organisation, financial and human costs rise, and resources are wasted (Stamp, 1989).

2.3.2. Levels of Work

As organisations battle to adapt to the rapidly increasing complexity in the environment, organisational structures must evolve to enable the thinking and activities required at each level across the structure. This is illustrated through the shift in hierarchical, linear structures to a matrix organisational design, where functions and divisions are combined to drive integrated problem solving and delivery of work. In an effort to enable a flexible and competitive workforce, companies have experimented with organisational structures, pioneered new structures, and followed successful competitors in their design. However, one fact remains true for all these structural iterations, and that is that the higher one moves up into the organisation, the more complex the work becomes.

Independent of the organisation's structural design, Elliot Jaques' (1989) theory of Stratified Systems identified the optimum levels of work in an organisation. These levels require corresponding cognitive power of the individual worker in order to make effective decisions. He considered this cognitive power to include knowledge, skills, experience, temperament, character and values that were needed to match the work an individual was undertaking (Jaques, 1989). This thinking evolved into the Matrix of

Working Relationships Model that described the work or activities required at each level in the organisational structure, and the corresponding competence required to realise success in this work (Stamp, 1993). Stamp (1993) acknowledged seven levels of work within three matrices as indicated in table 1.

Table 1: Matrix of Working Relationships Model (Stamp, 1993)

Matrices	Level of Work	Type of work	Time Frames
Operational	1. Quality	Concrete tasks	1 day – 3 months
	2. Service	Reflective ability	3 months – 1 year
	3. Practice	Linear extrapolation	1 – 2 years
Organisational	4. Strategic Development	Alternative extrapolation	2 – 5 years
	5. Strategic Intent	Context shaping	5 – 10 years
Strategic	6. Corporate Citizenship	Global context	10 – 20 years
	7. Corporate Prescience	Constructing the future	20+ years

Roles and responsibilities within each level vary in accordance with the complexities required. Jobs in the operational matrix are highly executional in nature, and decision making is limited to the short term. At the *Quality* level of work, jobs constitute activities with a concrete output (Stamp, 1993). E.g. Machine operator. The *Service* level comprises jobs that frame and support the work from the quality level, and respond to immediate changes in context by interpreting and explaining activities (Stamp, 1993). E.g. Team leader. The final operational level is that of *Practice*. Jobs in this theme require bigger picture thinking, identification of trends, budget allocation and management and optimisation of processes to best practice (Stamp, 1993). E.g. Production manager.

At the lower levels, task execution and decision making is limited to the short-term, but at some point a transition needs to occur to shift into work of a strategic nature that navigates the organisation over the longer term. This transition occurs as work shifts from the operational matrix to the organisational matrix. Recently, Davies and Davies (2010) reflected on the nature of decision making within an organisation. They acknowledged that a shift was required to transition from decision making at an operational level to a strategic level. This shift required the integration of current activities with longer term thinking, and the intrinsic value system of the organisation.

The first of these strategic levels of work is *strategic development*. Stamp (1993) described jobs at this level as those managing the interactions between pure strategy, the external environment, current practices, and the innovations required to ensure alignment between these constructs. E.g. Functional Head and General Manager. In returning to our definition of complexity that involves a system in which multiple independent agents interact with each other and change through time (Stamp, 1993), it becomes evident that work in this level of strategic development requires complex thinking.

According to Stamp (1993), the level of *strategic intent* is concerned with the long-term sustainability of the organisation. It includes comprehension of the socio-economic environment and its impact on the organisation's competitive positioning. It also begins to incorporate the intangible dimension of reputation. This level is fraught with ambiguity as leaders make decisions with less predictable outcomes. An example of a role in this level is Managing Director.

Shifts into deeper levels of complexity are required of global organisations. The strategic matrix defines roles and work that are required at this level, and are usually undertaken by Regional Managing Directors and Vice Presidents of multinational corporations. The level of *corporate citizenship* involves work that leverages national, regional, and global knowledge from the political, social, economic, technological and cultural landscape (Stamp, 1993). Decision making is highly complex as unexpected sources of opportunity and instability are evaluated to drive organisational growth.

The final level of complexity is that of *Corporate Prescience*. Decision making at this level looks to 20 years and beyond, and is undertaken by Chief Executive Officers of multinational corporations (Stamp, 1993). The work at this level incorporates the development, transformation, and acquisition or divestment of global institutions. Stamp (1993) includes discretionary impact on societies as a whole, and claimed this work was visionary in nature.

2.3.3. Levels of Capability

In the law of requisite complexity, it was suggested that it takes complexity to defeat complexity. Similarly, in CAS it was purported that a state of equilibrium between the organisation and environment is required. Stamp (1989) penetrates deeper into the organisation by surmising that the same level of equilibrium is required between the

individual and their role within the company. It is widely recognised that the capability of the organisation depends on the corresponding capability of its talent. Stamp (1989) provides insight into the behavioural manifestations of individuals who are not appropriately matched with the level of work that is required of them, as well as the resultant organisational costs to this imbalance.

If the scale of the challenge meets that of the individual's capability, then the individual is considered to be 'in flow'. According to Stamp (1989), this is the ideal situation for an individual, and promotes well-being and performance effectiveness. It can be said that the role matches an individual's ability to think with complexity and they are fit for purpose. However, if the scale of the challenge exceeds that of the individual's capability, then the individual is considered to be 'out of flow' (Stamp, 1989). This can have significant costs for an organisation as the individual begins to manifest indecisive behaviours, hasty decision making, inappropriate decisions and even complete paralysis in decision making (Stamp, 1989). Conversely, if the scale of the challenge is below that of the individual's capability, typical behaviours manifested include vacillation, boredom and extreme fatigue (Stamp, 1989). It can be extrapolated that this underutilisation of capability, or indeed over-stretching of capability, may lead to labour turnover in the organisation as individuals attempt to find a suitable role-fit for themselves. In addition, the organisation fails to extract the value required from these roles.

According to McDonnell (2011), corporate and talent strategies are inextricably linked, and the current talent management challenge is to provide greater focus on employees and positions that have the greatest distinctive impact on business strategy. For the purpose of this study, the organisational and strategic matrices will be explored to understand if executives in these higher levels of complexity match the strategic requirements of the roles and responsibilities of the work.

2.4. Leadership Theory and Competence

2.4.1. Complexity Leadership Theory

In order for organisations to perform in the increasingly turbulent climate, they require leaders who are able to undertake the ambiguous work needed at each level. Notions of leadership have captivated academics and organisations for decades. The power to induce people into a chosen course is central to the success of any endeavour, and therefore lies at the heart of effective organisational functioning. It is expected that leaders in the higher levels of the organisational structure are able to solve problems and make decisions that are strategic in nature, to provide effective navigation through the evolving and complex landscape. Thinking about leadership has moved from the highly modernist theories that define leadership as a characteristic of the individual (Cardella, 2010), to the post-modern understanding of leadership as a function of an interaction between groups of people within a constantly changing environment (Marion et. al., 2007). These leadership theorists provide further insight into the requirements of a leader in the complex organisational landscape.

Complexity Leadership Theory (CLT) is a framework anchored in CAS that focuses on the nature of interactions and adaptations in organisational systems, and how they influence characteristics such as innovation and organisational fitness (Marion et. al., 2007). Within this paradigm, leaders are understood to enable interactions and are seen as catalysts for action. They disrupt existing patterns by creating conflict and acknowledging uncertainty (Plowman, Solansky, Beck, Baker and Kulkarni, 2007). A central tenet of CLT is that leadership development efforts should be focused on behaviours that enable organisational fitness in the broader environment, rather than those that merely determine or guide effectiveness. In so doing, CLT broadens conceptualisations of leadership from perspectives that are heavily invested in the individual alone, to include a focus on processes for engaging dynamic systems (Uhl-Bien and Marion, 2008).

The literature takes cognisance of traditional leadership theory that was founded on the hierarchical and linear notion of management. In reference to the earlier definition of complexity versus complication, this idea of management can be defined as complicated. CLT incorporates this classical idea, but broadens the thinking into the complex environment by combining internal dynamics and external constraints through

three leadership functions: administrative, enabling and adaptive leadership (Marion et. al., 2007). By so doing, Marion et. al. (2007) shifted the leadership construct from one where an individual influences others, to one where a leader is entrenched in a complex interaction of multiple interacting forces. Understanding the three leadership functions of CLT enables a deeper understanding of the theory, but also illuminates the alignment between Stamp's (1993) matrix of working relationships, and the corresponding leadership requirements.

Administrative leadership includes the planning and coordination of activities for individuals and teams. This form of leadership most closely reflects traditional leadership theory. It takes cognisance of the bureaucracy inherent in organisations, and drives a top-down process of leadership based on authority and position (Marion et. al., 2007). An additional objective of administrative leadership is to create the conditions in which adaptive leadership can occur. Marion et. al. (2007) further explain that administrative leadership can only be undertaken successfully, if it is balanced with the organisation's adaptive requirements. For example, driving manufacturing efficiencies through process standardisation and cost reductions would be detrimental in an environment calling for investments in rapid product innovation with multiple stock keeping units. This leadership function relates to work that takes place in the strategic development theme of Stamp's organisational matrix.

Adaptive leadership defines the flexibility and creativity that emerges from interactions of CAS that attempts to seek the equilibrium between the organisation and the environment. Rather than solving technical problems, adaptive leadership requires problem solving that utilises new learning, and new patterns of behaviour that are significant and impactful (Marion et. al., 2007). This is a particularly relevant leadership function in the current climate of ambiguity and constant change, and aligns to the alternative extrapolation included in the strategic development theme of Stamp's organisational matrix.

The notion of an individual being able to adapt to the environment is not a new one. Freud introduced this concept through his work on the unconscious as far back as the 1950's. He theorised that individuals were unconsciously wired to adapt to the environment through reducing tension or pain and embracing pleasure (Solms, 2006). Adaptive leadership is precisely concerned with this need to find harmony between the self and the environment. Although in keeping with Marion et. al.'s (2007) description, this harmony occurs on a networked scale. It emerges as a result of interdependent

individuals, who collectively give rise to innovative solutions, rather than a top-down individualistic approach.

An example of this behaviour can be found in brainstorming sessions. Groups of individuals collectively build on each other's ideas to drive collective thinking and formulate new solutions to emergent issues. The idea cannot be subscribed to a single individual, but rather the collective. This is an important aspect of adaptive leadership, and clearly illustrates how CLT is anchored within the larger organisational system.

The final leadership function is that of e*nabling leadership,* and refers to the deconstruction of adaptive and administrative actions, to provide a supportive environment for the delivery of goals (Marion et. al., 2007). Prerequisites for enabling leadership include the ability to drive collaboration and interdependency. When aligning with the levels of work methodology (Stamp, 1993), this function is critical in realising the interactions between strategy, the external environment, current practices and the innovations required to ensure alignment between these constructs. Once again, this refers to the theme of strategic development. In summary, all the assertions made by Marion et. al. (2007) in their research on CLT relate to Stamp's contention that this intensity of leadership is required of the General Manager level within an organisation. As such, it would be wise to place CLT in context, to ensure that leaders are fit for purpose and aligned to the work they are required to undertake.

Whilst these three leadership functions provide a coherent articulation of the level of leadership required to perform effectively in specific roles, it falls short of expounding on how best to measure these characteristics in a manner that allows organisations to purposefully identify and recruit leaders to embrace the fundamentals of CLT. Although the concept of CLT purposefully moves away from an individual-centric explanation of the leader, towards a more holistic and interactive definition of leadership (Marion et. al. 2007), it is argued that in order to deliver on the functional requirements of adaptive and enabling leadership, a minimum level of complex thinking is required of an individual leader. Therefore, further insight is required in terms of how an individual manages complexity to realise the CLT concepts.

2.4.2. Career Capital Competencies

In an effort to identify additional perspectives on individual characteristics that may contribute to the current landscape, the literature provided helpful insight into some of

the competencies required in the new world of work. DeFillippi and Arthur (1994) pioneered the concept of career capital. Defined as the value enhancement of continuous career growth and recognition within the external and internal labour market, this concept is viewed as career currency that can be traded in the labour market (DeFillippi and Arthur, 1994). Inkson and Arthur (2001) progressed the thinking of career capital, by arguing that it was the accumulated knowledge of 'why' (motivation), 'how' (skills), and 'whom' (relationships) that successful individuals developed to drive their careers into executive positions (Inkson and Arthur, 2001).

Lamb and Sutherland (2010) harnessed this currency in the de facto model of career capital. They critically differentiated between "must-have capitals", previously identified by Inkson and Arthur (2001), and "nice-to-have capitals", uncovered through their own research. They purported that developing and internalising the "nice-to-haves" were a specific differentiator for workers in the dynamic global market. These "nice-to-haves" included: knowing oneself, emotional quotient, opportunity identification, action orientation, internal locus of control and context management (Lamb and Sutherland, 2010). The shift from Inkson and Arthur in 2001, to Lamb and Sutherland in 2010 clearly manifests the increased complexity of the evolving organisational environment, and the competencies that contributed to success in this climate. This research study will complement the construct of career capital in its exploration of what underpins the capacity to think in this evolving and ambiguous environment.

Although there is a great deal of literature researching leadership development and the development of leadership competencies, there is some evidence to suggest that cognitive limitations exist within individual thinking.

2.4.3. Cognitive Limitations

Whilst CLT provides good insight into how strategic leaders do what they do, the literature uncovers an interesting dimension as to whether all individuals are capable of embracing these leadership functions, to perform appropriately in the roles to which they have been assigned. From Elliot Jacque's (1989) perspective, individuals required a level of cognitive power that matched their level of work. Davies and Davies (2010) referred to these leaders as 'change champions', who created conditions for change, managed conflict and lived comfortably in ambiguous environments with a future-oriented perspective. In keeping with Marion et. al. (2007), the organisation's level of complexity must match that of the environment if it is to be successful.

Jaques (1989) based his theory of stratified systems on the work of the well-respected developmental psychologist, Piaget. In keeping with this robust foundation, Jaques (1989) claimed that cognitive power was distributed discontinuously. He proposed that individuals developed along individual 'tracks' of advancement, and further acknowledged that not all individuals had the capability to develop into higher levels of thinking. Whilst continuous learning and development occurred, not all individuals would progress into the strategic matrices where complex thinking occurs. The progression or development potential of an individual's' thinking was referred to as their 'mode', and is a key construct in measuring an individual's level of complexity in this research methodology.

Jaques was not alone in his thinking of limitations in cognitive power as Acosta (2010) discovered in his study of promotion dynamics. Acosta (2010) proposed that the "Peter Principle" indicated that individuals were "promoted to their level of incompetence". This insinuated that all leaders were not capable of making the transition from the operational to the strategic, making a controversial implication that leaders were born and not made. In contrast, Yorks and Nicolaides (2012) believed that strategic thinking could be learned. They acknowledged the need for increasingly complex levels of thinking in the organisation, and dedicated significant resources to explore a manner in which leaders could learn how to think strategically. They claimed that developing *'insight'* through engaging in challenging questions could grow an individuals' level of complex thinking. However, this notion ignores the fact that individuals remain limited in their ability to think beyond their experiences and mental maps.

This research is not intended to engage in the nature versus nurture debate nor if leaders are born versus made. However the fact that cognitive limitations exist is important to this study, which attempts to explore if there is a correlation between these cognitive limitations or advancements and individual personality factors. Uncovering this relationship will add credence to Jaques' development theory, and add specific value by focusing his broad, untested definition of cognitive power as the knowledge, experience, skill, temperament, character and values of an individual (Jaques, 1989).

2.5. Underlying Constructs of Leadership

2.5.1. Strategic Decision Making

There is clearly recognition in the literature that strategic decision making is critical to strategic leadership, but as yet there has been limited insight into what drives this ability. Many researchers acknowledge that intelligence, emotion and personality plays a role in strategic decision making, however, much of this research looks at the process of decision making broadly (Lim, 2012), decision making styles (Ahmed, Hasnain and Venkatesan, 2012), neurological drivers of decision making (Venkatraman and Huettel, 2012), very specific aspects of personality (e.g. optimism bias) on decision making (Bracha and Brown, 2012), and individual characteristics as they relate to leader effectiveness (Hoffman, Woehr, Maldagen-Youngjohn and Lyons, 2011).

In studying top management teams, some theorists have attempted to uncover characteristics of teams that lend themselves towards making successful strategic decisions (Carmeli, Friedman and Tishler, 2013). Team resilience was identified as a key factor in this regard, where resilience was defined as both the ability to cope with complexity and the capacity to adapt to changing circumstances (Carmeli et. al., 2013). But there remains a paucity of exploratory research that explicitly looks at the relationship between the individual leader and the capacity to think strategically.

Some empirical theorists argue that intelligence plays a role in the ability to think strategically, and hence assessing intelligence is important in selecting leaders (Morgan, 2006). However, according to Chamorro-Premuzic and Furnham (2004), this thinking has been displaced by considerations of investment theories. Notable intelligence theorist, Cattell (1971), distinguished between fluid intelligence (Gf), the information processing ability, and crystallised (Gc) intelligence, the ability to learn through experience and education (Chamorro-Premuzic and Furnham, 2004). Investment theory combines the Gf and Gc of intelligence with personality. It suggests that personality determines the acquisition of knowledge, and hence impacts on an individual's level of intelligence. Interestingly, there have been some studies that have found a correlation between intelligence and performance, however in keeping with Chamorro-Premuzic and Furnham (2004), it may be the inclusion of personality into the definition of intelligence that drives this outcome. It is posited in this research that if

personality is potentially the underlying construct of intelligence, then personality may too be the underlying construct of the ability to think strategically.

Previous unpublished organisational psychology research discovered no correlation between intelligence, as measured by the Weschler Adult Intelligence Scale, and the ability to think strategically, as measured by Stamp's Career Path Appreciation (Comaroff, 2012). As such, it is suggested that if intelligence is not the underlying construct for the ability to think strategically, then personality may be this underlying construct.

2.5.2. The Role of Personality

One study that may shed light on the relationship between personality and decision making was undertaken by Leone, Penolazzi and Russo (2013). They built on previous research that found inconsistent results in a study exploring the relationship between personality and decision making, where decisions involved negative short term consequences but positive long term consequences. In an effort to identify some differentiation, they incorporated substantial rewards and penalties attached to both the short term and long term decision. The introduction of this reward did result in a significant result in manifesting a relationship between personality and decision making (Leone et. al., 2013). However, given the construction of the test, one can at best assume that personality is aligned to rewards and penalties that may in turn be aligned to decision making.

Gelissen and de Graaf (2006) sought insights into the relationship between the big five personality traits and career success, as determined by progressively increased income and status attainment. If a relationship exists between senior leadership and income, some relevance may be uncovered through this study. The results of their research failed to find a relationship for four of the five personality traits, where only emotional stability realised a significant relationship with income attainment (Gelissen and de Graaf, 2006). This research is intended to explore the dimensions of personality, specifically in terms of their relationship with the ability to think strategically.

Muehlfeld, van Doorn and van Witteloostuijn (2011) proposed that personality is most relevant when scope for discretion exists in decision making. They specifically measured the relationship between locus of control and 'Type A' behaviours on team

change decisions (Muehlfeld et. al., 2011). Whilst the construct of 'change' implies some dynamic thinking, it fails to explicitly account for CAS and its relationship to individual personality traits.

Further inquiry was undertaken by Hall (2007), who called for a deeper understanding of personality and executive decision making. She referred to two types of decision making: *rational* decision making that is methodical, controlled, slow and utilises learned experience; and *intuitive* decision making that is quick, and relies on thought patterns from the unconscious. The introduction of the unconscious firmly establishes personality as key to effective executive decisions. Hall (2007) was particularly interested in cognitive bias when determining what choice to make. One such bias was the utilisation of standard rules that inherently guide judgment. From a psychological perspective, she claimed that this method of decision making is practised when the environment is complex and when decisions are made regarding the future (Hall, 2007).

Extensive research was undertaken to identify studies exploring the relationship between personality and the ability to think strategically, and the closest area of interest was found in Bowler, Bowler and Cope (2012). This study identified significant findings in their investigation of the impact of cognitive complexity on personality. Cognitive complexity was considered a measure of an individual's ability to integrate and differentiate multiple components of the environment (Bowler et. al., 2012). This appears to primarily equate to Stamp's (1993) *practice* level of work utilising the bigger picture to make decisions. It also more closely relates to the earlier definition of complication, in which multiple elements with standard patterns are processed. It does not take cognisance of the factor of time, or the ambiguity in the environment, which precludes this definition from being considered 'strategic'.

However, in utilising the five factor model of personality, Bowler et. al., 2012 discovered that individuals with lower levels of complexity displayed only three of the five factors of personality, whilst those with above average levels of complexity displayed the full five factors. While the outcome of this finding served to subjugate the five factor model of personality, it did prove a clear link between cognitive complexity (or complication) and personality.

A conscientious literature review did not discover research that specifically explored the dimensions of personality and its behavioural manifestations against a valid and reliable assessment that evaluates the actual ability for complex thinking, rather than merely decision making or performance. Therefore, the results of this research have

profound implications in gaining a deeper understanding of the relationship between personality and the ability to think strategically, as well as reshaping an organisation's talent management approach in identifying and selecting leaders who are fit for purpose in fulfilling decision making requirements of senior roles.

2.6. Chapter Summary

The multidimensional and interdependent notion of complexity was reviewed through a *Leadership* framework, specifically in drawing analogies with strategic decision making that is thought to utilise complex thinking. Firstly, the leadership context was uncovered through the definition of complexity and its disparity with the construct of complication. The idea of organisational structures and how they enable decision making was established through Stamp's (1993) model of the matrix of working relationships. This exposed the idea that differentiated levels of complexity were integral to each role in the organisation. It was noted that the further up an individual progresses in an organisation, the more complex the decision making requirements become. Cognisance was also paid to the level of capability of talent within an organisation. Stamp (1993) emphasised the need for an individual to be 'in flow' with the level of capability required of the role. That is, their individual level of complexity must match the level of complexity inherent in the role.

Complexity leadership theory then anchored leadership firmly into CAS highlighting the interdependence and emergent properties required of leaders. These properties were unpacked in the administrative, enabling, and adaptive leadership functions, which aligned with strategic thinking in terms of Stamp's matrix of working relationships model. To obtain a deeper understanding of the competencies required of leadership, the notion of career capital was incorporated to highlight further individual characteristics that are needed for success in strategic leadership roles. However, finding balance between individual characteristics, or competence, and those required of the role is not necessarily an easy task. The view of cognitive limitations was included in the debate to add further insight to the variability of the individual.

Finally, an investigation into the underlying constructs of strategic thinking was discussed, focusing specifically on intelligence and personality dimensions underlying decision making. The significant outcomes of this research firmly entrenched the

notion that a relationship exists between certain personality traits and decision making. Overall, this lays the foundation with which to explore the specific relationship between multidimensional personality factors and the ability to think with complexity.

CHAPTER 3: RESEARCH QUESTIONS

3.1. Introduction

Companies with exceptional leadership are highly correlated with revenue growth, whilst there is no correlation with those who have moderate leaders (Corporate Executive Board, 2013). The acknowledgement of the rapidly changing environment, and the recognition of CAS as fundamental to the new world of work, clearly manifest the need to advance complex leadership theory by gaining a deeper understanding of the ability to think strategically. In addition, as corporate and talent strategies are inextricably linked, the current talent management challenge is to provide a greater focus on employees and positions that have the greatest distinctive impact on business strategy (McDonnell, 2011).

3.2. Research Question 1

It has been established that the organisation (talent) must manage the equilibrium of complexity between the organisation and the environment. In addition, it was ascertained that organisational structures are layered in accordance with the degrees of complexity in the work at each level, and a corresponding level of cognitive power is required to successfully undertake this work. It is argued that organisational talent include executives who require strategic thinking in order to navigate the organisation through the tumultuous landscape. Determining if this is the case is the first research question.

Is there a relationship between the capacity to think strategically and progression into executive positions?

3.3. Research Question 2

With complexity defined as the ability to manage in a system where multiple independent agents interact with each other, and change in numerous ways through time (Stamp, 1993), it is important to understand what factors are related to the ability to think with complexity. In addition, CLT determined the adaptive, administrative and enabling functions required of this talent, whilst further studies acknowledged that some individual characteristics played a role in decision making. It is argued in the second research question that individual characteristics, specifically personality traits, are related to this ability to manage complexity or think strategically. In order to determine this, 20 hypotheses were tested:

H_o: Personality factors are not related to mode $\rho = 0$

H_1: Dominance (Do) is positively correlated with mode $\rho > 0$

H_2: Capacity for Status (Cs) is positively correlated with mode $\rho > 0$

H_3: Sociability (Sy) is positively correlated with mode $\rho > 0$

H_4: Social Presence (Sp) is positively correlated with mode $\rho > 0$

H_5: Self-Acceptance (Sa) is positively correlated with mode $\rho > 0$

H_6: Independence (In) is positively correlated with mode $\rho > 0$

H_7: Empathy (Em) is positively correlated with mode $\rho > 0$

H_8: Responsibility (Re) is positively correlated with mode $\rho > 0$

H_9: Socialisation (So) is positively correlated with mode $\rho > 0$

H_{10}: Self-control (Sc) is negatively correlated with mode $\rho < 0$

H_{11}: Good Impression (Gi) is positively correlated with mode $\rho > 0$

H_{12}: Communality (Cm) is positively correlated with mode $\rho > 0$

H_{13}: Well-being (Wb) is positively correlated with mode $\rho > 0$

H_{14}: Tolerance (To) is positively correlated with mode $\rho > 0$

H_{15}: Achievement via Conformance (Ac) is correlated with mode $\rho \neq 0$

H_{16}: Achievement via Independence (Ai) is positively correlated with mode $\rho > 0$

H_{17}: Intellectual Efficiency (Ie) is positively correlated with mode $\rho > 0$

H_{18}: Psychological-mindedness (Py) is positively correlated with mode $\rho > 0$

H_{19}: Flexibility (Fx) is positively correlated with mode $\rho > 0$

H_{20}: Femininity / Masculinity (F/M) is correlated with mode $\rho \neq 0$

3.4. Research Question 3

The purpose of exploring this relationship is to develop a profile of leaders who are capable of thinking and acting strategically to further the organisation's agenda. To determine this, a predictive relationship is required. The third research question seeks to establish if significantly correlated personality factors predict the capacity to think strategically, and is tested through the following hypothesis:

H_o: Significantly correlated personality factors do not predict mode $R^2 = 0$

H_{21}: Significantly correlated personality factors predict mode $R^2 > 0$

3.5. Chapter Summary

This chapter sought to link the theory commentary of chapter 2 with the specific research undertaken in this study. In an endeavour to advance CAS theory, this research aims to identify the factors that contribute to the ability to think strategically. In so doing, the personality factors that drive the three leadership functions of CAS are uncovered. In addition, competitive organisations looking to differentiate through leaders, need to identify those with the greatest impact on business results. By identifying the specific organisational layers that contribute to this strategic mind-set was uncovered through the first research question. Two further research questions were framed for analysis to identify the drivers of this ability to think strategically.

CHAPTER 4: RESEARCH METHODOLOGY

4.1. Research Design and Method

Whilst previous research has explored various aspects of strategic decision making and aspects of leadership characteristics (Lim, 2012; Ahmed et. al., 2012; Venkatraman & Huettel, 2012; Bracha & Brown, 2012; Hoffman et. al., 2011; Gelissen & de Graaf, 2006; Leone et. al., 2013; Muehlfield et. al., 2011; Hall, 2007; Bowler & Cope, 2012), the purpose of this study is to understand the specific relationship between personality factors and the ability to think strategically, thus converging several areas of thought into identifying one robust relationship. In order to explore the requirements of a leader in this new world of work, a descriptive research design was selected. This method was designed to accurately illustrate people, events or situations (Saunders and Lewis, 2012), which aligns with the intention of developing a deeper understanding of the potential relationship between personality and the ability to think strategically.

A quantitative approach was utilised where secondary, archival data was collected from a South African subsidiary of a multinational beverage organisation. This organisation achieved consistent growth throughout the past five years, with an average growth in share price of 20% per annum (London South East, 2013), illustrating success and resilience to the changing economic landscape. It is argued that with this record of success, the level of cognitive complexity in the critical mass of leaders would align with the level of complexity required in the job.

Secondary data is defined as that which has been collected for another purpose, and enjoys both advantages and disadvantages (Saunders and Lewis, 2012). The utilisation of secondary data enabled a cost effective data collection method, and provided access to a large pool of high quality data (Saunders and Lewis, 2012). In addition, it is an unobtrusive method of data collection, which is particularly important when analysing sensitive factors like personality traits. According to Saunders and Lewis (2012), the major disadvantages of utilising secondary data is that it may only partially meet research needs, it may not be value-neutral and there is no control over the quality of the information. Whilst cognisance must be taken of these shortcomings, the data utilised for this research was collected by certified psychologists, in

accordance with the guidelines of the South African Psychological Association and the Health Professions Council.

4.2. Unit of Analysis

According to Zikmund (2003), the unit of analysis is the level at which the analysis should be completed. The unit of analysis with regard to this study is the individual. The individual was analysed in terms of the following factors:

- Individual job level (hay grade)
- Individual personality factors (personality dimensions)
- Individual capability to manage complexity (level and mode)

4.3. Population and Sample

4.3.1. Population

Saunders and Lewis (2012), describe the population as having one key characteristic; it is a complete set of group members. The population under investigation for this research includes all individuals who have progressed into executive or strategic roles within an organisation. However, it would be impossible to gain access to all leaders in industry, resulting in the selection of a sample of individuals to represent this population.

4.3.2. Sample Method

Saunders and Lewis (2012) described a sample as reaching into the repository of the population to identify a subgroup from which one can extrapolate results. This research has utilised a non-probability sampling technique as a full list of the population

does not exist. The implication of this is that a random sample of participants could not be selected. As such, purposive sampling was utilised to identify an appropriate sample. This technique is considered most appropriate for this descriptive research as it enabled the ability to select participants based on specific criteria, namely:

- Individuals in a senior management or executive role, and
- Individuals who have completed the two instruments required in the study (CPI-434 and CPA)

4.3.3. Sample Size

The number of individuals in senior and executive management positions in the target company was 537. This management distinction was determined by the organisations hay grading system, utilising hay grades X4, X3, X2 and X1. The hay grading system seeks to evaluate job roles against a set of factors designed to measure inputs, throughputs and outputs (Hay Group, 2005). The resultant measure enables integration of organisational strategy, structure, processes and people (Hay Group, 2005). However, for the purpose of this study, only managers who had completed the CPI-434 and CPA could be leveraged. As such, a total sample size of 256 senior managers and executives were incorporated into the study. This number of employees met the criteria of the purposive sampling method.

This sample was diverse in terms of gender, race, functional area of expertise and nationality. All employees provided consent to the company to store and utilise their scores at the time of undertaking the assessments. In turn, the organisation provided permission to utilise these scores for the purpose of this research, on condition that the original assessment consent criteria was maintained. This criterion ensured that confidentiality was afforded to all individuals.

4.4. Research Instruments

Two specific instruments were used in the original collection of the data to be leveraged for this research: the California Psychological Inventory (CPI) and the Career

Path Appreciation (CPA). The additional secondary data pertaining to the level of the job was acquired from the organisation's talent management records. This data included the current organisational grade, age, function, gender and race.

4.4.1. California Psychological Inventory – 434 (CPI)

The California Psychological Inventory-434 (CPI) is a self-report assessment measuring both personality and behaviour through 20 'folk concepts' of personality that are aggregated into four dimensions, as indicated in Table 2 (Gough and Cook, 1996). The CPI was authored by Gough in 1956 and was reviewed and revised in 1995 (Occupational Psychology Services, 2000). Unlike the Big Five Personality Factor questionnaires that were cultivated through factor analysis, the CPI was empirically developed to furnish a description of an individual using descriptors that are easily recognised and used by 'ordinary people in everyday life' (Occupational Psychology Services, 2000). Each folk concept has between 28 and 46 items that require a 'true' or 'false' response. These items collectively form the 434 questions in the assessment (Groth-Marnat, 1999). Descriptors of each folk concept can be found in Appendix 1. The scoring for this assessment is recorded as a percentile for each concept, and forms the basis of the raw data for this research study.

Table 2: CPI-434 Dimensions and Scales (Gough and Cook, 1996)

Dimensions	Interpersonal Style	Personal Values and social adjustment	Achievement oriented behaviour	Role Preference
Scales	• Dominance • Capacity for Status • Sociability • Social Presence • Self Acceptance • Independence • Empathy	• Responsibility • Socialisation • Self Control • Good impression • Communality • Well-being • Tolerance	• Achievement via conformance • Achievement via independence • Intellectual Efficiency	• Psychological-mindedness • Flexibility • Femininity / Masculinity

4.4.1.1. Reliability and Validity of the CPI-434

Reliability refers to the degree to which data collection and analysis provides consistent findings, whilst validity refers to the degree to which the data collected accurately measures what the assessment purports to measure (Saunders and Lewis, 2012).

Saunders and Lewis (2012), caution that certain factors may threaten this reliability and validity. One such reliability error is subject bias, the manipulation of answers to avoid being seen in a poor light (Saunders and Lewis, 2012). The CPI-434 has built-in scales known as faking good, faking bad and random responses to assess and mitigate against this bias (Butcher, 2009). According to Stewart (2008), the CPI-434 has been proven both valid and reliable, as such, a confirmatory factor analysis was not performed in this study. Test-retest reliability for individual scales shows consistency with overall median reliability of 0.70 (Groth-Marnat, 1999). A further reliability analysis was completed on the scores from this sample, and an improved internal consistency was noted, $\alpha = .80$

Table 3: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.808	.822	20

From a validity perspective, the CPI-434 has relatively low levels of face validity, given that the questions are not clear in what they are testing. The phrasing is indirect and subtle (Butcher, 2009), however predictive validity research has shown all scales relate satisfactorily to the Big Five personality measures (Fleenor and Eastman, 1997). Although the sample in this study includes various nationalities, the employees who were assessed on the CPI-434 in this organisation were done so using normative data from the USA. As such, there may be some question regarding the validity of the non-American sample.

4.4.2. Career Path Appreciation (CPA)

The second instrument utilised in collection of this data was the Career Path Appreciation (CPA). The CPA measures current level of capability (level), future potential of capability (mode), and an individual's preferred approach to work (style) (Stamp, 1989). For the purpose of this study, only data related to level and mode was utilised, as they relate directly to the capacity to think with complexity now and into the future. Complexity was defined as the ability to manage in a system where multiple

independent agents interact with each other and change in numerous ways through time (Stamp, 1993). As such, this research has selected the scores in this instrument that relate only to the current level of complex management, and future potential of capability in order to take cognisance of time. Style was not utilised in this study.

The CPA constitutes a card-sorting procedure, a phrase card selection task, a qualitative interview and feedback, and is administered over a two to three hour period (Stamp, 1993). The results are recorded through the numbered levels of work illustrated through Stamp's (1993) matrix of working relationships model. The current level of capability is aligned with a level of work in the matrix, and the future capability is extrapolated through the individual development tracks. Finally, the individual's style is scored and recorded through a 'type' known as A, B, C or D.

4.4.2.1. Reliability and Validity of the CPA

Given the qualitative nature of initially collecting this data, inter-rater reliability is critical in establishing credibility. Observer bias refers to the manner in which researchers interpret data in different ways (Saunders and Lewis, 2012). This is particularly relevant when administering a qualitative interview as the risk of observer bias is high. However, research has confirmed high levels of inter-rater reliability scores, predominantly through studies where the CPA was administered to US Army soldiers (Lewis, 1993).

Whilst the CPA is utilised globally, it is particularly favoured by South African organisations. To obtain credibility in this regard, it is important that the CPA is proven to be culturally fair. Unpublished studies undertaken by Kitching (2005), confirmed no significant differences between employees with varied cultural backgrounds and experiences. Further studies have been undertaken by the Brunel Institute for Organisation and Social Studies (BIOSS), the organisation that owns and maintains the CPA, who have published positive results in confirming inter-rater reliability, test-retest reliability and predictive validity (BIOSS, 2007).

4.5. Data Collection

The psychometric data of employees was stored on the organisations SAP system in various formats: SAP data, word, pdf, and txt. Once the 256 individuals for the study had been identified, each employee record was retrieved and identified through their employee number. These records were manually transferred into an excel spreadsheet denoting employee number, percentile scores for each folk concept of the CPI-434, and the level and mode number from the CPA. Biographical data was then retrieved, and included: age, gender, ethnic origin, organisation functional area (e.g. marketing, finance, sales etc.), and hay job grade. All data was consolidated into a single excel spreadsheet. To ensure individual confidentiality, all employee numbers were removed and replaced with a single chronological identifier: 1, 2, 3,…256.

4.6. Data Analysis

4.6.1. Data Preparation

Once all the data was consolidated into a single spreadsheet, it went through an editing process to prepare it for the statistical analyses. This process was undertaken in order to ensure the data had no omissions, that it was legible and consistent (Saunders and Lewis, 2012).

Firstly, the data was codified to convert categorical data into a numerical score (Zikmund, 2003). The biographical data of gender and ethnic origin were all converted into nominal data through a codification process. Nominal data represents categories that have no rank order (Saunders and Lewis, 2012). The data of the CPA level and mode, and job grade were converted into ordinal data. This is categorical data that is placed in a definitive order (Saunders and Lewis, 2012).

The final set of data included the percentile scores from the personality assessment. Saunders and Lewis (2012) described discrete data as numerical information that has a finite number of values. As the percentile scores were already displayed as numerical, discrete data, no conversion or codification was necessary.

Finally, a process of data cleaning was completed to check for errors in transposing the data from the original transcripts, as well as from the codification process. Saunders and Lewis (2012) emphasise two particular errors common to transposing data: illegitimate codes and illegitimate relationships. The data set was closely reviewed to ensure that neither of these errors was present in the data.

4.6.2. Data Analysis

The resultant numerical data was then used to undertake an initial descriptive analysis. The biographical data and the CPA data were subjected to statistics to describe measures of central tendency. According to Saunders and Lewis (2012), central tendency is the value or variable that illustrates the common, middle or average. As such, statistics to establish mode, median and mean were utilised.

In addition to measures of central tendency, the personality data and age were exposed to dispersion analysis. Saunders and Lewis (2012) describe this method as establishing how the data is spread around the central tendency. Statistics of range and standard deviation were utilised to measure dispersion.

The first research question attempted to understand if there was an association between employee grade and their CPA current level of capability. This association illustrates if a relationship exists between the capacity to think strategically and progression or appointment into an executive position. In order to determine this, the Spearman's rank correlation was utilised. According to Saunders and Lewis (2012), this test is appropriate when testing both the strength of the relationship between the variables, as well as the probability the relationship occurred by chance. It is particularly pertinent for categorical ranked data, which describes the recoded data of job grade and level.

The second research question attempted to explore if a relationship existed between personality and the capacity to think strategically. Twenty hypotheses were tested to understand if a relationship between the individual factors of the CPI-434 and the CPA mode was present. The Pearson's correlation coefficient (*r)* was utilised to examine the correlation between these variables. Saunders and Lewis (2012) declared that this statistic establishes the strength of the relationship, and the probability of this relationship occurring by chance. The analysis was reported through organising the personality factors into their four classes as defined by Gough and Cook (1996).

The final research question sought an explanation of the correlations identified, by establishing if the personality traits actually predicted the capacity to think strategically. For this purpose, a multiple regression was performed to understand if the personality variables actually predicted the CPA mode. The correlation matrix indicated the existence of multicollinearity. According to Weiers (2011), when several independent variables are correlated with each other, multicollinearity exists. However, the removal of some of these factors would have greatly decreased the extent to which meaningful interpretation could be made. As a result, it was deemed prudent to maintain the structure of the factors, and utilise two modelling approaches to determine if the multicollinearity would cause the model to yield different results. These approaches included a stepwise regression, and a backward regression, each of which, approached the data in a different manner.

4.7. Limitations of Research Method

The primary limitation of this research study was the restrictions to the sample. The secondary data constituted only those individuals who currently work in the organisation. The company utilise these assessments at the recruitment stage to positively discriminate between individuals who manifest the best fit to the requirements of the role. As such, the sample presumably included only managers and executives who had been assessed as having the ability to think strategically.

The second limitation to the sample was the absence of so many executives who had not completed the required psychometric assessments. The organisation changed their personality measure from the Minnesota Multiphasic Personality Inventory (MMPI) to the California Psychological Inventory in 2006. Executives who were already in executive positions were not required to undergo the CPI-434, which excluded 282 managers from this sample. Given that these managers had the longest tenure in executive positions with the organisation, it can be inferred that they are clearly 'fit for purpose'. If they are well aligned to their roles, it is likely that they are able to think with complexity. The exclusion of these executives may manifest skewed results of the remaining executives with shorter tenure in management.

The third limitation of this research is the specific personality inventory that has been utilised. Given the prominence of the five factor personality model in organisations,

utilising the folk concepts of the CPI-434 may be considered a limitation to extrapolation. Although correlation studies between the CPI-434 and some five factor personality assessments have been completed, and results show good correlations between these personality measures for four of the five factors (McCrae, Costa and Piedmont, 1993), extrapolating across personality measures may require further investigation.

4.8. Chapter Summary

A descriptive research design was selected, whereby insights from leadership and strategic decision making paradigms converged to understand the nature of the relationship between personality in leadership characteristics, and the ability to think strategically. The individual was extracted as the unit of analysis; specifically, those in a senior management or executive role, and those who had completed the two required psychometric instruments. The CPI-434 and the CPA were both evaluated in terms of their validity and reliability, which were deemed sufficient and appropriate. Purposive sampling identified 256 qualified subjects, and secondary data on each of these individuals was utilised.

The data analysis process was preceded by a data cleaning process that ensured accuracy of data and codification. The body of the analysis included reference to the descriptive statistics undertaken to better understand the holistic profiles of the individuals in the sample. In addition both Spearman's and Pearson's correlations were referenced, whereby an understanding of the various relationships and associations within the data could be discovered. This was followed by the multiple regressions (stepwise and backward) that was utilised to explore predictability. Finally, sample and research instrument limitations were identified as variables that may impact on the results of this research.

CHAPTER 5: RESEARCH RESULTS

5.1. Introduction

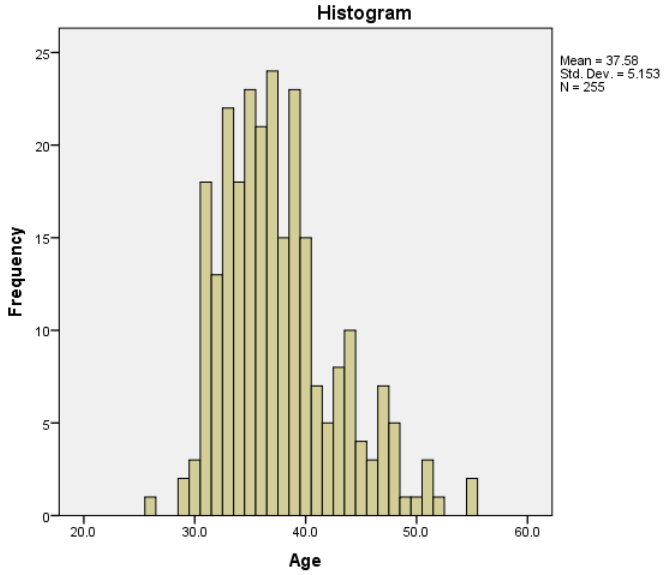
The intent of this chapter is to summarise the results of the statistical analyses performed on the secondary data collected. The software program utilised for this analysis was IBM SPSS Statistics 21, and all results reported in the narrative were rounded up to two decimal places. Firstly, the results of the descriptive statistics are portrayed to illustrate the overall profile of the sample and the data. Secondly, the results of the correlations are presented to gain insight into the relationships and associations within the data, and finally the results of the multiple regressions are offered to review if personality factors are deterministic with regard to the ability to think strategically.

5.2. Descriptive Statistics

5.2.1. Biographical Data

In order to understand the sample, *age* was subjected to a frequency analysis. As indicated in figure 1, the minimum age in the sample was 26 years of age and the maximum was 55 years of age, illustrating a range spanning 29 years. The average or mean was 37.6 years with a standard deviation of 5.1 years, whilst the median and mode was 37 years. According to Saunders and Lewis (2012), when the mean, median and mode are 'virtually the same', it indicates the data is normally distributed. This indicates that 95% of the sample fell between the ages of 31 and 47 years old.

Figure 1: Histogram of age frequencies



The sample was further examined in terms of gender and ethnic origin. This manifested that 44.9% of the sample were female and 55.1% of the sample were male. Within this number, the majority of this sample's ethnic origin was White at 42.2%, followed by Black at 29.3%, Asian at 19.5% and Coloured at 9%.

Figure 2: Gender Split

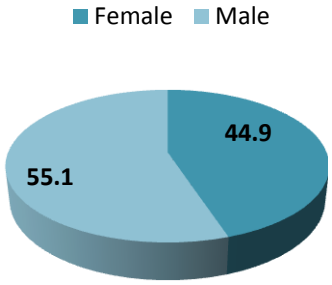
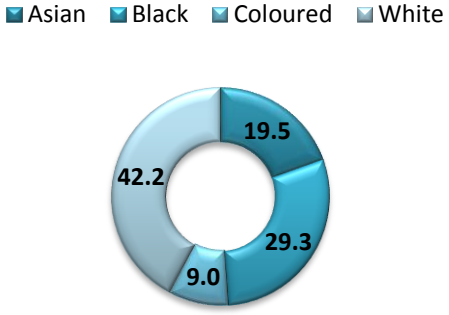


Figure 3: Ethnicity Split



The organisational function from which the sample was drawn provides some interesting insight into the overall profile of the data, as seen in table 4. However, given that the sample only constitutes 256 of the 537 managers and executives in the organisation, this data is not a true reflection of the organisations overall executive, functional profile. The largest data set emanates from the Information Systems function at 20.3%. This is followed by Marketing at 14.1%, Sales and Distribution at 12.5% and Supply Chain at 10.5%. The remaining functions contributed less than 10% of the sample each. As indicated in the description of limitations in the previous

chapter, the organisation changed its personality assessment in 2006 from the MMPI to the CPI-434. As a result, the most one can infer from this data, is that this sample of 256 executives were appointed post 2006, where Information Systems, Marketing, Sales and Distribution and Supply Chain displayed the majority of recruitment, and included individuals with the shortest tenure in executive roles within the organisation.

Table 4: Descriptive Analysis of Function

	Frequency	Percent
ADMINISTRATION	12	4.7
BREWING	1	.4
CORPORATE AFFAIRS	14	5.5
ENGINEERING	7	2.7
FINANCE	18	7.0
GENERAL MANAGEMENT	4	1.6
HUMAN RESOURCES	21	8.2
INFORMATION SYSTEMS	52	**20.3**
LEGAL & COMPANY SECRETARIAL	8	3.1
MANUFACTURING	1	.4
MARKETING	36	**14.1**
PACKAGING	3	1.2
SALES AND DISTRIBUTION	32	**12.5**
STRATEGY & PLANNING	8	3.1
SUPPLY CHAIN MANAGEMENT	27	**10.5**
TECHNICAL & MANUFACTURING	5	2.0
TRADE MARKETING	7	2.7

The job grade provides further insights into the profile of the sample and is directly relevant to the statistical analysis that follows. This data reflected in table 5, shows the hay job grade of the sample and illustrates that the majority of the data set, 80.1%, are at the middle management level of X4, with the smallest percentage of 5.1% constituting the highest executive grade of X1. Whilst the organisation is structurally typical in that they enjoy a pyramid structure with the fewest employees at the apex and the majority at the lower levels, this sample does not reflect the true structure of the organisation owing to the purposive sampling technique. These discrepancies are clear when reviewing the numbers in the X3 and X2 grades, which are 6.6% and 8.2% respectively. In keeping with the pyramid structure, X3 should incorporate a greater

number of people than X2. However, this discrepancy has no impact on the research questions attempting to understand the relationship between grade and the ability to think strategically.

Table 5: Descriptive Analysis of Job Grade

	Frequency	Percent
X1	13	**5.1**
X2	21	**8.2**
X3	17	**6.6**
X4	205	**80.1**

5.2.2. CPA Level and Mode

The CPA level and mode were also subjected to a frequency analysis to obtain a holistic view of the data.

Figure 4: Histogram of Level frequencies

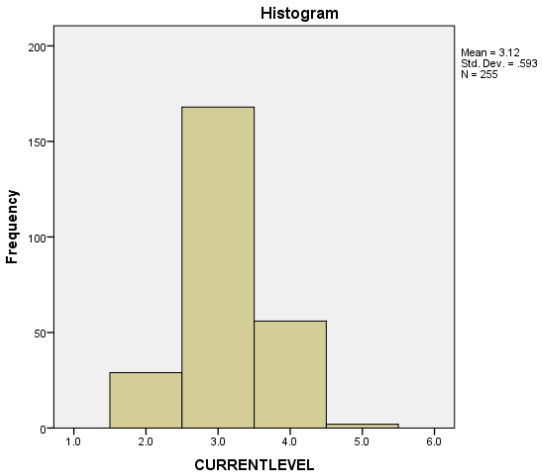


Figure 5: Histogram of Mode frequencies

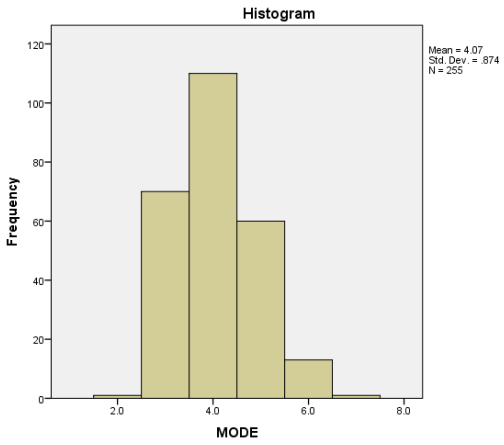


Figure 4 indicates the spread of levels across the data, whilst figure 5 illustrates the spread of modes across the data. Within figure 4, it is evident that the majority of the sample (66%) is operating in level 3, followed by 22% in level 4, 12% in level 2 and 1% in level 5. Figure 5 further illustrates the percentage splits across modes where the

majority (43%) have the potential of mode 4. This is followed by 27.3% of the sample at mode 3; 23.4% at mode 5; 5.1% at mode 6; 0.8% at mode 2 and 0.4% at mode 7.

It is useful to remember that the 'levels' refer to the current operating level of capability of the individual, whilst the 'mode' refers to the future operating potential of the individual.

5.2.3. CPI-434 Personality Factors

Further descriptive analysis was performed on the personality factors, indicating negative skewness on all factors, with the exception of Flexibility and Femininity / Masculinity, as indicated in table 6.

Table 6: Descriptive Analysis of Personality Factors

	Range	Min	Max	Mean	Mode	Std. Deviation	Skewness	
							Statistic	Std. Error
Dominance (Do)	30	50	80	66.055	69	4.9607	-0.616	0.152
Capacity for Status (Cs)	37	43	80	62.934	62	6.3326	-0.271	0.152
Sociability (Sy)	32	40	72	60.676	64	6.3209	-1.014	0.152
Social Presence (Sp)	45	31	76	58.727	61	7.555	-0.631	0.152
Self-Acceptance (Sa)	36	40	76	61.238	62	5.941	-0.454	0.152
Independence (In)	30	45	75	62.637	61.0[a]	5.2548	-0.409	0.152
Empathy (Em)	44	38	82	61.918	64	8.3842	-0.173	0.152
Responsibility (Re)	36	41	77	61.793	65	6.7068	-0.344	0.152
Socialisation (So)	37	38	75	58.914	60.0[a]	5.9376	-0.424	0.152
Self- Control (Sc)	43	30	73	56.652	59	8.6849	-0.488	0.152
Good Impression (Gi)	48	36	84	64.48	67	9.2989	-0.376	0.152
Communality (Cm)	36	29	65	55.359	60	6.3217	-0.95	0.152
Well Being (Wb)	32	40	72	60.164	65	4.5929	-0.939	0.152
Tolerance (To)	37	38	75	60.16	63	7.7955	-0.531	0.152
Achievement via Conformance (Ac)	27	48	75	64.137	68	6.2441	-0.506	0.152
Achievement via Independence (Ai)	33	45	78	60.43	61	6.3803	-0.135	0.152
Intellectual Efficiency (Ie)	51	24	75	60.547	65	6.4496	-1.04	0.152
Psychological Mindedness (Py)	49	29	78	60.406	62	7.489	-0.714	0.152
Flexibility (Fx)	46	30	76	51.371	49	8.3068	0.039	0.152
Femininity / Masculinity (F/M)	53	15	68	44.582	47	9.79	0.012	0.152

This illustrates that many more scores fell above the mean than below it, resulting in median being a better measure of central tendency. The average range of scores is 39, indicating a moderate level of difference between subjects on each factor. With the exception of Femininity / Masculinity, the mean percentile scores are all above the 50th percentile, demonstrating a profile of individuals who are self-confident, have high levels of responsibility and self-control, and high levels of achievement oriented behaviour.

5.3. Research Question 1

The first research question sought to establish if a relationship existed between the ability to think strategically and the progression into executive positions. In keeping with Stamp's (1993) matrix of working relationships, it was thought that the higher the grade, the higher the level of capability required to successfully perform at that level. The recoded variables of job grade and CPA level were subjected to a Spearman's Correlation analysis, and the results indicated that the job grade and level were significantly correlated, $r = .29$, $p < 0.001$, as illustrated in table 7.

Table 7: Correlation between Job Grade and Level

			Job Grade	LEVEL
Spearman's rho	Job Grade	Correlation Coefficient	1.000	.294**
		Sig. (2-tailed)		.000
	LEVEL	Correlation Coefficient	.294**	1.000
		Sig. (2-tailed)	.000	

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

It can be said that at a correlation of .29, the relationship is not strong but rather, weak (Saunders and Lewis, 2012). However, this significant correlation confirms the supposition that the higher the grade, the higher the level of capability required to perform at that grade.

5.4. Research Question 2

The second research question attempted to explore if a relationship existed between personality and the capacity to think strategically. In order to obtain a detailed understanding of this, 20 hypotheses were tested, one for each personality factor. Each table in this analysis includes the personality factors grouped into their Class, as defined by Gough and Cook (1996). This grouping enables a detailed view of the correlations within each class, which represents additional interesting insights. Scatterplots are utilised to visually illustrate the relationships, and are available in Appendix 2.

5.4.1. Class 1 Correlations

Table 8 illustrates the extent to which individual personality factors within Class 1 are correlated with each other. A range of significant correlations from .21 to .65 is evident.

H_o: Dominance (Do) is not related to mode $\rho = 0$

H_1: Dominance (Do) is positively correlated with mode $\rho > 0$

As indicated in table 8, Dominance is positively correlated with mode where $r = 0.29$, $p < 0.001$, and the null hypothesis is rejected. This clarifies that leadership ability, dominance and willingness to take a leadership role has a significant relationship with the ability to think strategically. Dominance enjoys the strongest correlation with mode within the Class 1 group of personality factors.

H_o: Capacity for Status (Cs) is not related to mode $\rho = 0$

H_2: Capacity for Status (Cs) is positively correlated with mode $\rho > 0$

Capacity for Status is positively correlated with mode where $r = 0.18$, $p < 0.01$, and the null hypothesis is rejected. This explains that ambition, confidence, awareness of value of status and success has a significant relationship with the ability to think

strategically. This relationship, however, shows the weakest correlation of all Class 1 factors with mode.

H_o: Sociability (Sy) is not related to mode $\rho = 0$

H_3: Sociability (Sy) is positively correlated with mode $\rho > 0$

Sociability is positively correlated with mode where $r = 0.20$, $p < 0.01$, and the null hypothesis is rejected. Comfort in social situations, self-confidence and enjoyment of attention has a significant, positive relationship with the ability to think with complexity.

H_o: Social Presence (Sp) is not related to mode $\rho = 0$

H_4: Social Presence (Sp) is positively correlated with mode $\rho > 0$

Social Presence is positively correlated with mode where $r = 0.25$, $p < 0.001$, and the null hypothesis is rejected. This illustrates that feelings of self-confidence, personal worth, self-assurance and joy of new experiences are significantly correlated with the ability to think strategically. The enjoyment of new experiences is particularly important, as it relates to the ability to embrace change, an important dimension in the ability to manage within the evolving landscape.

H_o: Self-Acceptance (Sa) is not related to mode $\rho = 0$

H_5: Self-Acceptance (Sa) is positively correlated with mode $\rho > 0$

Self-Acceptance is positively correlated with mode where $r = 0.22$, $p < 0.001$, and the null hypothesis is rejected. As such, the ability to think strategically is significantly correlated with comfort in dealing with others and a sense of personal worth.

H_o: Independence (In) is not related to mode $\rho = 0$

H_6: Independence (In) is positively correlated with mode $\rho > 0$

Independence is positively correlated with mode where $r = 0.27$, $p < 0.001$, and the null hypothesis is rejected. Whilst a significant correlation was found, it was thought that this personality factor would display a much stronger correlation with the ability to think with complexity, as it measures an individual's resoluteness, perseverance, and self-sufficiency. Although it has the third strongest correlation in this class, it remains statistically weak according to Saunders and Lewis (2012).

Table 8: Correlation Matrix of Class 1 personality factors and mode

		MODE	Do	Cs	Sy	Sp	Sa	In	Em
MODE	Pearson Corr.	1							
	Sig. (2-tailed)								
Do	Pearson Corr.	.291**	1						
	Sig. (2-tailed)	.000							
Cs	Pearson Corr.	.182**	.372**	1					
	Sig. (2-tailed)	.004	.000						
Sy	Pearson Corr.	.199**	.479**	.519**	1				
	Sig. (2-tailed)	.001	.000	.000					
Sp	Pearson Corr.	.248**	.341**	.444**	.654**	1			
	Sig. (2-tailed)	.000	.000	.000	.000				
Sa	Pearson Corr.	.222**	.474**	.349**	.569**	.508**	1		
	Sig. (2-tailed)	.000	.000	.000	.000	.000			
In	Pearson Corr.	.271**	.450**	.317**	.225**	.293**	.298**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		
Em	Pearson Corr.	.274**	.386**	.522**	.521**	.536**	.420**	.205**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.001	

H_o: Empathy (Em) is not related to mode $\rho = 0$

H_7: Empathy (Em) is positively correlated with mode $\rho > 0$

Empathy is positively correlated with mode and is significant where $r = 0.27$, $p < 0.001$, and the null hypothesis is rejected. This personality factor measures the ability to perceive the experiences of others, as well as insightfulness and self-sufficiency. It was also thought that this ability to take cognisance of a dimension outside of the self, would show a much stronger correlation with the ability to think strategically, where taking cognisance of the environment and the individual's inter-dependence with the

environment is required. However, according to Saunders and Lewis (2012), this is statistically a weak correlation.

5.4.2. Class 2 Correlations

Table 9 illustrates the correlations between Class 2 personality factors and mode, as well as the extent to which individual personality factors within Class 2 are correlated with each other. Class 2 factors demonstrate moderate positive correlations and weak negative correlations between factors, most of which, are significant.

H_o: Responsibility (Re) is not related to mode $\rho = 0$

H_8: Responsibility (Re) is positively correlated with mode $\rho > 0$

A correlation of $r = 0.10$ was found between Responsibility and mode, but this relationship was not seen to be significant at $p < 0.05$. The Responsibility factor refers to acceptance of social rules, dependability, responsibility and the ability to self-improve. It was thought that this ability to self-improve would correlate with the ability to think strategically, as it indicates some skill to manage the change required in complex environments. However, the outcome was not significant, resulting in failure to reject the null hypothesis.

H_o: Socialisation (So) is not related to mode $\rho = 0$

H_9: Socialisation (So) is positively correlated with mode $\rho > 0$

A negative correlation between Socialisation and mode of $r = -0.04$ was found, but this relationship was not significant at $p < 0.05$. It was thought that there would be a positive correlation between Socialisation and the ability to think strategically, as it refers to social maturity, integrity and morality that were presumed to be associated with the ability to think in a strategic environment. However, a negative and non-significant correlation was found resulting in failure to reject the null hypothesis. On deeper analysis, it was noted that the items in Class 2 of the CPI-434 were measuring

the degree to which an individual is conventional and accommodating versus the ability to take risks. With this in mind, one would expect a slightly negative correlation, as the ability to take risks is integral to making decisions within unpredictable environments.

Table 9: Correlation Matrix of Class 2 personality factors and mode

		MODE	Re	So	Sc	Gi	Cm	Wb	To
MODE	Pearson Corr.	1							
	Sig. (2-tailed)								
Re	Pearson Corr.	.096	1						
	Sig. (2-tailed)	.126							
So	Pearson Corr.	-.038	.352**	1					
	Sig. (2-tailed)	.546	.000						
Sc	Pearson Corr.	-.006	.488**	.319**	1				
	Sig. (2-tailed)	.930	.000	.000					
Gi	Pearson Corr.	.051	.529**	.310**	.765**	1			
	Sig. (2-tailed)	.415	.000	.000	.000				
Cm	Pearson Corr.	-.058	-.082	.107	-.132*	-.171**	1		
	Sig. (2-tailed)	.356	.190	.086	.034	.006			
Wb	Pearson Corr.	.150*	.426**	.230**	.494**	.525**	.013	1	
	Sig. (2-tailed)	.017	.000	.000	.000	.000	.830		
To	Pearson Corr.	.178**	.581**	.208**	.487**	.455**	-.109	.506**	1
	Sig. (2-tailed)	.004	.000	.001	.000	.000	.082	.000	

*. Correlation is significant at the 0.05 level (2-tailed).

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

H_o: Self-control (Sc) is not related to mode $\rho = 0$

H_{1o}: Self-control (Sc) is negatively correlated with mode $\rho < 0$

A negative correlation between Self-control and mode of $r = -0.01$ was found, but this relationship was not significant at $p < 0.05$. Self-control refers to self-regulation and the freedom from impulsivity, and it was supposed that some impulsivity or spontaneity would be required in order to operate in the dynamic and evolving environment. Whilst the outcome acknowledges a weak negative correlation, the lack of significance results in failure to reject the null hypothesis.

H_o: Good Impression (Gi) is not related to mode $\rho = 0$

H_{11}: Good Impression (Gi) is positively correlated with mode ρ > 0

Good Impression is positively correlated with mode where *r* = 0.05, but this correlation is not significant at *p* < 0.05. This factor describes the ability to create a favourable impression, along with the concern of how others react to the individual's behaviour. It was thought that this awareness outside of the self would enable the individual to take consideration of people and events outside of themselves, as required in complex environments. However, this correlation is extremely weak and is not significant, resulting in failure to reject the null hypothesis.

H_o: Communality (Cm) is not related to mode ρ = 0

H_{12}: Communality (Cm) is positively correlated with mode ρ > 0

Communality is the degree to which reactions and responses correspond to the norm pattern established for the inventory (Gough and Cook, 1996). Given the nature of this factor, it was expected that no correlation would be found. However, some of the items in this class were intended to measure optimism and morale, so it was hypothesised that a positive correlation may be evident. Conversely, a negative correlation was found where *r* = -0.06. This negative correlation was not significant at *p* < 0.05, causing failure to reject the null hypothesis.

It is interesting to note that when reviewing the correlations between the class 2 personality factors, Communality illustrates no significant positive or negative correlation with any other factors.

H_o: Well-being (Wb) is not related to mode ρ = 0

H_{13}: Well-being (Wb) is positively correlated with mode ρ > 0

Well-being is positively correlated with mode where *r* = 0.15, although this is not statistically significant at *p* < 0.05 and the null hypothesis fails to be rejected. The ability to withstand stress and enjoy good relationships and overall happiness was expected to positively correlate with the ability to manage the pressures of change that

are required in managing complexity, however the weak correlation was not statistically significant.

H_o: Tolerance (To) is not related to mode ρ = 0

H_{14}: Tolerance (To) is positively correlated with mode ρ > 0

It was assumed that tolerance would be positively correlated with the ability to think strategically as it describes the belief in fairness, integrity and resourcefulness. The results indicated a positive correlation of $r = 0.18$, $p < 0.05$, and the null hypothesis is rejected. This is the only factor in Class 2 that illustrates a significant correlation, albeit a weak one.

5.4.3. Class 3 Correlations

Table 10 illustrates the correlations between Class 3 personality factors and mode, as well as the extent to which individual personality factors within Class 3 are correlated with each other. A range of significant correlations from .20 to .52 is evident within Class 3.

Table 10: Correlation Matrix of Class 3 personality factors and mode

		MODE	Ac	Ai	Ie
MODE	Pearson Corr.	1	.055	.303**	.243**
	Sig. (2-tailed)		.379	.000	.000
Ac	Pearson Corr.	.055	1	.196**	.322**
	Sig. (2-tailed)	.379		.002	.000
Ai	Pearson Corr.	.303**	.196**	1	.523**
	Sig. (2-tailed)	.000	.002		.000
Ie	Pearson Corr.	.243**	.322**	.523**	1
	Sig. (2-tailed)	.000	.000	.000	

H_o: Achievement via Conformance (Ac) is not related to mode ρ = 0

H_{15}: Achievement via Conformance (Ac) is correlated with mode ρ ≠ 0

Achievement via Conformance is positively correlated with mode at $r = 0.06$, although this result is not statistically significant at $p < 0.05$. The direction of correlation was initially unclear, as this factor measures a dichotomous dimension with regard to the ability to think strategically. On the one hand, it measures motivation to achieve within a structured environment, which was thought to correlate negatively with the ability to think strategically. On the other hand, it also measures an individual's orientation towards the future, which was thought to correlate positively with the ability to manage strategically. As the result was not statistically significant, one fails to reject the null hypothesis.

H_o: Achievement via Independence (Ai) is not related to mode $\rho = 0$

H_{16}: Achievement via Independence (Ai) is positively correlated with mode $\rho > 0$

Achievement via Independence is positively correlated with mode at $r = 0.30$, $p < 0.001$. This is the second highest correlation of all personality factors across all four classes. This factor denotes the motivation to achieve superior performance in settings requiring independent planning and effort. This independent achievement orientation is clearly related to the ability to manage in a changing and unpredictable environment, and the null hypothesis is rejected.

H_o: Intellectual Efficiency (Ie) is not related to mode $\rho = 0$

H_{17}: Intellectual Efficiency (Ie) is positively correlated with mode $\rho > 0$

Intellectual Efficiency refers to the individual's self-assessment of their intellectual resources and endurance. It was thought that this access to cognitive resources would be positively correlated with the ability to think strategically, and this was borne out where $r = 0.24$, $p < 0.001$. As such, the null hypothesis is rejected.

5.4.4. Class 4 Correlations

Table 11 illustrates the correlations between Class 4 personality factors and mode, as well as the extent to which individual personality factors within Class 4 are correlated with each other. A range of positive and negative correlations exist between these factors, although the relationship between Femininity / Masculinity and Flexibility does not appear to be statistically significant.

H_o: Psychological-mindedness (Py) is not related to mode $\rho = 0$

H_{18}: Psychological-mindedness (Py) is positively correlated with mode $\rho > 0$

Psychological-mindedness is positively correlated with mode where $r = 0.21$, $p < 0.01$. This is a statistically significant result and the null hypothesis is rejected. This factor refers to the degree and extent of interest in inner needs, motives and the experiences of others. This perceptive and analytical attribute is aligned with the ability to manage the interdependencies of a complex environment.

Table 11: Correlation Matrix of Class 4 personality factors and mode

		MODE	Py	Fx	F / M
MODE	Pearson Corr.	1			
	Sig. (2-tailed)				
Py	Pearson Corr.	.211**	1		
	Sig. (2-tailed)	.001			
Fx	Pearson Corr.	.313**	.282**	1	
	Sig. (2-tailed)	.000	.000		
F / M	Pearson Corr.	-.060	-.171**	.023	1
	Sig. (2-tailed)	.340	.006	.717	

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

H_o: Flexibility (Fx) is not related to mode $\rho = 0$

H_{19}: Flexibility (Fx) is positively correlated with mode $\rho > 0$

Flexibility manifests the highest positive correlation with mode at $r = 0.31$, $p < 0.001$. This is a statistically significant result and the null hypothesis is rejected. Flexibility

describes the tolerance for ambiguity and variety, as well as the ability to admit bias and refrain from pre-judging. This is clearly aligned with the ability to manage in the ambiguous and unpredictable environment required of strategic thinking.

H_o: Femininity / Masculinity (F/M) is not related to mode $\rho = 0$

H_{2o}: Femininity / Masculinity (F/M) is correlated with mode $\rho \neq 0$

Femininity / Masculinity refer to an individual's interest in and capacity for patience and sensitivity. It was thought that sensitivity may correlate with the ability to think strategically, although the precise direction was uncertain. The results indicate that Femininity / Masculinity is negatively correlated with mode at $r = -0.06$ but this outcome is not statistically significant at $p < 0.05$. As such, one fails to reject the null hypothesis.

5.5. Research Question 3

The third research question attempted to understand the strength of a cause and effect relationship between the statistically significant correlations of personality factors and mode, identified through the second research question. This would illustrate if certain personality factors (independent variables) are deterministic of mode (dependent variable). In order to obtain a detailed understanding of this, and taking cognisance of multicollinearity, two regressions were completed. The following hypothesis was tested:

H_o: Significantly correlated personality factors do not predict mode $R^2 = 0$

H_{21}: Significantly correlated personality factors predict mode $R^2 \neq 0$

5.5.1. Stepwise Regression

12 of the 20 personality factors (Do, Cs, Sy, Sp, Sa, In, Em, To, Ai, Ie, Py and Fx) were used in the stepwise multiple regression analysis to test the prediction of mode, as these factors proved to have a significant correlation. The prediction model contained three of the 12 predictors: Flexibility; Dominance and Achievement via Independence. The model was statistically significant, $F = 19.624$, $p < 0.001$, as evidenced in the ANOVA table 12.

Table 12: Stepwise Regression ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	164.308	1	164.308	27.498	.000[b]
	Residual	1517.719	254	5.975		
	Total	1682.027	255			
2	Regression	294.839	2	147.419	26.887	.000[c]
	Residual	1387.189	253	5.483		
	Total	1682.027	255			
3	Regression	318.535	3	106.178	19.624	.000[d]
	Residual	1363.492	252	5.411		
	Total	1682.027	255			

a. Dependent Variable: MODE

b. Predictors: (Constant), Fx

c. Predictors: (Constant), Fx, Do

d. Predictors: (Constant), Fx, Do, Ai

This model explains almost 19% of what constitutes the mode variable ($R^2 = 0.189$, Adjusted $R^2 = 0.180$) as evidenced in table 13.

Table 13: Stepwise Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.313[a]	.098	.094	2.4444	.098	27.498	1	254	.000
2	.419[b]	.175	.169	2.3416	.078	23.807	1	253	.000
3	.435[c]	.189	.180	2.3261	.014	4.380	1	252	.037

Flexibility is the best predictor of mode, accounting for almost 10% of the variation in mode. When including Dominance with Flexibility, almost 18% of the variation accounted for mode, and almost 19% when including Achievement via Independence. Mode was, therefore, primarily predicted by high levels of Flexibility and Dominance, and to a lesser extent by higher levels of Achievement via Independence.

Dominance received the strongest weight in the model, followed by Flexibility and Achievement via Independence. According to the Coefficient table 14, each individual coefficient is significant.

Table 14: Stepwise Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	102.243	.959		106.624	.000
	Fx	.097	.018	.313	5.244	.000
2	(Constant)	92.890	2.126		43.702	.000
	Fx	.093	.018	.301	5.269	.000
	Do	.144	.030	.279	4.879	.000
3	(Constant)	91.163	2.267		40.213	.000
	Fx	.068	.021	.219	3.187	.002
	Do	.137	.030	.264	4.614	.000
	Ai	.058	.028	.145	2.093	.037

a. Dependent Variable: MODE

5.5.2. Backward Regression

Once again, 12 of the 20 personality factors (Do, Cs, Sy, Sp, Sa, In, Em, To, Ai, Ie, Py and Fx) were used in the backward regression analysis to test the prediction of mode. The best fit prediction model contained four of the 12 predictors: Flexibility; Dominance, Psychological Mindedness and Self-Acceptance. The model was statistically significant, as demonstrated by the F statistic; $F = 15.529$, $p < 0.001$, illustrated in Appendix 3.

This model explains almost 20% of what constitutes the mode variable ($R^2 = 0.198$, Adjusted $R^2 = 0.186$). Although the R^2 was higher in many of the previous models, the

best fit model incorporated Flexibility, Dominance, Psychological Mindedness and Self-Acceptance, illustrating these factors were the primary predictors of mode.

The Coefficient table in appendix 3 illustrates that Dominance enjoyed the strongest weight in the model with a B of 0.113. This was followed by Flexibility at 0.078; Self-Acceptance at 0.05 and finally Psychological Mindedness at 0.049. According to the table all factors are significant, although both Dominance and Flexibility are significant at $p < 0.01$, whilst Psychological Mindedness is significant at $p < 0.05$.

5.6. Additional Insights

In the interest of 'completeness', additional statistics were performed in order to understand if a relationship existed between the demographical factors of age, gender and race with mode. Whilst significant relationships were found, the data set was severely limited in size, and it was not possible to investigate these factors or their impact on modelling the mode.

5.7. Chapter Summary

Firstly, the descriptive statistics were presented to provide an overview of the biographical data. The first research question was then answered, and established that a relationship existed between the ability to think strategically and progression into executive positions. The second research question was then portrayed through 20 hypotheses. All seven factors in Class 1 were significantly, positively correlated with mode and the null hypotheses were rejected. Of the seven factors in Class 2, only one resulted in a significant correlation where the null hypothesis was rejected. The remaining six factors showed both positive and negative correlations, however these were not significant and the null hypothesis could not be rejected. Two of the factors in Class 3 illustrated significant, positive correlations, however the null hypothesis could not be rejected on the third factor as it was not statistically significant. The final Class of three factors resulted in two factors positively correlating with mode and the null

hypothesis was rejected. Conversely, the final factor was negatively correlated but the statistics were not significant. As such the null hypothesis could not be rejected.

The third research question was then presented through both a stepwise and backward regression. The outcome of the stepwise regression was statistically significant, indicating that Flexibility, Dominance and Achievement via Independence accounted for almost 19% of the variation of mode. The backward regression offered Dominance, Flexibility, Psychological Mindedness and Self-Acceptance as accounting for almost 20% of the variation of mode.

CHAPTER 6: DISCUSSION OF RESULTS

6.1. Introduction

The interpretation of these results is presented through a Leadership framework, in order to draw practical insights into talent management practices for Human Resource departments. Complex or strategic thinking, as a requirement of leadership, is analysed through the three research questions posed. Definitive outcomes enable robust conclusions to be drawn that serve to enhance the leadership functions of Complexity Leadership Theory, whilst providing practical solutions to organisations, to enable the most effective positioning of talent to ensure profitable business performance.

6.2. Research Question 1: Job Grade and Strategic Thinking

6.2.1. The equilibrium of complexity

Ashby's Law of Requisite Complexity (Marion et. al., 2007) suggested that only complexity could defeat complexity. To this end, Jaques (1989) asserted that the optimum levels of work within an organisation required corresponding cognitive power in order to perform in flow. The purpose of the first research question was to understand if this was a practical occurrence in an organisation that had a history of successful shareholder performance. It was important to initially establish that executives were able to think in the strategic level required of their role, in order to lay a solid foundation for the ensuing research questions. These questions assumed the sample included various levels of strategic thinkers, in order to understand how their personalities contributed to their thinking.

The results of the Spearman's correlation clearly indicated that executives performing in strategic roles had the appropriate level of strategic thinking required of these roles.

It illustrated that the higher the grade of the job, and therefore the more strategic, the higher the level of complex thinking in the individual executives.

The results indicate that 22% of executives were thinking in the level of *Strategic* Development in accordance with Stamp's Matrix of Working Relationships (1993), although 43% of executives indicated the capability to grow into this level of thinking in the future. Provided that the appropriate learning opportunities are present, it appears that the organisation recruited for 'high potential'. That is, those individuals who have the ability to move beyond their current role and progress into more complex roles. At this level, it is expected that these individuals will be capable of managing the interactions between pure strategy, the external environment, current practices and the innovations required to ensure alignment between these constructs.

Table 15: Matrix of Working Relationships Model (Stamp, 1993) with sample Level and Mode

Matrices	Level of Work	Type of Work	Level of Capability (%)	Mode of Capability (%)
Operational	1. Quality	Concrete tasks	-	-
	2. Service	Reflective ability	12%	0.8%
	3. Practice	Linear extrapolation	66%	27.3%
Organisational	4. Strategic Development	Alternative extrapolation	22%	43%
	5. Strategic Intent	Context shaping	1%	23.4%
Strategic	6. Corporate Citizenship	Global context	-	5.1%
	7. Corporate Prescience	Constructing the future	-	0.4%

A further 1% were aligned to the level of *Strategic Intent,* while 28.9% of individuals illustrate the capability to think in modes 5 to 7 in the future. These executives incorporate *Strategic Intent, Corporate Citizenship,* and *Corporate Prescience,* showing concern for the long-term sustainability of the organisation (Stamp, 1993). 23.4% will be able to make decisions by comprehending the socio-economic environment and its impact on the organisation's competitive positioning. 5.1% will make decisions that leverage national, regional and global knowledge from the political, social, economic, technological and cultural landscape. 0.4% will incorporate the development, transformation and acquisition or divestment of global institutions.

The remaining 78% of executives were thinking in the operational matrix, whilst 28.1% of these executives indicate the capability to progress into higher levels of the operational matrix of Stamp's Matrix of Working Relationships Model (1993). 0.8% responded to immediate changes in context by interpreting and explaining activities, whilst 27.3% are likely to utilise bigger picture thinking, identify trends, manage budgets and optimise processes to best practice (Stamp, 1993).

6.2.2. The disequilibrium of complexity

Acosta (2010) suggested that some individuals were "promoted to their level of incompetence" in accordance with the "Peter Principle". Furthermore, Jaques (1989) claimed that not all individuals had the capability to develop into higher levels of thinking. Failure to find a strong correlation ($r = 0.29$, $p < 0.001$) may illustrate that this is indeed the case and several executives may be 'out of flow' (Stamp, 1993). However, given the continuous success of this organisation, alternative theories are considered. Some positions in the higher grades may not require higher levels of strategic thinking over the longer term. An example of this would be specialist technical positions that require depth of complicated thought rather than broad complex thinking. This would account for the X1 individual who was positioned in the level 2 capability (figure 3), where work is characterised by responding to immediate changes in context through interpreting and explaining activities (Stamp, 1993).

Figure 6: Level displayed by grade

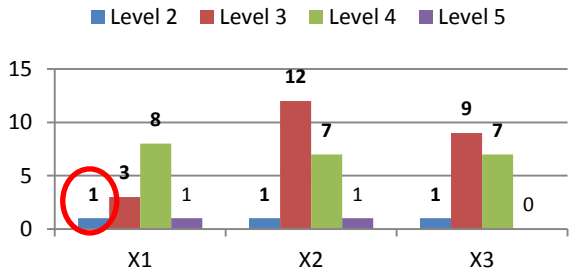


Figure 7: Mode displayed by grade

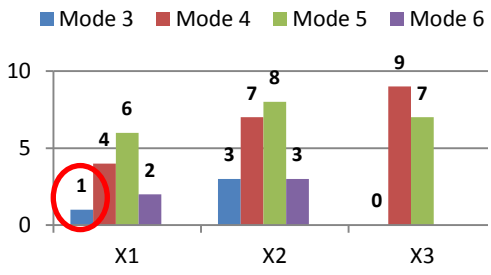


Figure 4 illustrates that this X1 individual has the ability to develop into higher levels of operational thinking (mode 3). On further exploration, it was discovered that this executive was positioned in a role where specific activities included managing

compliance within the regulatory structures of the legislature. This *Service* level work at the X1 grade could be considered an outlier and removed to strengthen the correlation. This individual was removed from the data set and a further Spearman's correlation was performed on the remaining 255 subjects. The strength of the correlation between grade and strategic thinking improved to $r = 0.313$, $p < 0.01$, as illustrated in table 16.

Table 16: Correlation between Job Grade and Level with one outlier excluded

			Job Grade	LEVEL
Spearman's rho	Job Grade	Correlation Coefficient	1.000	.313**
		Sig. (2-tailed)		.000
	LEVEL	Correlation Coefficient	.313**	1.000
		Sig. (2-tailed)	.000	

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

McDonnell (2011) proposed that employers should focus on roles that have the greatest distinctive impact on business strategy. This can be considered the X1, X2 and X3 grades in this sample, as they are all strategic in role design. By placing a disproportionate focus on these business navigators, the organisation is better able to efficiently and effectively manage their talent resources, particularly considering the limited number of Human Resource professionals in each organisation available to undertake this work. This targeted talent management practice can be leveraged to deliver robust, customised succession plans that can enable talent stability and, in turn, shareholder comfort.

This finding concludes that the more senior the executive, the greater their cognitive power to manage the complexity and longer-term sustainability of the organisation. Furthermore, from a talent management perspective, this finding enables confidence in organisational talent practices, where development and engagement initiatives can be focused on these business navigators disproportionately.

6.3. Research Question 2: Personality and Strategic Thinking

6.3.1. Individual characteristics related to complexity

The outcomes of the 20 hypotheses tested in this research question manifested interesting insights into the relationship between personality and the ability to think strategically. The literature review established that several studies had been undertaken to determine if a relationship existed between certain individual characteristics and leadership (Hoffman et. al., 2011), and personality and strategic decision making (Ahmed et. al., 2012; Bracha and Brown, 2012). This finding illustrated that a definitive relationship exists between individual characteristics of personality and the ability to think strategically. This strategic thinking ability is thought to underlie both strategic decision making, and the leadership style required in today's dynamic climate.

As indicated in table 17, all seven personality factors in Class 1 illustrated weak to moderate correlations with mode. This explains that there is some relationship between personality and the ability to think strategically.

Dominance enjoyed the strongest correlation with mode within Class 1, clarifying that leadership ability, dominance and willingness to take leadership roles, is related to the ability to think strategically. Harrison (1996) described the executive level as constituting those that make strategic decisions. These are the individuals who navigate the company through the changing competitive context, and so it stands to reason that these navigators enjoy high levels of Dominance and display leadership abilities.

Empathy, Independence, Social Presence and Self-Acceptance were all related to mode at a significant level. Independence measures an individual's resoluteness, perseverance and self-sufficiency, whilst Self-Acceptance evaluates an individual's sense of personal worth (McAllister, 1996). These descriptors align with the modernist theories that define leadership as a characteristic of the individual (Cardella, 2010). In addition, the post-modern Complexity Leadership Theory builds on this concept to integrate leadership as a function of the interaction between people and groups (Marion et. al., 2007). With this being the case, it is clear to see how Social Presence and Empathy would have a role to play in strategic leadership. Social Presence

measures the individual's confidence within social situations, as well as the enjoyment of new experiences (McAllister, 1996). In keeping with Yorks and Nicolaides (2012), who proposed that insight was a key determinant in strategic thinking, Empathy evaluates the ability to perceive experiences of others, as well as insightfulness, confirming that a relationship exists between Empathy and the ability to manage complexity.

Table 17: Significantly correlated personality factors with mode

Class	Personality Factor	Correlation with Mode
Class 1	Dominance	.291
	Capacity for Status	.182
	Sociability	.199
	Social Presence	.248
	Self-Acceptance	.222
	Independence	.271
	Empathy	.274
Class 2	Tolerance	.178
Class 3	Achievement via Independence	.303
	Intellectual Efficiency	.243
Class 4	Psychological Mindedness	.211
	Flexibility	.313

The belief in fairness, integrity and the ability to be resourceful is measured through the Tolerance personality factor. This is the only factor in Class 2 that illustrated a significant correlation with the ability to think strategically. Individuals who rate high on Tolerance can be expected to be open and trusting with an unbiased attitude (McAllister, 1996). If the new executive leadership theories require superior interpersonal skills in order to work within matrixed environments, then Tolerance is clearly related to this ability.

Class 3 measures achievement orientation and contains two factors that significantly correlated with strategic thinking: Achievement via Independence and Intellectual Efficiency. This finding aligns with the work of Lamb and Sutherland (2010) who

identified action orientation as a key factor in career capital. This, they suggested, enabled career success in the globally competitive environment. Achievement via independence illustrates self-motivation, ambition and superior planning traits, whilst Intellectual Efficiency displays traits of versatility, enterprising, eagerness to learn and intellectual confidence (McAllister, 1996). This provides a picture of driven and targeted adaptability that is required of consistently changing contexts, that is the new world of work. Confidence in one's intellectual rigour is important in strategic decision making, as Harrison (1996) claims that intellectual understanding of the organisation in relation to the environment, whilst encompassing all functions, is required.

Traits of curiosity and open-mindedness are characteristics of Psychological Mindedness, whilst spontaneity, variety and change are synonomous with Flexibility (McAllister, 1996). Both these factors were found to be significantly correlated with the ability to think strategically. It has been established that Complex Adaptive Systems interact with the environment in an inter-dependent manner, where nonlinear feedback results in adaption and emergent behaviours (Schneider and Somers, 2006). This critical notion of continuous changing patterns lies at the very heart of complex thinking. As such, factors high in variety and open-mindedness are critically related to the ability to manage this complexity.

6.3.2. Individual characteristics *NOT* related to complexity

Of particular interest are those personality factors that did not show a significant correlation with the ability to think strategically as illustrated in table 18. Class 2 manifested the largest number of unrelated variables. Although each factor enjoys practical behavioural descriptors, it is important to note that in the construction of the test, Good Impression was created as the '*faking good'* indicator, Well-being was created as the '*faking bad'* indicator and Communality measured the '*random responses'* (McAllister, 1996). For this reason, it was unsurprising that no significant correlation was uncovered.

Other unsurprising findings included the lack of significant correlation with Achievement via Conformance and Femininity / Masculinity. The adoption of social norms, structured, methodical and disciplined behaviour is characteristic of Achievement via Conformance (McAllister, 1996). It is clear to see how individuals who require a structured environment would not thrive in complex situations that, by nature, are unstructured and open-ended systems (Schneider and Somers, 2006). Femininity /

Masculinity primarily measures vulnerability and interpersonal sensitivity (McAllister, 1996) and was negatively correlated with strategic thinking. However, this correlation was extremely weak and was not significant.

Table 18: Personality factors NOT related to mode

Class	Personality Factor	Correlation with Mode
Class 2	Responsibility	.096
	Socialisation	-.038
	Self-Control	-.006
	Good Impression	.051
	Communality	-.058
	Well-being	.150
Class 3	Achievement via Conformance	.055
Class 4	Femininity / Masculinity	-.060

This finding concludes that although personality characteristics certainly have a role to play in the ability to think strategically, not all traits were correlated. This introduces the notion that if not all traits are related, then one's ability to think strategically is either driven by a small number of defined characteristics, or there may be a construct beyond personality that contributes to complex thinking. Determining whether personality accounts for the variation of strategic thinking is considered in the following research findings.

6.4. Research Question 3: Underlying Constructs of Strategic Thinking

6.4.1. Augmented CLT leadership functions

The outcome of the third research question aligned with the leadership functions of *administrative, enabling and adaptive leadership* identified by Marion et. al. (2007) within CLT. In addition, it served to augment this paradigm by contributing specific personality factors and characteristic behaviours to further describe the requirements of each leadership function. The regression models identified Dominance, Flexibility, Achievement via Independence, Psychological Mindedness and Self-Acceptance as the accumulated best fit models to account for the variation in strategic thinking (table 19). These factors illustrated deeper insight into the leadership functions, yet failed to explain the full variation in the ability to think with complexity, of which 80% of the variation remains unidentified.

6.4.1.1. Administrative Leadership

It was established that *administrative leadership* most closely reflected traditional leadership theory in that it constituted the planning and coordination of activities for individuals and teams. Since methodical planning and organisation (Achievement via Conformance) was not found to be correlated with strategic thinking, it was thought that this leadership function did not align well with the definition of complexity. However, although Achievement via Conformance was the key indicator of methodical and structured planning, McAllister (1996) incorporated superior planning in his interpretation of Achievement via Independence. This definition depicts this construct as the ability to deliver superior, goal-oriented plans, but within an unstructured setting. It is suggested that the CLT *administrative leadership* function expand its definition to exclude ‘methodical planning’, and incorporate ‘goal directed planning’.

Further support for this shift from methodical planning and the bureaucracy of traditional leadership was identified by Hall (2007) in her study of cognitive bias in decision making. She claimed that the bias of utilising standard rules that inherently guide judgment was mistakenly employed in complex environments, and when decisions were made regarding the future. The behaviour of decision making through

goal-directed, future orientated and unstructured contexts is manifested through Achievement via Independence.

Furthermore, *Marion* et. al. (2007) expands their portrayal of this *administrative leadership* to also include the top-down leadership that is based on authority and position. This power of authority and position can be seen in the Dominance personality factor.

McAllister (1996) suggested that individuals high on the Dominance factor are more likely to assertively set limits, manage their outputs in a goal directed manner, and take charge of situations. With positional authority behind them, they are likely to freely express their opinions and direct others with confidence. They tend to be optimistic and are able to develop their resources to consistently attain their goals (McAllister, 1996). This confidence in leading and perseverance in achieving defined goals are key behaviours in managing within a complex environment.

Table 19: Best Fit regression models of personality and strategic thinking

Regression	Personality Factor	Leadership Function
Stepwise	Flexibility	Adaptive
	Dominance	Administrative, Enabling
	Achievement via Independence	Administrative, Adaptive
Backward	Flexibility	Adaptive
	Dominance	Administrative, Enabling
	Psychological Mindedness	Adaptive
	Self-Acceptance	Enabling

6.4.1.2. Adaptive Leadership

Flexibility, Achievement via Independence and Psychological Mindedness are all aligned to Marion et. al.'s (2007) description of *adaptive leadership,* thereby reinforcing this definition through empirical research. The interactions of CAS attempt to find the equilibrium between the organisation and the environment, resulting in the necessity of evolving and emergent behaviours from leaders (Marion et. al., 2007). Creativity and flexibility are key criteria in this leadership function, as executives shift from solving

technical problems to utilising new learning's that are impactful in resolving emergent problems (Marion et. al., 2007).

The extent to which an individual is flexible, adaptable and dynamic in their thinking, behaviour and temperament, is McAllister's (1996) explanation of the Flexibility factor. This factor includes a measure of the ability to tolerate ambiguity and uncertainty, which is a critical factor when working at the level of *strategic development* (Stamp, 1993). The unpredictability of the environment was emphasised in Pryor and Bright's (2007) chaos theory of careers. Comfort with the unpredictable and unknown requires a level of comfort in adapting to changing requirements. The key tenet of Flexibility is the openness to considering and experiencing alternative perspectives. This intellectual suppleness enables creativity and the development of innovative inspirations. This is a requirement of *adaptive leadership*.

In keeping with this ability to embrace ambiguity, is the inclusion of Achievement via Independence as integral to this leadership function. In addition to goal-oriented planning, this personality factor manifests a high tolerance of ambiguity, to the extent that structured and stringent environments are rejected. Creativity and originality are valued, whilst ambitions are high, and the variety of interests, plentiful (McAllister, 1996). This creativity and the rejection of the conventional are well aligned to the transformational requirements of the CAS context.

Further alignment with the *adaptive leadership* function is Psychological Mindedness. This factor describes a person's ability to concentrate, persevere with long term goals and effectively deal with ambiguity (McAllister, 1996), all the qualities one would expect in a strategic leader. Rather than solving technical problems, adaptive leadership requires problem solving that utilises new learning and new patterns of behaviour (Marion et. al., 2007). Individuals high in Psychological Mindedness are excellent at managing the abstract. They avoid concrete problem solving and prefer to discover new insights through conceptual problem solving. Although CLT pays cognisance to the interdependencies between people, which gives rise to collective solutions, individuals high in Psychological Mindedness are seen as individualistic and independent minded (McAllister, 1996).

A profile of a creative, flexible, abstract thinker emerges, along with a highly independent and goal-oriented leader. This notion of independence and individualism provides new insight to the CLT *adaptive leadership* function.

6.4.1.3. Enabling Leadership

The ability to drive collaboration and interdependencies are fundamental to *enabling leadership.* The purpose of this function, is to deconstruct the adaptive and administrative functions, in order to enable a supporting environment for the delivery of goals (Marion et. al., 2007). Dominance and Self-Acceptance were found to be aligned with this description.

As previously discussed, individuals with high Dominance are able to effectively take charge of situations, direct and develop others in achievement of goals (McAllister, 1996). This leadership ability enables individuals to assume a driving role that corral's teams into the collaborative attainment of goals. However, McAllister (1996) notes that these individuals, whilst enabling, also display non-compromising behaviours. Whilst not for the faint-hearted, this aversion to compromise may well be what ensures the realisation of objectives.

Individuals high in Self-Acceptance tend to be seen as secure and sure of themselves. They have a high sense of self-worth, self-criticism and an inordinate capacity for independent thinking and action (McAllister, 1996). Although there is a high penchant for individualism, these individuals are also considered to be very sociable and talkative, concluding that this individualism and need for social interaction are interdependent. The strong interpersonal behaviours may enable the collaboration of teams, whilst the robust independence of thought may enable problem solving within unchartered contexts.

The *enabling leader* can therefore be described as a goal directed leader who is non-compromising in driving outputs, yet able to drive collaboration through others. A key tenet appears to be their ability to approach problems through independent thinking. This adds a level of independence to the profile of the strategic leader that is not fully explored in Marion et. al.'s (2007) model. Although CLT describes leaders as individuals who are catalysts for action, Plowman et. al. (2007) suggests that these individuals disrupt existing patterns by creating conflict within uncertain environments. For this reason, the strategic leader appears to require the independence to create this conflict, and the collaborative skills to rally their teams.

6.4.2. Augmented Career Capital model

The de facto model of career capital developed by Lamb and Sutherland (2010) enriched Inkson and Arthur's (2001) paradigm through the identification of "nice-to-have capitals" that differentiated workers in the global market. The global market is thought to be more complex, in that environmental changes are more rapid and prevalent, and the multi-cultural context is more complex due to its multifaceted nature. Alignment between these "nice-to-have" differentiators and the findings from this research are clear as illustrated in table 20.

Table 20: Alignment between personality factors and career capital competencies

Personality Factor	Career Capital Competencies
Dominance	Action orientation, internal locus of control
Flexibility	Opportunity identification, context management
Achievement via Independence	Opportunity Identification, action orientation
Psychological Mindedness	Emotional quotient
Self-Acceptance	Knowing oneself, internal locus of control

Lamb and Sutherland (2010) defined these capitals as: knowing oneself, emotional quotient, opportunity identification, action orientation, internal locus of control and context management. They noted that talent mature over time, and their key drivers shift from a focus on building economic capital, to building personal capital and meaning. This is evident through Psychological Mindedness and Self-Acceptance. The theoretical alignment between these capitals and personality factors further enhances the notion of building independent thought and action in order to thrive in today's business climate. In addition, globally competitive talent are able to identify opportunities as they adapt to the changing context, as illustrated through the factors of Dominance, Flexibility and Achievement via Independence.

6.5. Insights limitations

The findings of this research clearly illustrate that certain factors of personality are instrumental in the ability to think strategically. However, these factors only explain 20% of the variation in strategic thinking, resulting in further unidentified determinants in the ability to think strategically.

When documenting his theory on complexity, Jaques (1989) defined the cognitive power required of complex thinking to include knowledge, skills, experience, temperament, character and values. No evidence of empirical testing could be found for this definition, however the results of this research support the proposition that temperament and character are instrumental in complex thinking. The remaining constructs of knowledge, skills, experience and values may well be the residual determinants in the ability to think strategically. There was some support for the inclusion of values through the Ramirez and Vasconcelos (2011) study on decision making. They identified three types of decision making required in complex environments: complicated decisions, complex decisions and value-based decisions.

6.5.1. Sample limitations

An alternative to this expanded definition of cognitive power may be found in increasing the sample size utilised for this study in order to perform more sophisticated analyses. Only 256 managers and executives were utilised from the total organisational management talent pool of 537. An increase in the sample size would have enabled an alternative statistical technique known as structural equation modelling (SEM), which is particularly suited to measuring variables that cannot be observed, such as those found in social science research (Schreiber, Stage, King, Nora & Barlow, 2006).

Schreiber et. al. (2006) defined SEM as a statistical technique that is utilised to reduce the number of observed variables into latent variables, by “examining the covariation among observed variables”. In essence, SEM combines factor analysis with several multiple regressions simultaneously to produce a structural model of best fit. However, they suggest that a minimum of 15 participants were required for each parameter being studied. Within this sample of 256 individuals, 20 personality factors were being considered across four classes. This would require a minimum sample size of 360

participants, in addition to a more advanced statistician. However, the benefit of undertaking this analysis could result in the emergence of a more robust model.

This sample size also did not lend itself towards gaining deeper insight into the additional demographic variables and their relationship with the ability to think strategically. While there is justification to explore the differences in age, race, gender and function, the sample was not large enough to enable individual analyses.

6.6. Chapter Summary

The discussion in this chapter consolidated the key findings within the context of the leadership functions of Complex Adaptive Systems. Firstly, it was determined that the more strategic work at the higher levels in the organisation was undertaken by individuals who were more strategic in their thinking. Given the moderate correlation, it was also determined that not all higher level positions required strategic thinking, and that technical experts were also positioned in the executive levels to undertake specific work required of the organisational context.

Twelve of the twenty individual characteristics were found to be significantly correlated with complexity, confirming previous research identifying a relationship between personality and strategic decision making and leadership. These correlations provide enhancements to the literature in that they identify additional personality factors and related behaviours that augment the descriptors of strategic leadership. The failure of eight of the individual characteristics to correlate with complexity, indicated that there may be further constructs beyond personality that contribute to an individual's ability to think strategically.

The final research question established a core set of personality factors that explained almost 20% of the variation in the ability to think strategically. These factors were aligned to the leadership functions of CAS, serving to provide deeper insight into the behaviours associated with CLT. The *administrative leadership* function was manifested through individual characteristics of Dominance and Achievement via Independence, describing an assertive leader who is able to develop resources and perseveres in delivering superior, goal-oriented plans within an unstructured environment.

The *adaptive leader* encompasses Flexibility, Achievement via Independence and Psychological Mindedness to portray a leader who is adaptable, creative in their thinking, comfortable with ambiguity and uncertainty, and focused on longer term goals. Particularly relevant to this finding is the distinctiveness in which technical problems and myopic views are rejected to embrace transformational thinking and behaviours.

And finally, the *enabling leader* leverages Dominance and Self-Acceptance to define an individual who is able to effectively take charge in driving collaborative goals, whilst utilising insight to direct independent thinking, to create the conflict required of change in uncertain environments.

CHAPTER 7: CONCLUSION

7.1. Introduction

All research findings are consolidated into a new leadership profile that can be leveraged by organisations in their identification and management of leaders and leadership succession. Recommendations to organisational stakeholders are revealed, focusing on both leaders and Human Resource practitioners. Proposals for further research are also documented in order to augment the insights into strategic leadership by enabling a deeper practical understanding into the strategic thinking that directs organisational strategies.

7.2. Major Findings

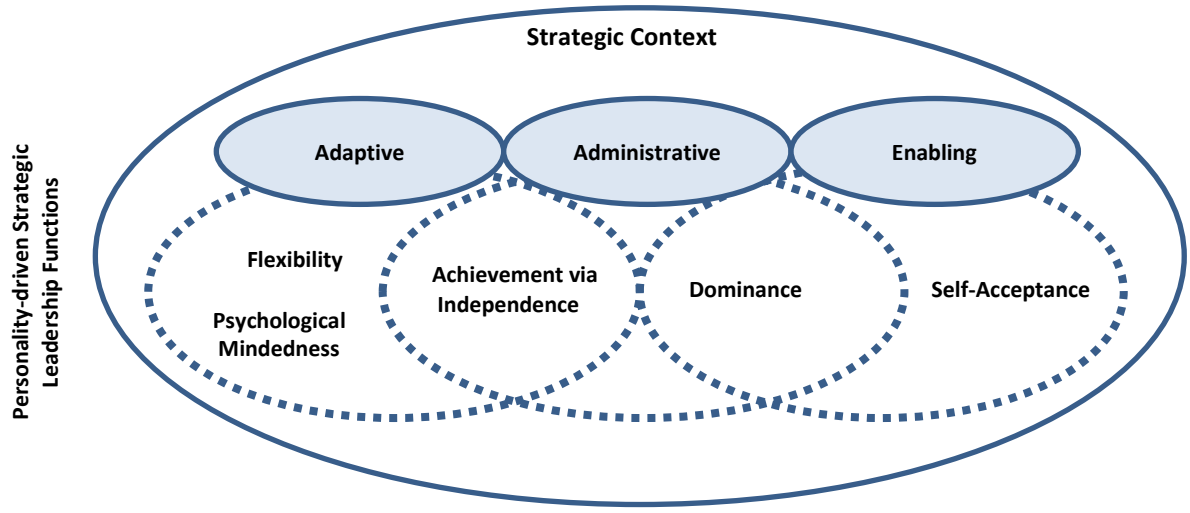
According to Heifetz et. al. (2009), leadership is in a permanent state of crisis where the emergent context requires increasingly more complex problem solving in order to realise success. The major findings in this study lend insight into the underlying constructs of this ability to manage emergent complexity. Marion et. al.'s (2007) formulation of Complexity Leadership Theory defines the leadership functions required to manage in this new environment. However, this theory falls short in identifying the factors or underlying constructs that enable these functions in a manner that can provide practical insight to organisations.

The consolidated findings identified Dominance, Flexibility, Achievement via Independence, Psychological Mindedness and Self-Acceptance as key contributors to the ability think strategically, and thereby manage complexity. Complexity was defined as a system in which multiple independent agents interact with each other and change in numerous ways through time (Stamp, 1993). This research concludes that in order for a leader to manage this complexity, high levels of these five personality factors must be present.

7.2.1. The strategic leadership profile

The findings are best illustrated through a diagrammatic representation as indicated in figure 8. This model begins with the encompassing circle denoting the fluid strategic context characterised by the emergent properties that are consistent with the evolution of an organisations competitive environment over time. Within this context are the *adaptive, administrative and enabling* leadership functions of CLT (Marion et. al. (2007). These leadership functions combine the internal dynamics of organisations with the external constraints in the environment. This pattern entrenches the strategic leader within the complex interaction of contextual forces.

Figure 8: Strategic Leadership Profile



Strategic behavioural factors

Flexibility	Psychological Mindedness	Achievement via Independence	Dominance	Self-Acceptance
• Comfort with uncertainty • Openness to new experience • Intellectually supple	• Independent & individualistic • Perseverance over long term • Abstract reasoning	• Tolerance of ambiguity • Creative & original • Unstructured thinking	• Goal-directed & output driven • Develop resources • Direct & manage assertively	• Independent thinker • High self worth • Ambitious and assertive

The ability to realise and attain these leadership functions is dependent on particular personality factors. To achieve the flexibility and creativity required of the *adaptive* leadership function, individual characteristics of Flexibility, Psychological Mindedness and Achievement via Independence are required, as illustrated through the first ellipse. The second ellipse overlaps the first to denote that Achievement via Independence is

also required to realise the *administrative* leadership function. In addition, Dominance is also required to enable the practical application of the superior planning and direction of activities necessary for *administrative* leadership. In turn, the third ellipse overlaps the second to manifest the requirement of Dominance in the achievement of the *enabling* leadership function. Self-Acceptance contributes to the realisation of *enabling* leadership in its provision of the catalyst through independent thinking. The three combined ellipses represent the personality-driven, strategic leadership functions. The areas of overlap demonstrate the interdependencies of the leadership functions.

Underpinning these leadership functions are the observable behaviours that express these personality factors. The emphases of these behaviours are instrumental in leveraging the practical application of these findings, and are best clarified through recommendations to stakeholders.

7.3. Recommendations to stakeholders

7.3.1. Recommendations to Human Resource practitioners

Recognition that talent are the critical discriminator of corporate performance is imperative in the new world of work. If Human Resource (HR) practitioners are to enable corporate performance, their objectives should be focused on the talent that have the largest impact on profitable results. This is the talent pool that constitutes strategic leaders. The strategic leadership profile incorporates specific personality factors that drive strategic thinking. These factors of Dominance, Flexibility, Achievement via Independence, Psychological Mindedness and Self-Acceptance are necessary characteristics and combine to form the new strategic leadership profile.

Identifying leaders with this profile can be practically achieved through the administration of a personality assessment when identifying talent outside the organisation, or through the observation of related behaviours when identifying talent within the organisation. Once identified, these leaders can receive a disproportionate focus in the execution of talent management interventions – from development initiatives to compensation and rewards.

It is further recommended that leveraging the new strategic leadership profile will facilitate the development of a bench of future leaders. This could involve the identification of individuals that match the new leadership profile early in their career. This cadre of individuals at the junior to middle management level can not only deepen the level of strategic thinking in the organisation, but can ensure sustainability through continued succession of strategic leaders. The provision of a continuous stream of capable and strategic leaders will facilitate organisational stability that can bolster shareholder comfort regarding the organisations future sustainability.

Embracing the new leadership profile can propel Human Resource practitioners into delivering on the commercial requirements of the business. Identifying and selecting these leaders can have a significant impact on managing in the current environment, whilst identifying and developing these personality and behavioural factors in junior and middle management can ensure continued strategic leadership into the future.

7.3.2. Recommendations to management and leaders

Lamb and Sutherland (2010) revealed that an internal locus of control was required for an individual to successfully navigate the new world of work. This ability to take accountability for one's actions is critical in focusing on self-development. Managers and leaders who possess the new leadership profile can develop and refine their abilities through dialling up (emphasising), or dialling down (de-emphasising), certain behaviours. This would be particularly relevant in reflecting on the specific behaviours required of particular situations.

For example, identifying a new product brand strategy will require an individual to 'dial up' intellectual suppleness and creativity. To create an executional brand plan will require an emphasis on behaviours of superior goal development, whilst practical execution will require a 'dial up' on development of resources, perseverance and assertive direction. By emphasising and de-emphasising certain behaviours, a leader can obtain flexibility in their approach to the dynamic context to which they are exposed daily.

Embracing the new leadership profile can provide a defined target on which managers and leaders can focus in their continuous development. A persistent focus can facilitate a behavioural flexibility and suppleness that can largely differentiate successful leaders from their competitive counterparts.

7.4. Recommendations for future research

The continued muted growth in the global economy is resulting in tighter competition as organisations fight for survival and growth. Gaining a deeper understanding of how to better navigate this new landscape will continue to be topical. Progressive organisations are looking for key differentiators that can propel them back into growth, resulting in a need to comprehend how their leaders can achieve this. In order to supply these insights, further exploration into strategic thinking is needed. The following avenues are recommended:

- Given Jaques' (1989) broad definition of complexity, further research that explores whether values plays a role should be undertaken. This may shed further light on the factors that contribute to the variation in strategic thinking, and could add value to the new strategic leadership profile. The Motives, Values, Preferences Inventory (MVPI) developed by Hogan may add value in this regard.
- In order to extrapolate to the general population, a larger, more inclusive sample is required. It is recommended that the full management and executive population of an organisation would result in more conclusive findings. A more sophisticated statistical technique could then be utilised, resulting in stronger and potentially more meaningful conclusions.
- It is also recommended that this research is repeated across different organisations in different industry sectors and across different geographies. This is likely to provide a richness of insight that is not possible in a unitary company.
- Although several nationalities, ages and ethnicities were present in this research, the sample size prohibited the ability to insightfully analyse any particular trends. It is recommended that specific studies are undertaken to observe any moderating effects of cultural and generational factors.

The accumulated outcomes of this broadened research will sharpen the new strategic leadership profile, and enable the development of tools and resources that can improve an organisations ability to identify, attract, select and develop leaders appropriate to the new world of work. Such tools may include behavioural-based interview guides; behavioural-based performance evaluation guides and behavioural-based 360 degree feedback guides.

7.5. Conclusion

Patterns of the past are no longer suitable predictors of patterns of the future. As such, understanding personality and its relationship to strategic thinking was required to determine the new leadership profile. This profile encompasses distinct personality factors that enable leaders to think strategically and embrace complexity. The conclusions drawn from this research augments Complexity Leadership Theory by providing behavioural characteristics that facilitates a more practical resource in identifying truly strategic leaders. Furthermore, this study enhances CLT by recognising the critical role of independent thinking and individualism within the interactions between leaders.

The intent of this study was to identify the nature of the relationship between personality and strategic thinking, with a view to providing practical insights that can be leveraged by Human Resource practitioners and leaders alike. By focusing disproportionately on the talent pool that enjoy high levels of the new leadership profile, the HR practitioner can target the most strategic of thinkers for selection, development and remuneration. In so doing, the HR practitioner can directly contribute to the commercial agenda of the organisation, by positioning the most appropriate talent in the market-facing, profit-generating functions.

In addition, managers and leaders can target their self-development initiatives by developing flexibility and suppleness in their behaviours. Emphasising (dialling up) and de-emphasising (dialling down) specific behaviours can provide a more targeted focus in leadership development.

And finally, this research has revealed the complexity of this topic. Numerous unknowns remain in uncovering the determinants of strategic thinking and potential moderating variables. Future research in these areas would build a more exhaustive model for organisational application. The role of values may enhance the understanding of strategic thinking further, whilst generational and cultural factors must be explored to appreciate the topic as fully as possible.

In summary, organisations with the most effective leadership bench, enjoy almost double the rate of revenue and profit growth as their competitors (CEB, 2013). Effective leadership has been documented in the new strategic leadership profile. Organisations that exploit this leadership profile are likely to significantly differentiate themselves from the competition. The continuous interaction of forces within and

outside the organisation is resulting in an unprecedented changing environment where the past holds no template with which to manage the future. However, a deeper understanding of the individual will continue to expose appropriate solutions. As William Faulkner noted of personality:

"Always dream and shoot higher than you know you can do.
Do not bother just to be better than your contemporaries or predecessors.
Try to be better than yourself."

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Appendix 1: CPI-434 Class One Scale: Folk Concept Descriptions (McAllister, 1996)

Class One Scales: Self-confidence, social effectiveness, poise

LOW - (30-)	LOW (30 – 45)	HIGH (55 – 70)	HIGH + (70 +)
Dominance (Do): Leadership ability, dominance and willingness to take a leadership role.			
Reserved, cautious, follower	Project oriented, respect given to authority	Ambitious, enterprising	Assertive, competitive
Capacity for Status (Cs): Ambitious, self-assured, confident, aware of value of status, success.			
Shy, tend to :give up", cautious	Avoid major challenges, use position to influence	Ambitious, self-directed, handle stress / pressure	Desire status, sensitive to how treated
Sociability (Sy): Comfortable in social situations, self-confident, enjoys attention.			
Reserved, loner	Private, limited ambition	Enjoy people, participative	Socially enterprising, enthusiastic
Social Presence (Sp): Feelings of self-confidence, personal worth, self assurance, joy of new experiences			
Self-doubt, uncomfortable with status, power	Deliberate, conform, careful	Active, energy, sense of urgency, independence	Need for power, recognition
Self-Acceptance (Sa): comfort in dealing with others, self-evaluation and sense of personal worth			
Insecure, low self-confidence	Conventional, reluctant to take a stand	Self confident, take initiative	Seeks visibility, opportunistic
Independence (In): resoluteness, perseverance, self-sufficiency, willingness to follow own judgment though others disagree.			
Self-doubt, cautious, pleasing	Low initiative, avoid social disapproval	Resourceful, enterprising, individualistic	Independent, defend self, resilient
Empathy (Em): ability to perceive and feel the experiences of others, resolute persevering, self sufficient.			
Dependent, unsociable, ill at ease	Shy, feels inadequate, sceptical, cautious	Friendly, tactful, pleasant	Insightful, perceptive of social nuances

CPI-434 Class Two Scale: Folk Concept Descriptions (McAllister, 1996)

Class Two Scales: Personal values, self-control, sense of responsibility

LOW -	LOW	HIGH	HIGH +
Responsibility (Re): acceptance of social rules because of a true understanding of the need for such rules, dependable, self-improvement			
Poor self-discipline, self-indulgent	Unconventional, impatient with routine	Orderly, operate by rule of reason	Dependable, socially responsible
Socialisation (So): social maturity, integrity, morality, righteousness			
Defensive, stubborn, rebellious	Risk-taking, opinionated, insolent	Sincere, conventional, accommodating	Socially sensitive, diplomatic
Self-control (Sc): self-regulation, self-control, freedom from impulsivity and self-centredness			
Impulsive, easily irritated, pleasure seeking	Spontaneous, adaptable, bored with sameness	Disciplined, reserved, values normative issues	Controlled, seeks predictability, rigid
Good Impression (Gi): ability to create a favourable impression and concern about how others could react			
Unconcilliatory, demanding, moody	Indifferent, critical, no-nonsense	Responsive, approachable, considerate	Overly-friendly, tries to "fit in"
Communality (Cm): the degree to which reactions and responses correspond to the common pattern established for the inventory			
Non-conformist, poor morale, lacks direction	Solitary, unconventional, different	Optimistic, reasonable, fits in	Conservative conventional, trustworthy
Well-Being (Wb): feelings of able to withstand stress, trusting others, good relationships, happiness and good morale			
Worried, discontented, confused	Sensitive, low vitality, anxious	Enthusiastic, optimistic, enterprising	Self-satisfied, in harmony with self / life
Tolerance (To): integrity, goodwill, feelings of being treated fairly, concern for others, belief in fairness and equity			
Keeps, distance, dogmatic	Cautious, suspicious, prejudiced	Open, resourceful, accepting	Trusting, unbiased attitude

CPI-434 Class Three Scale: Folk Concept Descriptions (McAllister, 1996)

Class Three Scales: Achievement Oriented Behaviour

LOW -	LOW	HIGH	HIGH +
Achievement via Conformance (Ac): motivation to achieve within structure, accept rules, planfulness and orientation towards the future, persevere			
Rebellious, unpredictable	Defensive, guarded commitment	Organised, adapts to social norms	Thorough, methodical, disciplined
Achievement via Independence (Ai): motivation to achieve superior performance in settings requiring independent planning and effort			
Dependent, distrusts own abilities	Practical, hands-on, careful about change	Self-motivated, set own goals, high aspirations	Individualist, independent
Intellectual Efficiency (Ie): assessment of intellectual resources and endurance, morale, confidence, intellectual activity			
Docile, unsure	Active, pragmatic, soloist	Eager to learn, anticipates, versatile	Enterprising, self-confident, insightful

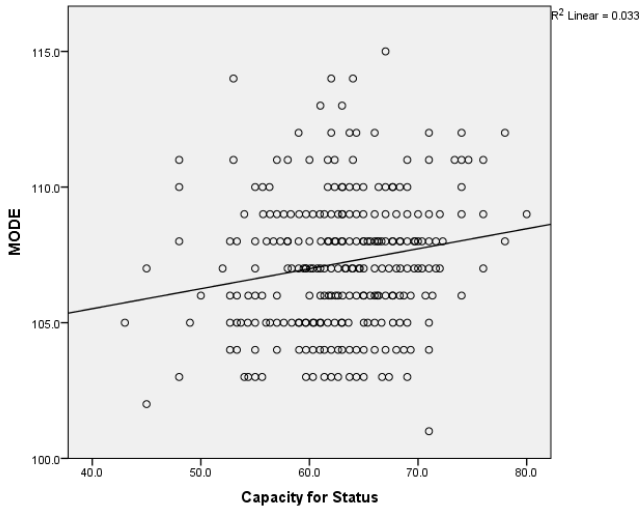
CPI-434 Class Four Scale: Folk Concept Descriptions (McAllister, 1996)

Class Four Scales: Conceptual and intellectual modes or styles

LOW -	LOW	HIGH	HIGH +
Psychological Mindedness (Py): degree of interest in and responsive to inner needs, motives and experiences of others (non-judgmental)			
Concrete, pragmatic, not astute	Structured, rational, low interest in interpersonal dynamics	Perceptive, independent, wide interests	Analytical, curious re behaviour, open-minded
Flexibility (Fx): Tolerance for ambiguity, non-compulsive behaviours, admitting bias, not pre-judging			
Risk averse, seeks structure, systematic	Deliberate, planful, cautious	Flexible, enjoys variety, alert	Spontaneous, change equals learning opportunities
Femininity / Masculinity (F/M): to assess a person's interest in and capacity for patience and personal sensitivity			
Determined, insensitive, results, respect important	Task-oriented, directive	Understanding, empathy, sensitive	Easily hurt, vulnerable, warm affectionate

Appendix 2: Scatterplots of personality factors and mode

Figure 9: Scatterplot: Mode and Cs



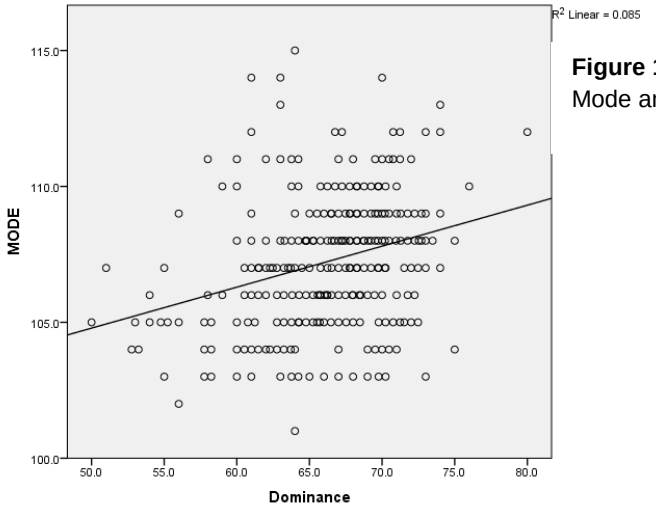
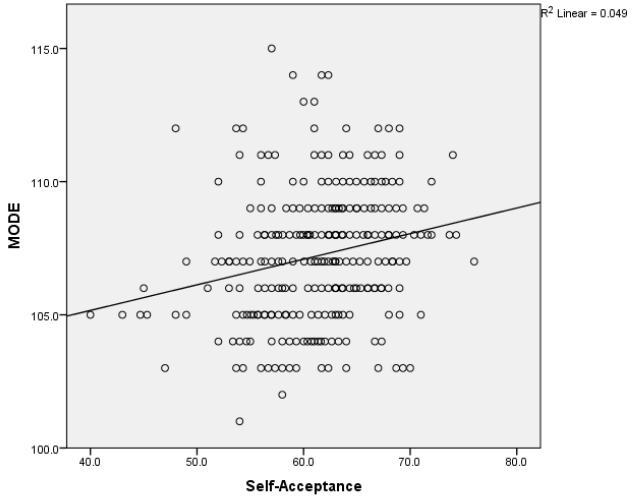


Figure 10: Scatterplot: Mode and Do

Figure 11: Scatterplot: Mode and Sa



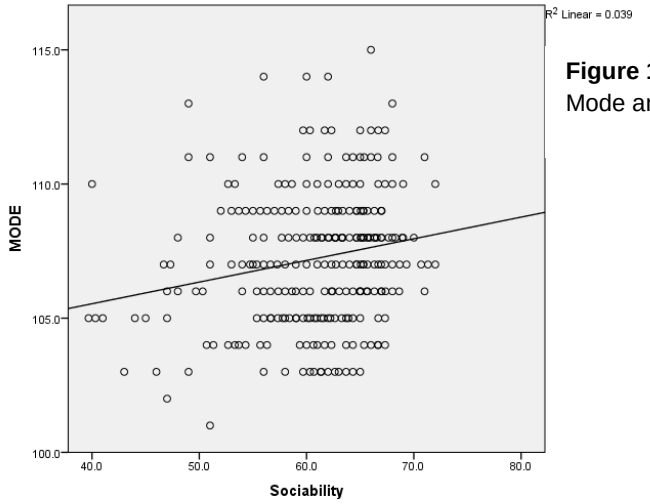


Figure 12: Scatterplot: Mode and So

Figure 13: Scatterplot: Mode and Em

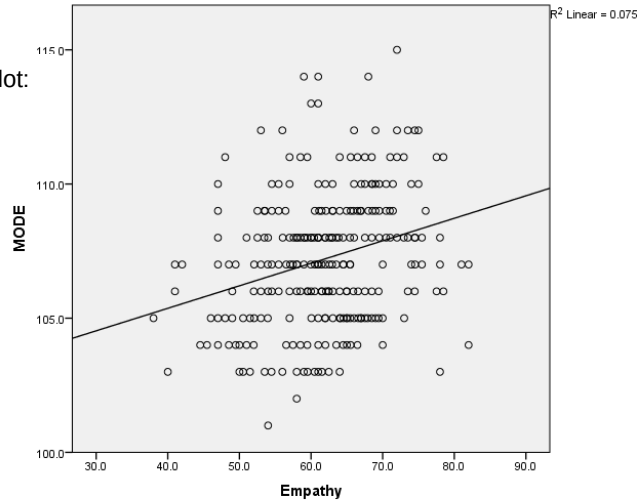


Figure 14: Scatterplot: Mode and Sp

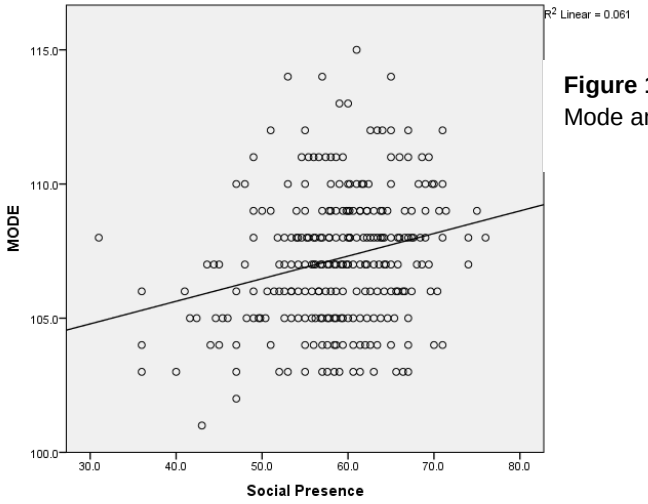


Figure 15: Scatterplot: Mode and So

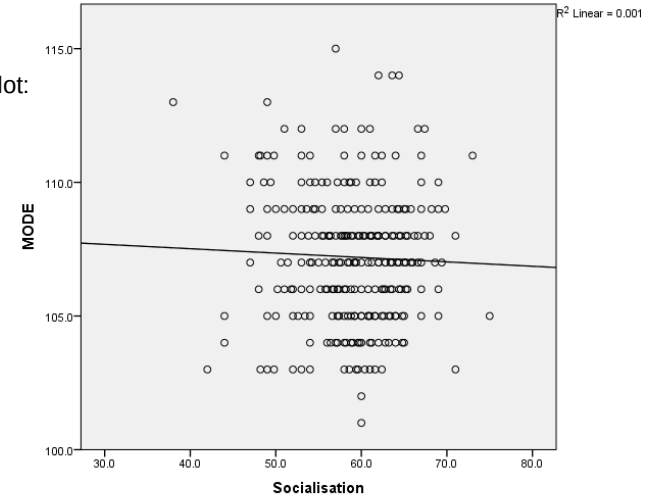


Figure 16: Scatterplot: Mode and In

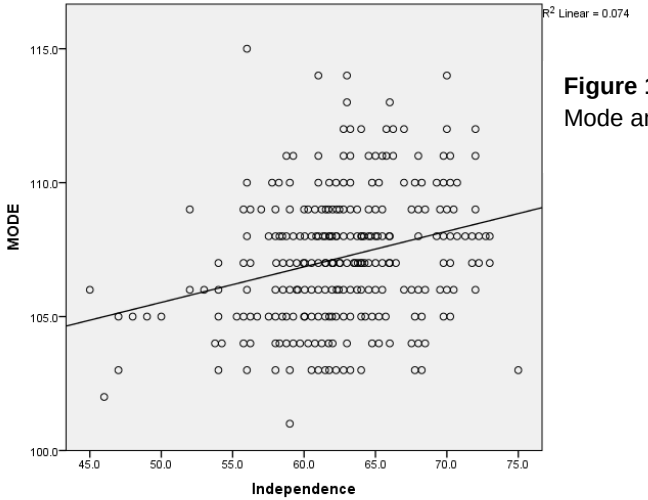


Figure 17: Scatterplot: Mode and Re

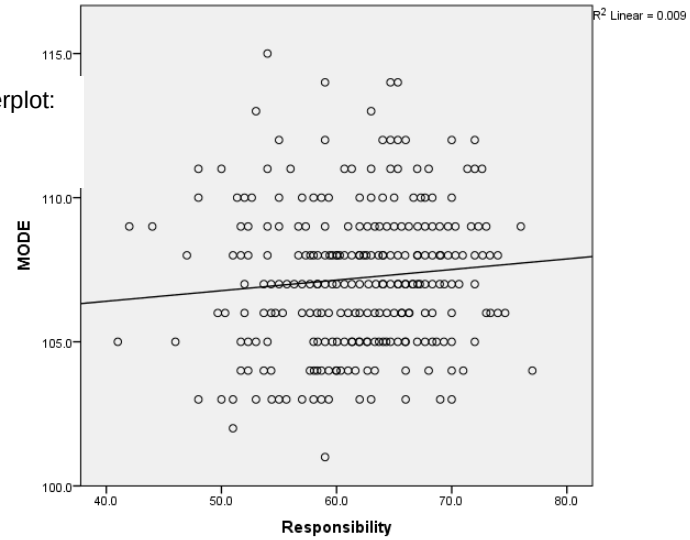


Figure 18: Scatterplot: Mode and Sc

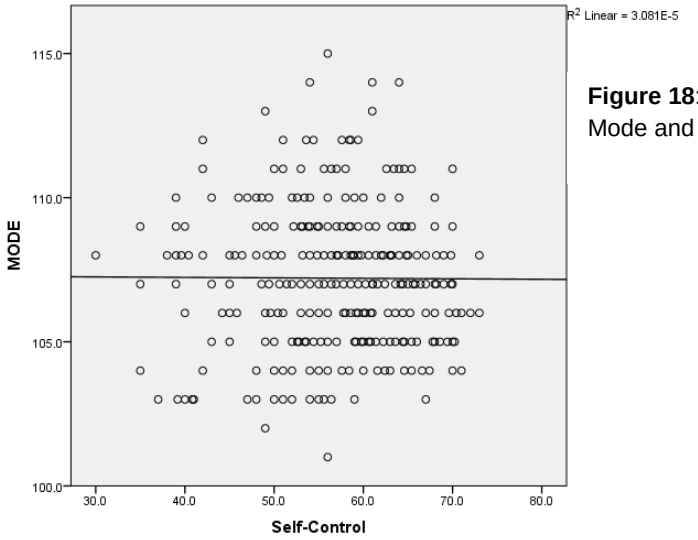


Figure 19: Scatterplot: Mode and Gi

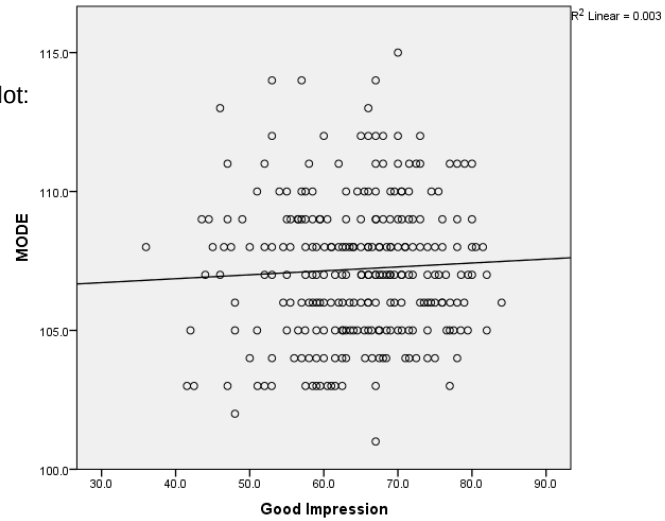
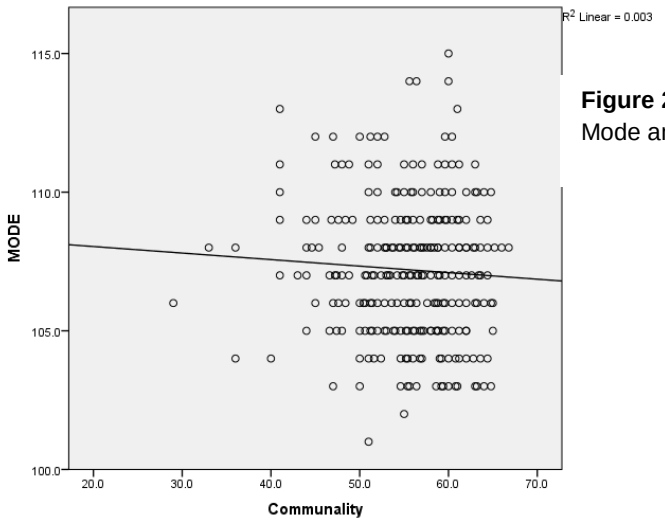


Figure 20: Scatterplot: Mode and Cm



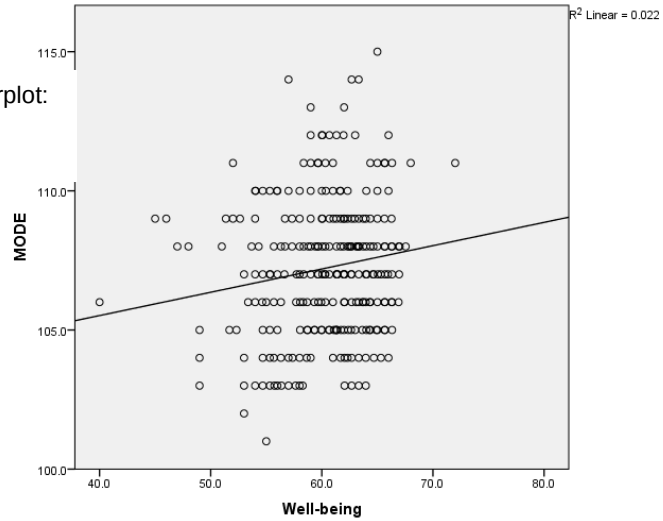


Figure 21: Scatterplot: Mode and Wb

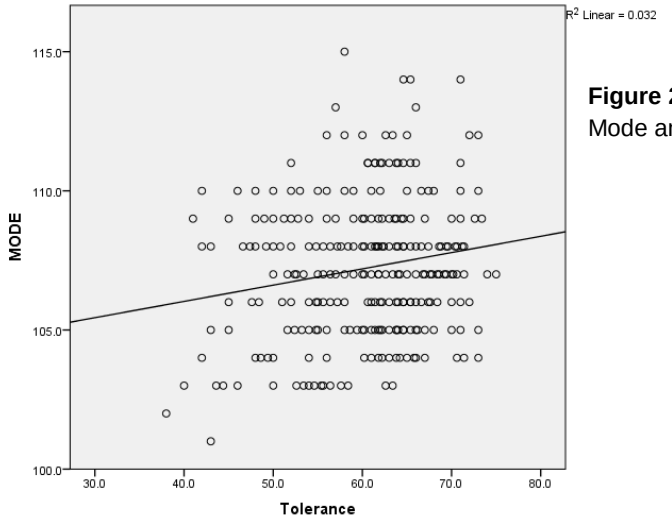


Figure 22: Scatterplot: Mode and To

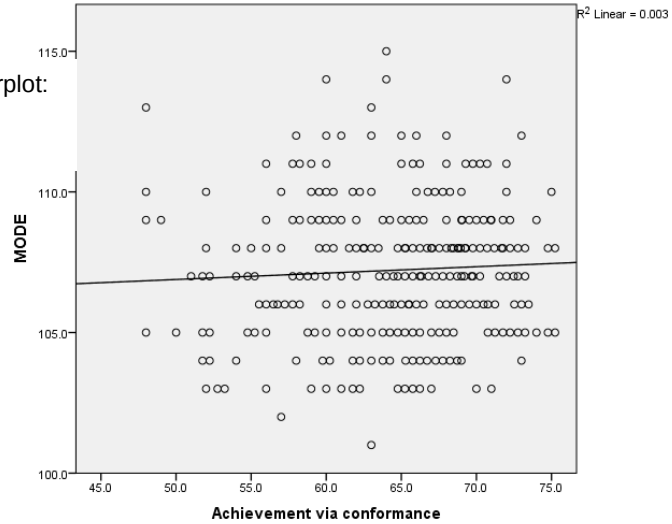


Figure 23: Scatterplot: Mode and Ac

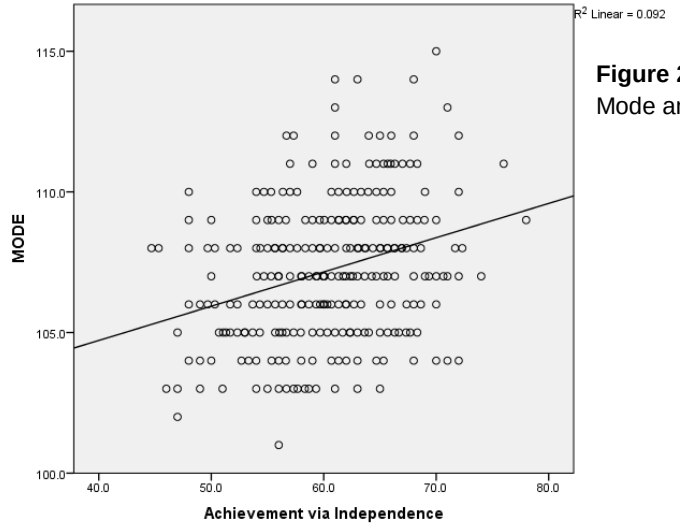


Figure 24: Scatterplot: Mode and Ai

Figure 25: Scatterplot: Mode and Fx

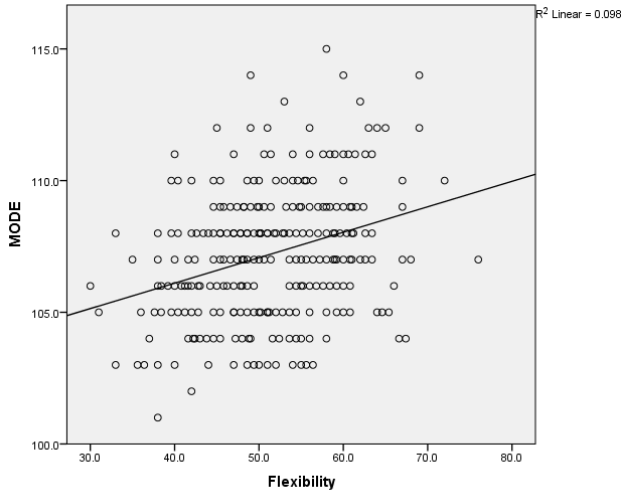


Figure 26: Scatterplot: Mode and Ie

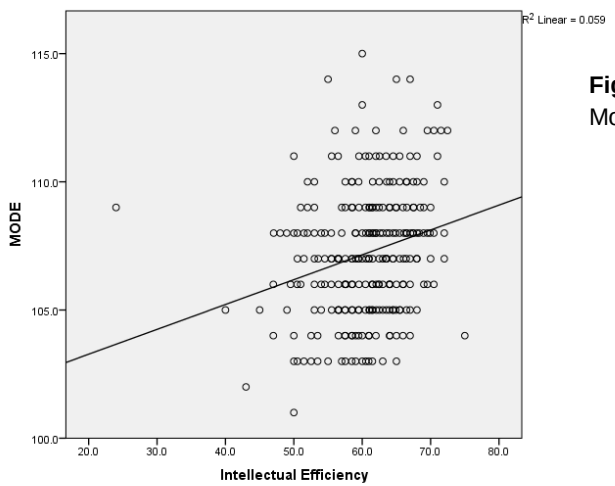


Figure 27: Scatterplot: Mode and Py

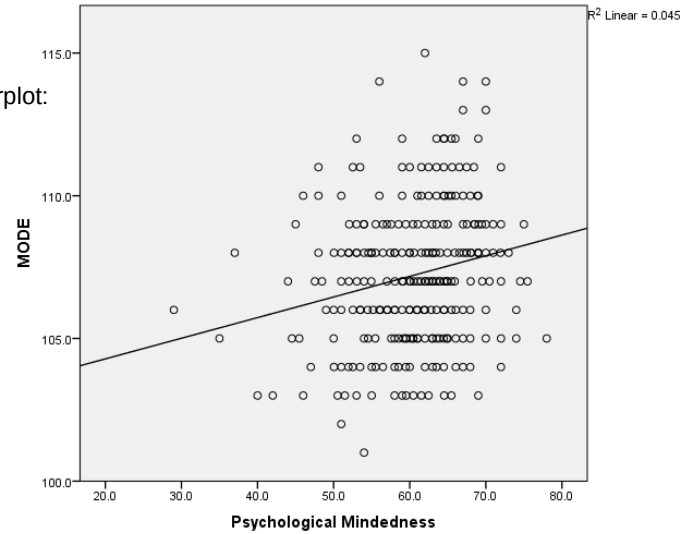
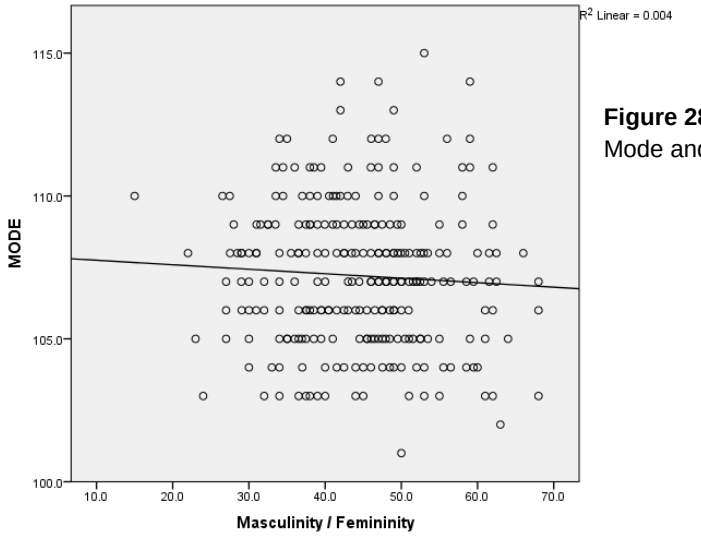


Figure 28: Scatterplot: Mode and M/F



Appendix 3: Statistics Results

Table 21: Backward Regression ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	358.838	12	29.903	5.492	.000[b]
	Residual	1323.189	243	5.445		
	Total	1682.027	255			
2	Regression	358.610	11	32.601	6.011	.000[c]
	Residual	1323.417	244	5.424		
	Total	1682.027	255			
3	Regression	358.201	10	35.820	6.629	.000[d]
	Residual	1323.826	245	5.403		
	Total	1682.027	255			
4	Regression	357.948	9	39.772	7.389	.000[e]
	Residual	1324.079	246	5.382		
	Total	1682.027	255			
5	Regression	357.142	8	44.643	8.323	.000[f]
	Residual	1324.885	247	5.364		
	Total	1682.027	255			
6	Regression	355.940	7	50.849	9.510	.000[g]
	Residual	1326.088	248	5.347		
	Total	1682.027	255			
7	Regression	354.117	6	59.020	11.067	.000[h]
	Residual	1327.910	249	5.333		
	Total	1682.027	255			
8	Regression	345.665	5	69.133	12.933	.000[i]
	Residual	1336.362	250	5.345		
	Total	1682.027	255			
9	Regression	333.680	4	83.420	15.529	.000[j]
	Residual	1348.348	251	5.372		
	Total	1682.027	255			

a. Dependent Variable: MODE

b. Predictors: (Constant), Fx, Do, Py, Cs, To, Sp, In, Sa, Cf, Em, Ai, Sy

c. Predictors: (Constant), Fx, Do, Py, Cs, To, Sp, Sa, Cf, Em, Ai, Sy

d. Predictors: (Constant), Fx, Do, Py, Cs, To, Sa, Cf, Em, Ai, Sy

e. Predictors: (Constant), Fx, Do, Py, Cs, To, Sa, Cf, Em, Ai

f. Predictors: (Constant), Fx, Do, Py, Cs, Sa, Cf, Em, Ai

g. Predictors: (Constant), Fx, Do, Py, Cs, Sa, Em, Ai

h. Predictors: (Constant), Fx, Do, Py, Cs, Sa, Ai

i. Predictors: (Constant), Fx, Do, Py, Sa, Ai

j. Predictors: (Constant), Fx, Do, Py, Sa

Table 22: Backward Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.462[a]	.213	.174	2.3335	.213	5.492	12	243	.000
2	.462[b]	.213	.178	2.3289	.000	.042	1	243	.838
3	.461[c]	.213	.181	2.3245	.000	.075	1	244	.784
4	.461[d]	.213	.184	2.3200	.000	.047	1	245	.829
5	.461[e]	.212	.187	2.3160	.000	.150	1	246	.699
6	.460[f]	.212	.189	2.3124	-.001	.224	1	247	.636
7	.459[g]	.211	.192	2.3093	-.001	.341	1	248	.560
8	.453[h]	.206	.190	2.3120	-.005	1.585	1	249	.209
9	.445[i]	.198	.186	2.3177	-.007	2.242	1	250	.136

a. Predictors: (Constant), Fx, Do, Py, Cs, To, Sp, In, Sa, Cf, Em, Ai, Sy

b. Predictors: (Constant), Fx, Do, Py, Cs, To, Sp, Sa, Cf, Em, Ai, Sy

c. Predictors: (Constant), Fx, Do, Py, Cs, To, Sa, Cf, Em, Ai, Sy

d. Predictors: (Constant), Fx, Do, Py, Cs, To, Sa, Cf, Em, Ai

e. Predictors: (Constant), Fx, Do, Py, Cs, Sa, Cf, Em, Ai

f. Predictors: (Constant), Fx, Do, Py, Cs, Sa, Em, Ai

g. Predictors: (Constant), Fx, Do, Py, Cs, Sa, Ai

h. Predictors: (Constant), Fx, Do, Py, Sa, Ai

i. Predictors: (Constant), Fx, Do, Py, Sa

j. Dependent Variable: MODE

Table 23: Backward Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
9	(Constant)	89.726	2.411		37.216	.000
	Do	.113	.034	.218	3.369	.001
	Sa	.050	.028	.115	1.744	.082
	Py	.049	.021	.143	2.366	.019
	Fx	.078	.018	.253	4.255	.000

a. Dependent Variable: MODE