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REINFORCEMENT SENSITIVITY THEORY, PERSONALITY, 
AND SENIOR EXECUTIVE PERFORMANCE

ANN MECHTHILD HUTCHISON

Abstract

This thesis explores the extent to which Jeffrey Gray’s reinforcement sensitivity theory of personality can predict and explain the job performance of top-level executive leaders. In this study, 189 senior executives underwent a battery of psychometric, biographical and performance measures. The dimensions of approach and avoidance motivation were measured using Carver and White’s (1994) ‘BIS/BAS Scales’, and the predictive power of these dimensions was compared to R. Hogan and Hogan’s (1997) ambition and adjustment traits. Overall, a model of senior executive performance prediction was tested using structural equation modelling. The results showed that the ‘BIS/BAS Scales’ did not predict the selected aspects of executive performance. However, the Hogan ambition and adjustment traits did, but only when certain facets of these traits were used. Most notably, the executives’ levels of experience and perceived reward at work were stronger predictors of performance than personality was. The results suggest that reinforcement sensitivity theory does not provide a particularly promising explanation for senior executive job performance, with the chosen measures, but that selected Hogan measures do. However, executive performance prediction is very much a nuanced phenomenon, and these nuances only emerge when the performance and predictor domains are measured and analysed at a facet level.
Acknowledgements

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Chapter 1
Introduction

This thesis is about senior executive business leaders, and what predicts their job performance. The thesis explores how personality fares as a key predictor of top-level executive performance, alongside other relevant predictors. Most significantly though, the thesis takes a unique perspective by exploring whether a particular neurobiological theory of personality, Jeffrey Gray’s reinforcement sensitivity theory (Gray, 1972a, 1972b, 1982; Gray & McNaughton, 2000), can predict and explain executive performance. The implications of reinforcement sensitivity theory for the workplace and for the fields of management and industrial/organisational (I/O) psychology are only just emerging (see Furnham & Jackson, 2008). This thesis contributes to that emerging literature, focusing uniquely on reinforcement sensitivity theory’s implications at the senior-executive level.

What is equally original is that the thesis focuses exclusively on top-level executives as a unique group (excluding middle managers), presenting personality and performance data from 189 senior executives: chief executives, heads of marketing, heads of human resources, chief financial officers, and other roles of a similar level. It appears that, although several qualitative research efforts have revealed the traits that predict executive effectiveness (e.g., Bray, Campbell, & Grant, 1974; Kaplan, 1991; Kotter, 1982), there is no published quantitative research on the link between personality and executive performance that focuses exclusively on senior executives, while also aligning with contemporary personality theories, and capturing the executive performance domain in a sufficiently valid and thorough manner.

To elaborate further, there is published quantitative research on the personality-performance linkage for executive leadership, but this research is either outdated in terms of
personality theory (e.g., Bentz, 1985), blends several levels of leadership including middle management (e.g., J. Hogan, Hogan, & Murtha, 1992; Judge, Ilies, Bono, & Gerhardt, 2002), or uses indirect measures of performance, such as leader emergence or salary level, rather than measuring performance directly and comprehensively (e.g., McClelland & Boyatzis, 1982; Nicholson, 1998).

This thesis makes an original contribution in that it (a) explores reinforcement sensitivity theory at the senior-executive level; and (b) provides a quantitative study of top-level senior executives using a variety of appropriate personality and performance measures.

1.1 The Business Case for this Research

Why is this of interest to the field of business? From a theoretical perspective, the importance of senior executives was asserted by Hambrick and Mason (1984) in their seminal work on upper echelons theory. They argued that the senior executive team has a significant impact on the bottom line of an organisation. Although contextual factors, such as job design or market conditions, will always affect the extent of the executive team’s influence on organisational outcomes, the research around upper echelons theory suggests that ensuring the right people reach the top is an important business issue (Hambrick, 2007).

This aside, executive underperformance is a business problem that receives considerable attention from management writers. It has been estimated by R. Hogan, Raskin, and Fazzini (1990) that the “base rate for flawed leadership” is between 60% and 75% (p. 347). R. Hogan et al. use various studies to support this estimate, covering workplace bullying, leadership outcomes, and chief executive turnover. Moreover, based on interviews conducted with 500 executives who hire senior managers, Sessa and Taylor (2000) estimate that 25% to 75% of new senior management hires are not deemed to perform satisfactorily once they are in the job, and Lombardo, Ruderman, and McCauley (1988) estimate that 50%
to 60% of senior executives in fact ‘derail’ (i.e., fail to perform once they reach this level). In addition, it is acknowledged that ‘toxic’ or ‘destructive’ leadership behaviours at a senior level are not uncommon (Conger, 1990; Padilla, Hogan, & Kaiser, 2007; Schaubroeck, Walumbwa, Ganster, & Kepes, 2007).

Considering these figures, the costs of executive failure for organisations can be significant (Kaplan, 1991; Sessa & Taylor, 2000). If an executive fails to perform, the costs range from missed business opportunities or inappropriate business decisions, to replacement costs of that executive, lowered subordinate motivation, or loss of continuity if the executive leaves (Cascio & Boudreau, 2008; Smart, 2005). Some of these costs are, of course, difficult to measure. Nevertheless, it is argued here that executive effectiveness poses a source of competitive advantage to organisations.

If it is possible to detect early on in a person’s career, or early on in a selection process, whether a given person has the potential to be an outstanding executive or, conversely, whether they are at risk of displaying negative executive behaviours, this will be useful to businesses.

1.2 Linking Reinforcement Sensitivity Theory to Executive Performance: A Bridge Between Neuroscience and Management

Executives aside, reinforcement sensitivity theory (RST) itself holds interesting implications for management because of its links with motivation theory. RST postulates that people differ along two orthogonal personality dimensions – approach motivation (sometimes termed ‘reward sensitivity’) and avoidance motivation (sometimes termed ‘punishment sensitivity’). People high in approach motivation are particularly driven to achieve rewards in life, whereas people low in this score are less likely to be so driven. Similarly, the personality dimension of avoidance motivation dictates the likelihood of someone displaying inhibited behaviour in the face of threat or punishment (see Corr, 2008, for a review of the
theory). RST proposes that these two traits have their roots in biological brain mechanisms, and that individual levels of approach motivation and/or avoidance motivation are innate (i.e., biologically based).

The argument here is that motivation has a biological basis. For business, if this is true, the implications are that employees are inherently motivated or not, and that motivation stems from a person’s unique biological make-up. At the executive level, the question is whether those with high approach motivation are naturally more driven than other executives and, if so, whether that drive has an impact on performance outcomes. The question also arises as to whether it is worth using motivational techniques if motivation is in fact an innate quality.

Reinforcement sensitivity theory has only recently been applied to management or business contexts (e.g., Diefendorff & Mehta, 2007; Furnham & Jackson, 2008; Van der Linden, Taris, Beckers, & Kindt, 2007), and (as far as is known) not at the senior-executive level, so this research will help build a fuller picture of what is known about RST at work, further informing us about the ecological validity of this theory in organisational research contexts.

1.3 The Study and its Findings

This project presents a quantitative study of 189 top-level executives from across numerous industries within Australia and New Zealand, representing a range of professional specialisations. These executives took a battery of psychometric measures, using the Hogan assessments (R. Hogan, Barrett, & Hogan, 2007; R. Hogan & Hogan, 1997) to measure mainstream psychometric dimensions, and Carver and White’s (1994) ‘BIS/BAS Scales’ to measure approach motivation and avoidance motivation. The executives then underwent a set of performance measures. The performance measures were collected using 360-degree
ratings of the executives’ (a) achievement of their business objectives, (b) key competencies, and (c) subordinate outcomes (job satisfaction, organisational commitment, and turnover intentions of their direct reports).

From a management perspective, by including neurobiological and mainstream personality measures, a wider view of the predictive power of personality is gained; and by using 360-degree ratings to measure multiple facets of performance, a particularly comprehensive picture of performance is obtained. This provides a fuller picture of executive performance than previous studies have achieved.

This thesis ultimately pulls together various strands of literature to develop a set of hypotheses about executive performance. These strands include personality theories, research on personality and work outcomes, management literature on senior executive leadership, theories of job performance, and literature on neurobiological theories of personality, in particular reinforcement sensitivity theory.

The research design here was deliberately aligned with contemporary personality research on workplace outcomes, and addressed the various recommendations and directions for further research proposed by the most prominent personality theorists (Barrick, 2005; R. Hogan, 2005; Hough & Oswald, 2005; Ones, 2005).

Ultimately, a series of structural equation models were used to test whether approach motivation and avoidance motivation predict specific aspects of executive performance. Alongside this, selected Hogan personality traits (R. Hogan & Hogan, 1997) were also included in the models to explore whether mainstream personality theories provide superior prediction to RST.
1.4 Thesis Structure

The thesis starts by operationalising the term ‘executive performance’ in the first chapter of its literature review (chapter 2). This is based on various writings about job performance and executive leadership, including the seminal works of Campbell, McCloy, Oppler, and Sager (1993), Barnard (1938), Motowidlo, Borman, and Schmit (1997), and Boyatzis (1982).

Next, the thesis argues that reinforcement sensitivity theory is a theory worth using in the context of executive leadership (chapter 3). To support that argument, the relevant neuroscientific research is reviewed, with particularly heavy reliance on the work of Corr (2008), Pickering (1997), Pickering and Gray (2001), Gray and McNaughton (2000), and of course Jeffrey Gray’s (1970, 1972a, 1972b, 1981) research.

Relatively little is known about RST in the workplace, and seemingly nothing at the executive level. Therefore, the literature review turns to personality research for clues that can be used to build hypotheses about RST and executive performance. This literature is discussed in chapter 4, and that chapter ultimately argues that the mainstream five-factor model of personality (FFM; Costa & McCrae, 1991, Digman, 1990) may not provide the best structure for understanding executive performance, and that the use of motivation-related dimensions (like approach motivation and avoidance motivation) could result in higher predictive validities.

Finally, the management literature is consulted in chapter 5, and it is this literature that provides the most information on executive leadership, and the most guidance for building hypotheses. The work of Kotter (1982) and Kaplan (1991) are particularly influential in this chapter. Ultimately, 17 hypotheses about executive leadership are built over the course of this chapter, and these hypotheses form a wider model of executive performance. The hypotheses are listed in chapter 6.
The study’s methods and results are presented in chapters 7 and 8 respectively, followed by a discussion in chapter 9. In that discussion, the findings surrounding approach and avoidance motivation are discussed in the light of this study’s research design and measurement practices. In addition, the results’ theoretical implications are discussed, as are the study’s implications for management practices.

In conclusion, this thesis explores the link between the neurobiological reinforcement sensitivity theory of personality, on the one hand, and senior executive performance, on the other. A study is presented here, incorporating data from 189 top-level executives from across New Zealand and Australia. In this study, a variety of predictors and performance criteria are used to explore executive performance prediction as comprehensively as possible. The results provide a fuller picture of executive performance than has previously been available in published literature, and also contribute further insight into what is known about the bridge between neurobiological personality theories and management outcomes.
Chapter 2
What is Executive Performance?

The word *performance* is misused and exploited to the extreme in society at large, and is frequently butchered beyond recognition in psychology (Campbell, McCloy, Oppler, & Sager, 1993, p. 35).

This first chapter of the literature review has one purpose: to define the term ‘executive performance’. As the dependent variable, executive performance is this thesis’s main variable of interest, warranting careful attention. However, as the above quote by Campbell, McCloy, Oppler, and Sager (1993) suggests, this is not entirely straightforward. The aim here is to provide clarity around this somewhat elusive variable (Bentz, 1985), explaining what executive performance is and what it is not. This is important as it will set the scene for evaluating the executive performance literature in subsequent chapters, and it will lay the foundation for a model of executive performance in chapter 5.

2.1 Defining the Term ‘Executive’

First I will define the term ‘executive’ for the purposes of this thesis. Once this is defined I will then discuss performance. In this thesis, then, an executive is defined as a senior manager of an organisation. In general, this would be the chief executive and those who report to him or her, although it includes those who are lower in the organisational hierarchy if they set the strategy for a key business unit, a key business function (such as human resources, sales, or marketing), or are intimately involved with the overall leadership of the business in a significant decision-making capacity. It is members of an organisation’s senior leadership team that are of interest here, and by definition this excludes middle management and lower-level supervisory roles, focusing instead on senior executives as a distinct group. The uniqueness of the executive function will be discussed in more detail later in the chapter.
It is worth noting that, although executives are treated here as a distinct group, much of the literature blurs the distinction between levels of management. Many researchers have studied ‘managers’ or ‘leaders’, but the samples in these studies have spanned several levels of management or leadership (sometimes including junior supervisors) rather than consisting exclusively of senior executives (e.g., Bentz, 1985; Bray, Campbell, & Grant, 1974; J. Hogan, Hogan, & Murtha, 1992; Robertson, Gibbons, Baron, MacIver, & Nyfield, 1999). In these studies it is quite common for the term ‘leader’, ‘manager’ and ‘executive’ to be used interchangeably, and sometimes without a clear definition.

In evaluating the literature, this thesis pays particular attention to studies that have focused solely on senior executives. However, wider managerial studies will be considered where it is useful, with the proviso that these studies look at a slightly different dependent variable. Here, the term ‘executive’ will refer to senior managers, and the term ‘manager’ or ‘managerial’ will refer to management in general (i.e., across levels).

2.2 Guiding Principles for Understanding Executive Performance

Although it is reasonably straightforward to define the term executive, it is less easy to define executive performance. This section will start with some guiding principles about job performance in general, and will then suggest how executive performance should be conceptualised.

A starting point for guidance about job performance is Campbell et al.’s (1993) theory of performance. Prior to this work, the authors suggest that the performance domain had been empirically neglected and little understood. This 1993 theory provided much-needed, common-sense guidelines for defining and measuring performance. Here, the theory provides a useful blue-print.
According to Campbell et al. (1993), job performance: (a) reflects how well a person does the job he/she is hired to do, and (b) must be in line with the organisation’s goals. Unfortunately it is not necessarily this simple, because the diverse goals of an organisation can have paradoxical elements or reflect internal tensions (Boxall & Purcell, 2008). Nevertheless, for executives, Campbell et al.’s theory suggests that their performance should be judged on how well they help the organisation achieve its various goals.

Under this definition, it appears that few studies of executive performance have used valid measures of performance. For example, studies have used leader emergence, career advancement, assessment centre ratings, salary level or simply the virtue of being an executive, to measure managerial, leadership or executive performance (e.g., Benson, 2006; Bray, Campbell, & Grant, 1974; McClelland & Boyatzis, 1982; Nicholson, 1998), rather than measuring how well an individual helps the organisation achieve its goals by carrying out what they are hired to do. Such studies argue that career advancement or salary level reflect others’ perceptions of the individual’s effectiveness, and are therefore adequate measures of their performance (Bray et al., 1974; J. Hogan et al., 1992). Suppose, however, that managerial promotion results from an executive’s impression management skills rather than performance, a phenomenon that is not uncommon (Robertson, 2007); or suppose that an executive hides elements of poor performance from those who promote him or her; or that the organisation’s remuneration policy does not effectively reward performance. The point here is that promotion, salary level, and leader emergence are indirect measures that imply performance, but are not valid performance constructs. Therefore, in this thesis executive performance will be operationalised (in part) as how well the executive achieves his or her performance objectives.
Differentiating Performance from Effectiveness

Campbell et al. (1993) raised another important point about job performance. They argued that performance is behavioural in nature, and must be something that the individual can directly influence. Campbell et al. differentiate performance from what they term ‘effectiveness’, arguing that performance is what people do, rather than the results of what they do; whereas effectiveness reflects the results of performance, (i.e., the hoped-for outcomes). Campbell et al. argue that results can be subject to external influences beyond the individual’s control, and are therefore a flawed measure of an individual’s performance.

Motowidlo, Borman, and Schmit (1997) support this view, arguing that it is tempting to measure the results of performance because they reflect how well an individual helps or hinders an organisation. However, like Campbell et al., they conclude that results are an inadequate measure of performance as they are not entirely under the individual’s control.

Not everyone agrees with the view that performance is behaviour rather than results. After all, results are the real measure of interest to executives’ employers, therefore some researchers do deliberately merge results and performance (e.g., Russell, 2001). However, it can be argued that it is ineffective to measure a relationship between a predictor and criterion if that relationship is likely to be influenced by a web of dynamic interactions – organisational, situational, and individual – that are beyond the bounds of control and measurement.

Despite these principles, it could be argued that if only behaviours are measured, how does one know that such behaviours have utility to the organisation? Indeed, this project needs to include performance behaviour, but should also confirm that those behaviours are related to effectiveness. As Campbell, Dunnette, Lawler, and Weick (1970) argued, “the bridge needs to be built on careful empirical research, showing exactly how personal traits
and job behaviours relate to desired organisational outcomes” (p. 9). Although there are counter-arguments, I take a stand in this thesis and argue for the careful inclusion of certain measures of results (i.e., measures of effectiveness) in addition to measures of executive behaviour. The argument is this: for an organisation, it is of primary importance that an executive achieves results and meets their key performance indicators. In fact, in the case of chief executives or general managers, their job performance is almost synonymous with organisational or business unit performance. It is their job to achieve desired results in the face of internal and external threats and opportunities. Some result-oriented measures, if carefully chosen, could shed light on the utility of particular performance behaviours, and these outcomes are an important part of a model of executive effectiveness. Any measures must be carefully selected, and results must be interpreted with the proviso that other factors may influence effectiveness. This has guided the choice of measures, described in chapter 7.

2.4 The Executive Function: What are Executives Hired to Do?

The above principles beg the next question: If performance reflects how well an executive carries out the job he/she is hired to do, what exactly is that job? Is there a substantive content that broadly applies to all executive roles? The obvious way to approach this question would be to conduct an extensive job analysis of executive positions across organisations, and this is the approach that is recommended by some researchers of performance (for example, Campbell et al., 1970; Campbell et al., 1993; J. Hogan et al., 1992). However, various job analysis efforts have already been carried out by researchers using techniques such as observations, diary studies, and critical incident methods (e.g., Borman & Brush, 1993; Russell, 1990, 2001; Tett, Guterman, Bleier, & Murphy, 2000), and it is proposed here that the existing literature on managerial and executive performance provides sufficient guidance about the executive function for this project’s purposes.
An overall view of the executive role is neatly summed up by Barnard (1938), who stated that executive work is work that is essential to the vitality and endurance of an organisation. It is not work of an organisation (for example, selling or manufacturing products), instead it is the work of maintaining the organisation in operation. He also clarified that it is not about managing a group of people, but it is about directing the various units of the organisation. Barnard likened executive work to the central nervous system, directing parts of the body so that the body as a whole can adjust to the environment. In this way, an organisation’s executive function is distinct from middle management as it is responsible for overall direction, across a complex organisation. Heifetz and Laurie (2001, p. 132) described this as “getting on the balcony” for a wider, overall view of the organisation and the context in which it operates.

Barnard’s statements capture what is unique about the executive function as opposed to middle management, in that the focus of the executive is directed towards the organisation as a whole rather than a discrete element. In this way, an executive is required to navigate the paradoxical elements and internal tensions that arise from diverse organisational goals (as discussed by Boxall & Purcell, 2008), meaning that the executive’s performance objectives (whether articulated or informal) will incorporate short-term and long-term elements, as well as fiscal and non-fiscal aspects. In addition to all this, an executive will presumably aim to maintain a motivated workforce through effective leadership behaviours, all the while maintaining focus on the organisation’s ultimate performance objectives. Broadly, then, executives are hired to direct, maintain and lead the organisation as a whole, to make it a successful enterprise, and any performance measure should attempt to capture the tensions and multiple considerations that this presents for an executive. This thesis will therefore incorporate short-term, long-term, fiscal, non-fiscal, and subordinate outcomes into the executive performance domain.
2.5 Task and Contextual Performance

It is evident from the above discussion that the results of an executive’s performance are diverse, and incorporate long-term, short-term, fiscal, non-fiscal, and subordinate elements, but one must remember that performance should also be viewed in terms of behaviours rather than simply results (Campbell et al., 1993). Therefore, the next question is: what are the behaviours that an executive needs to display in order to achieve their objectives, and maintain the competitiveness and survival of their organisation as a whole?

There are numerous writings about the behavioural content of managerial performance, including various taxonomies of managerial performance dimensions (Borman & Brush, 1993; R. Hogan & Warrenfeltz, 2003; Russell, 2001; Tett et al., 2000). Most of these are not addressing executive performance, but instead are addressing managerial performance. It is also difficult to decide if any taxonomy is the superior one. However, an overriding theme emerges repeatedly: All taxonomies appear to converge onto the well-known dichotomy known as task and contextual performance, which will be defined below. This conclusion has been reached by several other researchers (Mount, Judge, Scullen, Systma, & Hezlett, 1998; Oh & Berry, 2009). The view taken here, therefore, is that the two factors of contextual and task performance should be treated as two distinct factors that make up the overall performance domain for executive performance.

Task and contextual performance should first be defined. These concepts were proposed by Motowidlo et al. (1997), as a way of categorising different dimensions of job performance (applicable across occupational groups). Task performance is defined as “activities that transform raw materials into the goods and services that are the organisation’s products” and “activities that service and maintain the technical core by replenishing its supply of raw materials” (p. 75), while contextual performance refers to “activities that
promote the viability of the social and organisational network, and enhance the psychological climate in which the technical core is embedded” (p. 76). Based on these definitions, task performance at the executive level would probably reflect how well the executive achieves his or her key business objectives (fiscal, non-fiscal, short-term, long-term), and the behaviours that contribute to the achievement of objectives. On the other hand, contextual performance would refer to how well the executive fosters a social climate that is conducive to the achievement of those objectives, perhaps incorporating outcomes such as the job satisfaction and organisational commitment of the executive’s subordinates, as well as the executive’s behaviours that lead to positive subordinate outcomes. With this conceptualisation, this study captures executive performance holistically, considering task and contextual performance, results and behaviours, and the tensions of the various organisational goals.

The task-contextual dichotomy fits the picture of executive performance that emerges from qualitative studies and popular management literature (to be described further in chapter 5). The task/contextual distinction bears strong resemblance to the dichotomy of ‘initiating structure’ versus ‘consideration’, which are two dimensions of leadership style that were researched several decades ago (Judge, Piccolo, & Ilies, 2004). According to Judge et al. (2004), initiating structure refers to the degree to which a leader is oriented towards goal attainment, whereas consideration reflects the extent to which a leader shows concern for their followers. Initiating structure and consideration fell out of favour due to lack of empirical evidence, but these concepts re-emerged when Judge et al. used improved methods to show that their criterion validity was in fact sound. It appears the people-task dichotomy in human performance has long been an observed phenomenon, culminating in the formalisation of task and contextual performance (Borman & Motowidlo, 1993; Motowidlo et al., 1997; Motowidlo & Van Scotter, 1994).
Does this dichotomy reflect performance at the senior-executive level? While it is difficult to find explicit mention of task and contextual performance in executive leadership literature, it certainly appears so. Conger and Nadler (2004) observed that chief executives’ styles vary along two dimensions: content orientation and context orientation. Content reflects a focus on the substance of a company’s business, while context refers to a focus on the environment in which decisions are made. Conger and Nadler’s dimensions illustrate what task and contextual performance could look like at senior level. In a similar vein, Sessa and Taylor (2000), who interviewed 500 executives about senior management effectiveness, found that senior executives often reveal a tension between a bottom-line and relationship orientation, while Blake and Mouton (1985) described how managers can display a concern for people quite separately to a concern for production. Kaplan and Kaiser (2003) used this to suggest a way forward for leadership research. They described two dimensions of leadership style: forceful and enabling. Forceful leadership is about asserting one’s power and authority; while enabling leadership is about creating conditions for others to lead and contribute. The empirical basis of this article appears to be Kaplan’s (1991) six-year qualitative study of executive performance, in which the contrast between task and people aspects of performance and effectiveness emerged repeatedly. In this case, an executive’s ‘style’ is clearly an important aspect of their behaviour (both task and contextual) and is therefore considered relevant to performance.

Based on the literature, it is proposed here that the executive performance domain should differentiate between task performance and contextual performance – the former reflecting how well an executive achieves their business objectives, and the latter reflecting how well an executive fosters a beneficial social climate. The specific behaviours that contribute to task and contextual performance will be discussed again in chapter 5, when
specific hypotheses will be built. For now, the point is that task and contextual performance need to be treated as separate entities.

2.6 Constructive and Destructive Behaviour

Task and contextual performance are positive constructs. However, in recent years a darker side to executive performance has attracted increased research attention (e.g., Conger, 1990; Einarsen, Aasland, & Skogstad, 2007; R. Hogan, 1994; Padilla, Hogan, & Kaiser, 2007). The terms commonly used are ‘the dark side of leadership’, ‘toxic leadership’ or ‘destructive leadership’. These terms suggest the concept of leadership style, rather than performance, and one must beware of confusing constructs here. However, toxic leadership is an important behavioural phenomenon that is believed to influence key outcomes, and is not uncommon amongst executive leaders (Babiak & Hare, 2007; R. Hogan, Raskin, & Fazzini, 1990; Maccoby, 2003). It is therefore included here as an important aspect of executive performance.

While the definitions of toxic leadership vary, Einarsen et al. (2007) provide a view that can be adapted here:

(Destructive leadership is) the systematic and repeated behaviour by a leader, supervisor or manager that violates the legitimate interest of the organisation by undermining and/or sabotaging the organisation’s goals, tasks, resources, and effectiveness and/or motivation, well-being, or job satisfaction of subordinates. (Einarsen et al., 2007, p. 208).

Of course, organisational goals can be in conflict with one another. Nevertheless, this definition captures the idea that toxic behaviour could be task-related (anti-organisation behaviour, or behaviour that is not in line with the executive’s performance objectives), or
contextual-related (toxic behaviour, or behaviour that does not foster a positive social climate).

According to Einarsen et al. (2007), researchers have historically viewed destructive leadership as the absence of good performance, but evidence now suggests that destructive behaviours extend beyond the mere absence of good performance. The reason for this, according to Einarsen et al., is that leaders can display high levels of productivity alongside toxic behaviour towards subordinates. One could apply this idea to the task/contextual view, arguing that high task performance can be accompanied by low contextual performance, and vice-versa. Perhaps toxic leadership that is ‘anti-subordinate’ is in fact simply poor contextual performance.

Einarsen et al. (2007) used Blake and Mouton’s (1985) concern for people/concern for production idea (again a task versus contextual concept) to underpin the idea that leadership behaviour can fall along two orthogonal dimensions: pro- or anti- subordinate, and pro- or anti- organisation (see Figure 2.1). While they use the term ‘leadership behaviour’, this model can in fact be adapted to represent the dependent variable in this thesis: executive performance.

It is proposed here that the two dimensions in this model (subordinate/organisation) are an example of the familiar people-task dichotomy that was discussed earlier in this chapter, and are similar to task and contextual performance. Furthermore, it is argued that ‘anti-subordinate behaviour’ (described by Einarsen et al., 2007, as sabotaging the effectiveness, motivation, wellbeing, and job satisfaction of subordinates) can be viewed as the opposite of good contextual performance, and that ‘anti-organisation behaviour’ (described by Einarsen et al. as sabotaging the organisation’s goals, tasks, and/or resources) can be operationalised as the opposite of good task performance. For the purposes of this
thesis, this view is sufficient. However, additional research on destructive behaviour as a separate construct could do more to isolate particular destructive behaviours and outcomes in a performance prediction model.

Figure 2.1.

*A Model of Destructive and Constructive Leadership Behaviour* (Einarsen et al., 2007)

As an aside, a separate body of literature addresses the phenomenon of executive ‘derailment’, a term that is used to reflect the failure of an executive’s career, occurring once an individual reaches the executive level (Lombardo, Ruderman, & McCauley, 1988; McCall & Lombardo, 1983; Van Velsor & Leslie, 1995). The studies cited here suggest that up to 50% of executives derail. In truth, derailment is an outcome of performance rather than performance itself. In fact, destructive leadership is more of a performance construct than derailment, due to its behavioural nature, and, therefore, while literature on derailment will be
of interest, the focus here remains on destructive behaviour and its place in the executive performance domain, rather than the more general construct of derailment.

The overall point here, though, is that the dark side of executive performance is a critical aspect of executive performance. This dark side – just like constructive performance – appears to apply to both task and contextual performance, although it is probably more frequently viewed in contextual terms, particularly considering the well-publicised literature on narcissistic leaders (Maccoby, 2003), psychopaths in the work-place (Babiak & Hare, 2007), and the dark side of charisma (Conger, 1990), all of which is very much oriented to looking at contextual-performance-oriented aspects of these destructive phenomena.

2.7 Conclusion

This chapter has supported Campbell et al.’s (1993) view that performance is multifaceted. In fact, perhaps the term ‘executive performance’ should be replaced by the term ‘executive performances’, because there are several distinct elements to this thesis’s performance domain.

Performance will be operationalised here as (a) behaviours and (b) results. The utility of specific executive behaviours will be tested, exploring whether these behaviours actually predict results. This decision was based in part on Campbell et al.’s (1993) and Campbell et al.’s (1970) theoretical ideas, as discussed earlier in the chapter. The specific executive behaviours will be explained in more detail in chapter 5, once further management literature on executive leadership has been addressed.

In addition, based on the perspectives of Barnard (1938), and Boxall and Purcell (2008), a holistic view of executive performance will be taken, capturing the multi-faceted, paradoxical aspects of the executive’s goals (or hoped-for results). To this end, the
executive’s achievement of their fiscal, non-fiscal, short-term and long-term objectives will be measured, in addition to subordinate outcomes (the job satisfaction and organisational commitment of the executive’s subordinates).

The above results will be divided into two distinct latent factors, reflecting task and contextual performance (based on the work of Motowidlo et al., 1997). For results, task performance will be operationalised as the achievement of the executive’s business objectives (fiscal, non-fiscal, short-term, long-term), while contextual performance will be operationalised as subordinate outcomes (the job satisfaction, organisational commitment, and turnover intentions of subordinates). See Figure 2.2 below.

Figure 2.2.

*The Executive Performance Domain*
The executives’ task and contextual behaviours (as opposed to results) are a somewhat more complex matter, and will be described in more detail in chapter 5. In that chapter, task and contextual performance behaviours will be operationalised as competencies (based on the work of Boyatzis, 1982, and Spencer & Spencer, 1993). Contextual performance will be operationalised in terms of relationship-building behaviours, and task performance will be operationalised in terms of drive for results.

Finally, toxic leadership must be considered as its absence is an important aspect of executive performance. However, because this thesis is about performance rather than toxic leadership, the decision has been made to view the ‘dark side’ of leadership as low contextual performance. Further research can be done to actively measure the presence of toxic leadership, and this will be discussed further in the discussion chapter. For these purposes, however, low contextual performance is considered an acceptable way of accommodating this necessary element of the performance literature into the project.

In summary, then, this chapter has presented several perspectives on executive performance. To my knowledge, these perspectives have not been pulled together before to operationalise executive performance, and therefore this study will provide a uniquely theory-driven operationalisation of executive performance as a criterion variable. With this in place, the thesis will now explore the equally complex predictor side of the equation. This will involve exploring reinforcement sensitivity theory (chapter 3), and its wider context of personality psychology (chapter 4). Once this has been covered, the management literature on senior executive leadership will be explored in chapter 5, and the various bodies of literature will be combined to present a model of executive performance prediction that can be tested. The next chapter will turn from executive performance to a markedly different topic: that of Jeffrey Gray’s reinforcement sensitivity theory of personality.
Chapter 3
Reinforcement Sensitivity Theory

This project’s purpose is to explore the extent to which Jeffrey Gray’s reinforcement sensitivity theory can predict and explain senior executive performance. The first step was to define executive performance (the criterion domain); and the previous chapter (chapter 2) was devoted to fully understanding this. Now that executive performance has been defined, the next step is to explore the other side of the equation by discussing the predictive theory that is at the heart of this thesis: reinforcement sensitivity theory. This will involve turning to a very different literature, as this theory is built upon rigorous neuroscientific experimentation. This experimentation will be described here, as a necessary step in assessing whether this theory is worth using in a management context.

Reinforcement sensitivity theory (RST) is a neurobiological theory of personality that has been selected here because of its influence within the neuroscientific field of personality. Similarly, executive performance is a topic of immense importance within the field of management. In combining these two influential but diverse areas this thesis is exploring the bridge between management and neurobiology – a novel integration of two very different fields. To help build this bridge, this chapter’s objective is to present the reinforcement sensitivity theory of personality, exploring what is already known about that theory in workplace settings.

The information presented in this chapter will ultimately be used to build hypotheses about the theory’s predictions for executive performance. The content of this chapter therefore provides essential knowledge that will help the reader ultimately understand how and why the hypotheses in chapter 6 were formulated.
3.1 The Neurobiology of Personality, and Reinforcement Sensitivity Theory’s Contribution

Before presenting the theory, it is important to understand the field in which it sits. The chapter has stated that reinforcement sensitivity theory is a ‘neurobiological theory of personality’, but what is meant by this? Neurobiological personality theorists explore whether there is a physiological reason why people differ in their behaviour (i.e., whether aspects of a person’s personality can be explained by the way their brain functions). The fundamental premise of personality psychology is that there are structures within people (whether biological, cognitive, or emotional) that determine behaviour (R. Hogan, 2005). Personality psychologists are essentially interested in predicting how someone is likely to behave, based on enduring differences that distinguish him/her from others. The field of personality will be discussed more fully in chapter 4; this present chapter is purely concerned with one stream within this wider field: the neurobiological approach.

There are other ways to look at personality (see chapter 4), and the neurobiological perspective is arguably not the most popular. However, this perspective has an established track-record of scientific research, and research strongly suggests that there are physiological differences in people’s brains that make them behave a certain way as individuals (for a summary see Corr & Perkins, 2006). This will be discussed further in due course.

The neurobiological field is huge, and the topic complex. So, when looking at neurobiology in the workplace it is difficult to know where to start. However, amongst the variety of neurobiological personality theories available, RST is widely acknowledged as a well-developed and influential account (Corr, 2008; Matthews, Deary, & Whiteman, 2003; Revelle, 1995). Even theorists who have provided competing ideas to RST’s finer points (for example, R. C. Cloninger, 1987; R. C. Cloninger, Svrakic, & Przybeck, 1993; Depue &
Collins, 1999; Fowles, 1993; Zuckerman, 1979) have also provided support for RST’s broader assertions; and the diversity of opinion amongst these theorists lies more in the detail than the fundamental basics. With this in mind it seems easiest to first describe RST and the empirical support for it. Then, the work of other neurobiological theorists will be discussed, as appropriate.

Let us now consider RST itself. RST is a theory about the biological and psychological brain processes that underpin personality. It was originally developed by Professor Jeffrey Gray, an experimental psychologist, in the 1970s and continues to receive acclaim for its influence on the field of neurobiology and personality (Corr, 2008). Today, research on the theory’s details is as active as it was thirty years ago.

In its current form, the theory postulates that the brain has three major mechanisms that underpin human (and animal) motivation (Corr, 2008; Gray & McNaughton, 2000). These mechanisms are known as the Behavioural Approach System (BAS), the Behavioural Inhibition System (BIS), and the Fight-Flight-Freeze System (FFFS). These mechanisms are viewed as essential to a person’s survival, as they control an individual’s motivation to attain the necessities of life (rewards), on the one hand, and to avoid danger (threats), on the other hand (Corr, 2008). People vary in how active each system is, and this leads to personality differences. This will become clearer below as the systems are discussed, in turn.

3.2 The Behavioural Approach System (BAS)

We will begin by discussing the BAS. According to the theory, the BAS is responsible for initiating and maintaining behaviour that brings a person or animal in contact with a reward, whatever that reward might be (Gray, 1987; Pickering & Gray, 2001; Pickering & Smillie, 2008). The BAS is believed to be an essential system as it enables a person to attain the things they need to survive (Corr, 2008).
The BAS works by directing a person’s attention to reward cues in the environment, enabling them to learn or attend to various associations between cues and subsequent rewards (Corr, 2008; Pickering & Smillie, 2008), for example, if my subordinates are smiling at me, they’re probably satisfied with their jobs and therefore they may be more likely to perform. It also has an important part to play in emotion, initiating hope, elation, or anticipatory pleasure in response to reward cues (Gray, 1994). It is suggested that people differ in how active their BAS is, and these differences underpin a person’s general level of sensitivity to rewards, which in turn influences their day-to-day behaviour (Corr & Perkins, 2006).

In the case of executives, this suggests that those with a hyper-active BAS might be more emotionally responsive to incentives in the workplace, whatever form those incentives take. Similarly, they might also be more attuned cognitively to workplace cues that enable them to monitor progress towards high performance and (more importantly) any associated rewards. In turn, this might make them more likely to initiate and maintain the necessary behaviour that will enable them to attain those rewards.

As an aside, it is generally argued that the BAS is an evolutionary mechanism, meaning that it enables a person to achieve goals that are relevant to the basic aims of survival and reproduction (Corr, 2008; Revelle, 1995). This raises the question of how this manifests itself in modern society. In primitive societies, the BAS would presumably help a person obtain basic requirements like food, shelter or a mate. Nowadays, the concept of what reward entails in human society is probably more complex. Speculatively, the BAS may help a person be driven to attain rewards that increase one’s functioning in society and hence their survival, and this could be anything from money to status, romantic love, or friendships. To my knowledge, research has not yet shown whether the BAS is geared towards specific types of rewards more than others (e.g., gaining status rather than getting along with others). Corr (2008) states, however, that the BAS deals with all rewards in our environment.
Undoubtedly, the BAS is a complex system that has to deal with a range of heterogeneous reward-related stimuli. However, further research could be done to enlighten us as to how it applies to humans in modern society.

Returning now to the idea of the BAS having implications for personality, let us consider how this might transpire. Firstly, the theory suggests that a person with a hypoactive BAS will not be as interested as others in attaining rewards; they will be less likely to notice reward cues in their environment; and less likely to experience positive emotions associated with rewards. Conversely, a person with a hyperactive BAS will be highly driven to attain rewards; very much aware of the reward cues in their environment; and excited at the idea of attaining those rewards. This personality dimension of reward sensitivity is sometimes known as ‘approach motivation’ (Elliot, 1999) as it reflects the extent to which a person is motivated to attain rewards. Empirical support for this argument and the wider theory will be presented shortly.

Gray did not use the term ‘approach motivation’ himself. He actually used the term ‘impulsivity’ to refer to the personality dimension resulting from BAS sensitivity. In retrospect, it may not have been the best choice of term (Pickering & Smillie, 2008; Revelle, 2008). The trait ‘impulsivity’ nowadays has a number of different meanings that stray quite far from the BAS concept (Pickering & Smillie, 2008), so when studies refer to ‘impulsivity’ it is important to look carefully at what exactly is being measured. For now this thesis will simply use the term ‘BAS dimension’ to reflect a person’s sensitivity to reward and their associated levels of approach motivation.

3.3 The Behavioural Inhibition System (BIS) and Fight-Flight-Freeze System (FFFS)

Let us now turn to the BIS and FFFS, which are somewhat more complicated than the BAS. While the BAS deals with reward cues, the BIS and FFFS mediate a person’s reactions to
punishment. Recent research has shown that a person’s general level of punishment sensitivity results from the combined activity of these systems: the BIS and the FFFS (Gray & McNaughton, 2000; McNaughton & Corr, 2004). These two systems work together to inhibit a person’s behaviour when faced with a threat. Again, this is an essential part of survival as it enables a person to effectively respond to aspects of their environment that pose a risk to their survival (for example an aggressive person; Corr, 2008).

The systems work together as follows: The FFFS is responsible for processing any aversive stimuli in a person’s environment (Gray & McNaughton, 2000). Like the BAS, it directs a person’s attention to cues in the environment; but instead of positive cues, it directs the brain’s focus to aversive cues. It also enables a person or animal to develop sets of learned associations based on negative stimuli (for example it would enable a rat to learn that if he sees a bird of prey circling above it may shortly swoop down and therefore he should freeze). The FFFS initiates emotional responses to aversive events – mainly fear, panic, or defensive aggression (Corr, Pickering, & Gray, 1995). However, the FFFS does not inhibit behaviour itself – instead, the FFFS and BAS both feed information into the BIS, which addresses any conflict and ‘decides’ whether the risk of threat is large enough to inhibit the person’s behaviour. In the case of a rat, this may be the decision about whether to approach a piece of food in an open field despite the fact that a bird of prey is circling overhead. The BIS ‘weighs up’ whether to approach or avoid, and metaphorically decides whether to put the brakes on accordingly.

An interesting diversion here is that the BIS does not only deal with approach-avoidance conflicts; it in fact addresses any conflict, including the conflict between two or more rewarding options. This can explain the earlier question of how the BAS tackles the range of rewards in today’s society. Intuition suggests that different people place differing values on certain rewards. What the BIS has to do is ‘decide’ which option to inhibit.
Returning now to the BIS and FFFS, according to the theory a person can have a hyperactive or hypoactive BIS or FFFS, which in turn will influence that person’s general level of punishment sensitivity (Corr, 2004; McNaughton & Corr, 2004). The BIS contributes to a person’s level of punishment sensitivity because its role is to inhibit approach behaviour in the face of threat. If the BIS is hypoactive, behavioural inhibition is less likely to occur. Of course, if the FFFS is hypoactive, this will also affect the general level of punishment sensitivity, because the aversive information is not being fed in to the BIS. Alternatively, if the BIS or FFFS is hyperactive, a person may be crippled by fear, unable to take action because their behaviour is continually inhibited.

In the case of executives, it is possible that threats to ‘survival’ in an organisation, such as political games, relationship difficulties with colleagues, change, or risks, might inhibit otherwise productive behaviours. If the FFFS or BIS is hyperactive, this could cause an executive to be overly inhibited by threats, and perhaps less likely to achieve their objectives. This will be discussed further in chapter 5.

Gray originally named the personality dimension that reflects punishment sensitivity ‘anxiety’. This makes some sense as, along with punishment sensitivity comes a tendency to experience anxiety as one approaches threat (because a punishment-sensitive person is so acutely aware of the threat). There is a real emotional element that results from the workings of the BIS and in fact the FFFS; and people with a hyperactive BIS or FFFS are likely to experience negative emotions in response to threats. Gray’s term anxiety also reflects a person’s levels of motivation to avoid threat – a trait that is sometimes also known as ‘avoidance motivation’ (Elliot, 1999). The term anxiety is potentially misleading, however, as work by Gray and McNaughton (2000) has confirmed that the emotional implications of punishment sensitivity go beyond anxiety, and include fear, panic, and other negative
emotions. Therefore, instead of ‘anxiety’, the term ‘BIS dimension’ will be used to refer to the trait of punishment sensitivity (also known as avoidance motivation).

To summarise briefly, the chapter so far has described the basic assertions of RST as it stands today. The theory has been modified over the years, sometimes drastically (see Gray & McNaughton, 2000), but this chapter provides a view of what is currently known rather than the story of its historical development. With this in place, the chapter will next address whether RST is actually a well-validated theory that is acceptable to use for the purposes of this thesis. Ultimately, this chapter will demonstrate that RST is a proven, well-supported theory that is worth applying to the field of management.

3.4 The Empirical Support for Reinforcement Sensitivity Theory

If hypotheses about RST and executive performance are to be developed, one should first be confident that the theory is worth using. As it happens, there are many grey areas around the details of RST that have not yet been resolved, but these grey areas relate to the finer workings of the mechanisms rather than the theory’s broad assertions (see Pickering et al., 1997). In this chapter, this level of detail is not relevant, but it is important to be confident that the broad dimensions of approach and avoidance motivation have a biological basis and translate into personality measures. This will confirm that the hypotheses set out in chapter 6 are worth testing.

There is in fact good evidence supporting the broad dimensions of approach and avoidance motivation. This support lies in three facts that have been supported using experimental research. The facts are that (a) a distinct part of the brain deals with punishment cues; (b) a separate part of the brain deals with reward cues; and (c) sensitivities to punishment and reward are manifested in personality. Therefore, the BIS dimension and the BAS dimension do have a biological basis.
3.4.1 A distinct part of the brain deals with punishment cues.

Gray (1970, 1972a, 1972b) proved early on that there is a brain system that mediates an animal’s or person’s sensitivity to punishment cues, by initially using animal experiments to prove the point. He trained rats to learn about cues in their environment; for example, that going down a certain path in a maze, or hearing an alarm bell, will lead to a punishment such as an electric shock. Once rats have learned associations like these they display specific behaviours in anticipation of punishment (Gray, 1970, 1972a, 1972b).

With rats and mazes in place, Gray then carried out further experiments to see which parts of the brain mediate reactions to punishment cues. He had noted that when people take the drug sodium amobarbital their behaviour becomes less inhibited, and he speculated that this could be an indication that sodium amobarbital reduces a person’s sensitivity to punishment cues. He suggested that sodium amobarbital acts on a part of the brain that is responsible for punishment sensitivity. With this in mind, Gray gave the rats doses of the drug, and sure enough the rats who were given this drug were less responsive (behaviourally) to punishments.

Gray (1972a) then found that if he gave rats lesions in specific areas of the brain (areas known as the medial septal area and hippocampus) they displayed the same symptoms as if they were given sodium amobarbital. However, while the drug sodium amobarbital and these specific lesions had profound effects on the rats’ responses to punishment cues, these interventions had no effect whatsoever on rats’ responses to reward. From all this Gray concluded that there is a physiological system in the brain that is responsible for responding to punishing cues; and that this is distinct from the brain’s responses to rewards.

Over the years, other researchers have supported the concept of some sort of punishment sensitive system (e.g., Newman, Wallace, Schmitt, & Arnett, 1997; Wallace &
Newman, 1990). When viewed together, there is sound evidence to support the existence of a system in the brain that mediates a person’s responses to punishment. The details of the BIS and FFFS are still being worked through but, regardless of the details, this chapter shows that there is a mechanism of some sort in the brain that underpins a person’s general level of punishment sensitivity or avoidance motivation.

3.4.2 A distinct part of the brain deals with reward cues.

Quite separately, the evidence suggests that a distinct brain system mediates a person’s responses to reward cues. This system is clearly separate from the punishment-sensitive mechanism, as demonstrated by the studies just discussed (Gray, 1970, 1972a, 1972b).

Evidence that biology mediates responses to reward lies in studies that have been conducted on monkeys (Schultz, 1998). Schultz found that when monkeys are given rewards (e.g., a drop of juice on the tongue), or are presented with cues signaling imminent reward, a chemical in the brain known as dopamine increases in activity. In fact, in these studies the level of dopaminergic activity in the brain increased when the strength of reward increased (Pickering & Smillie, 2008). Other theorists such as R. C. Cloninger (1987), Depue and Collins (1999), Fowles (1993), and Zuckerman (1979) have all proposed that reward sensitivity lies in some sort of dopaminergic system, and Gray himself believed that the BAS could be found in an area of the brain that is heavily populated by dopaminergic pathways (Pickering & Gray, 2001).

Pickering and Gray (2001) presented a compelling case for the role of a dopaminergic system in reward-seeking behaviour, based on various research efforts including their own. Two findings are particularly striking. The first is the fact that dopamine receptors (brain cells that respond to dopamine) can differ physically between people, and that these physical differences have been shown to be correlated with reward-seeking behaviours including
smoking and gambling (Comings et al., 1997). Secondly, it has been shown that people with Parkinson’s disease, a disorder related to dopamine dysfunction, have been found to have lower than average scores in the BAS dimension, as measured using R. C. Cloninger’s novelty-seeking scale, which is thought to be one way of measuring reward-sensitivity (R. C. Cloninger et al., 1993). It certainly appears that the widely-held view is that a brain mechanism of some sort underpins a person’s level of reward sensitivity.

3.4.3 Sensitivities to punishment and reward are manifested in personality.

The evidence supports the existence of separate brain functions that mediate a person’s responses to rewards and punishments. The next question is: how does one know that people differ in the sensitivity of these systems and that these differences translate into personality? An answer to this lies in the work of renowned personality theorist Hans Eysenck.

Eysenck (1967) found that some people learn things more quickly than others when conditions are punishing; but when conditions are neutral these differences are not seen. This was a groundbreaking finding, as it was the first indication that some people are more sensitive to punishments than others. Eysenck uncovered this finding by carrying out an eyeblink conditioning test on a large sample of people. This involved giving a signal (e.g., a sound), and then puffing some air into the person’s eye. Eventually, a person learns that the signal precedes a puff of air, and they blink in anticipation. This learning is referred to as ‘conditioning’. Eysenck measured the speed with which this conditioning was acquired. He then tested whether a person’s speed of conditioning was related to personality (measured using the ‘Maudsley Personality Inventory’; see Eysenck, 1967, for details). Eysenck was particularly interested in the dimension of extraversion-introversion which measured the extent to which someone is sociable and impulsive, with ‘extraverts’ being on the social,
impulsive end of the spectrum and ‘introverts’\textsuperscript{1} being on the non-social, less impulsive end. He found that speed of punishment-related conditioning was related to introversion. In other words, introverts are more sensitive to punishment cues. Moreover, under neutral circumstances, introverts did not differ from extraverts in their speed of conditioning.

This suggested that punishment sensitivity does manifest itself in personality, somehow. Gray (1981) built upon Eysenck’s work, and found that punishment sensitivity is not quite the same as introversion, though it is close. Gray argued that in addition to introversion (i.e., a lack of sociability and impulsivity), there is an element of emotionality (fear, panic, anxiety) inherent in a person’s sensitivity to threat. Eysenck’s introversion dimension did not include emotionality\textsuperscript{2}, and only reflected a person’s behavioural inhibitions (particularly with regard to social behaviour). In light of the emotionality issue, Gray (1970, 1981) suggested that punishment sensitivity is manifested in a personality trait called ‘anxiety’, which reflects just that – a person’s level of sensitivity to threat or punishment, the associated emotional tendencies, and behavioural inhibition. In other words, punishment sensitivity is a combination of introversion and emotionality.

Turning now to reward sensitivity, there are debates about how this manifests itself in personality, and the proof of reward sensitivity being a personality dimension is more controversial. As yet, no agreement has been reached on what the BAS trait actually looks like, or how it should be measured. There are two broad alternatives: The first, proposed by Depue and Collins (1999), is that BAS is equivalent to the personality trait extraversion. The second, proposed by other researchers including Gray himself (Pickering & Gray, 2001), is that the BAS trait comprises elements of impulsivity, psychoticism, anti-social tendencies, and sensation-seeking (Pickering and Gray refer to the trait as ‘impulsive anti-social

\textsuperscript{1} Note that Eysenck’s introversion-extraversion was a dimension along which people vary, so he used the term ‘introvert’ or ‘extravert’ to mean someone at the high or low end of the spectrum.

\textsuperscript{2} Eysenck measured emotionality as a separate personality dimension which he labelled ‘neuroticism’.
sensation-seeking’ or ‘ImpASS’). Table 3.1 shows the basic measures that have been developed under each of the two approaches. Research has shown support for both approaches, depending on the research methods used (see Pickering & Gray, 2001, for a full review). Pickering and Gray conclude that reward sensitivity does manifest itself in personality, but that further research is needed to confirm the best way of measuring the resulting personality dimension.

Further support for the manifestation of RST in personality comes from the work of Carver and White (1994). Given the fact that Gray’s dimensions did not quite line up with Eysenck’s personality measures, Carver and White explored the idea of personality further, and developed scales that they hoped would measure the separate dimensions of punishment sensitivity and reward sensitivity (i.e., the BIS dimension and the BAS dimension, respectively). This effort resulted in a well-validated psychometric tool known as the ‘BIS/BAS Scales’. This tool measured approach motivation and avoidance motivation as separate dimensions, and named the two dimensions ‘BAS’ and ‘BIS’, respectively. Furthermore, through factor analysis, Carver and White found that the ‘BAS’ dimension can be broken down into three distinct subscales: reward-responsiveness (BASR; the tendency to experience “positive responses to the occurrence or anticipation of reward”, p.4), drive (BASD; the tendency to pursue desired goals with persistence) and fun-seeking (BASF; the tendency to experience “desire for new rewards and willingness to approach a potentially rewarding event on the spur of the moment”, p.4), which they suggest reflect different aspects of BAS functioning. It is also worth noting that the BAS scale is considered a measure of impulsive anti-social sensation-seeking (ImpASS) rather than a measure of extraversion.
Table 3.1.

*Measures of Extraversion and Impulsive Antisocial Sensation Seeking (ImpASS) (adapted from Pickering & Gray, 2001)*.

<table>
<thead>
<tr>
<th>Measures of Extraversion</th>
<th>Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>Eysenck Personality Inventory Questionnaire (EPI/EPQ; H. Eysenck &amp; Eysenck, 1975a, 1975b)</td>
</tr>
<tr>
<td></td>
<td>Neuroticism Extraversion Openness Personality Inventory (NEO-PI-R; Costa &amp; McCrae, 1991)</td>
</tr>
<tr>
<td>Extraversion</td>
<td>Multidimensional Personality Questionnaire (MPQ: Tellegen, 1982; Tellegen &amp; Waller, 1992)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measures of ImpASS</th>
<th>Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novelty Seeking</td>
<td>Tridimensional Personality Questionnaire (TPQ; R. C. Cloninger, 1989)</td>
</tr>
<tr>
<td>P Scale</td>
<td>EPQ (H. Eysenck &amp; Eysenck, 1975b)</td>
</tr>
<tr>
<td>Impulsiveness and Venturesomeness</td>
<td>The I-Impulsiveness Scale (S.B.G. Eysenck, Pearson, Easting &amp; Allsop, 1985)</td>
</tr>
<tr>
<td>Sensation Seeking Scale</td>
<td>Sensation Seeking Scale (SSS; Zuckerman, 1979)</td>
</tr>
<tr>
<td>Behavioural Activation³</td>
<td>The BIS/BAS Scales (Carver &amp; White, 1994)</td>
</tr>
</tbody>
</table>

³ The terms ‘behavioural activation system’ and ‘behavioural approach system’ are used interchangeably in early literature. However, it appears that the latter seems to be preferred by prominent researchers of RST (e.g. Corr, 2008).
The ‘BIS/BAS Scales’ appear to be reliable and valid measures of reward and punishment sensitivity. Carver and White (1994) validated their tools by finding that there is a correlation between a person’s BAS scores and their sensitivity to reward, as measured by their levels of self-reported happiness in response to rewards earned during a computer task. Similarly, there is a correlation between BIS scores and self-reported levels of anxiety in response to punishment (having to put a hand in icy water) during a computer task. The initial validation of these scales opened up the opportunity to test whether these concepts of ‘approach motivation’ and ‘avoidance motivation’ really bear any relevance to day-to-day life in humans. Researchers started to test the predictive validity of the BIS and BAS dimensions as they pertain to a variety of outcomes such as gambling and alcoholism, and they proved to be valid constructs.

Unfortunately, however, Carver and White developed their scales using a version of RST that later became outdated. A major modification to RST occurred in 2000 (Gray & McNaughton, 2000). Prior to that, Gray (1982) had proposed that the BIS was the single punishment-sensitive mechanism, rather than the FFFS and BIS combined, and there were other more minor modifications relating to the kinds of stimuli that activated the systems, and the kinds of behaviours that resulted from the systems. Carver and White used Gray’s 1982 version of RST to determine the content of their scales. This suggests that there is room for improvement with the scales. Work is now being done to update measures of the BIS and BAS dimensions so that the separate workings of the BIS, BAS and FFFS can be captured (Smillie, Pickering, & Jackson, 2006). In the meantime, the ‘BIS/BAS Scales’ predict whether someone is sensitive to rewards, and sensitive to punishments, and they have predictive validity for a variety of human outcomes including depression (Beevers & Meyer, 2002), recovery from health issues (Carver, Meyer, & Antoni, 2000), psychopathic behaviour (Ross et al., 2007), and goal-setting activities at work (Elliot & Thrash, 2002). One must,
however, bear in mind that there is room for improvement with the ‘BIS/BAS Scales’. There are other psychometric measures of BAS and BIS, which will be covered in chapter 7, but for the purposes of this chapter the ‘BIS/BAS Scales’ provide support for the general dimensions of approach and avoidance motivation.

It is worth noting at this point that the BAS and BIS dimensions are believed to be related to two other personality traits: positive affectivity (PA; the extent to which a person experiences positive emotions) and negative affectivity (NA; the extent to which a person experiences negative emotions), respectively (Gable, Reis, & Elliot, 2000). The link between the BAS/BIS dimensions and PA/NA is based on the role that the BAS, BIS and FFFS play in emotion. Carver and White (1994) found significant correlations between the BAS scale and PA, and the BIS scale and NA, using Watson, Clark, and Tellegen’s (1988) ‘Positive and Negative Affect Scales’ (PANAS) to measure PA and NA. Again, this provides further support for the ‘BIS/BAS Scales’, and the wider idea that RST does have personality consequences.

Now let us return to a key question of this chapter: whether RST is a theory worth using in management research. Without addressing the finer workings of RST’s mechanisms in too much detail, the present chapter has shown that the broad dimensions of approach motivation and avoidance motivation (or the ‘BAS dimension’ and ‘BIS dimension’) are valid constructs. Whatever the details of RST, the fact is that brain mechanisms underpin two crucial evolutionary functions: the activity of attaining rewards, and the activity of avoiding danger. It is these two broad concepts – approach and avoidance motivation – that are of relevance here. However, while this thesis focuses on the broad concepts, there is a place for understanding the details of RST as these should be used to logically deduce how these processes would work in a senior management context. This chapter has deliberately included selected details about RST that will help the reader understand how the hypotheses
in chapter 6 were ultimately constructed. With the details in place the thesis will now explore what is already known about the BAS and BIS dimensions in workplace settings and in the context of executive performance.

3.5 Reinforcement Sensitivity Theory as a Predictor of Workplace Outcomes

It is argued that the motivation to approach, and the motivation to avoid, are fundamental aspects of human behaviour (Corr, 2008). As these are motivation concepts, it would stand to reason that they also have some bearing on work behaviour. Motivation is after all one of the key predictors of job performance (Blumberg & Pringle, 1982). Regardless of the details of RST, this thesis is fundamentally looking at approach motivation and avoidance motivation and how they link with executive performance.

Let us briefly consider how approach motivation might operate at the executive level. Approach motivation involves seeking rewards and attaining goals. This could include financial reward, but also the achievement of status in society. After all, it stands to reason that status would facilitate survival and reproduction. In modern society, status is often reflected in leadership, financial achievement and career success. To reach a senior level of the organisation and maintain one’s position – with all the obstacles and challenges faced – would presumably take a certain level of drive. There would presumably need to be a strong determination and desire to ‘win’ that would enable an executive to achieve objectives and perform.

With avoidance motivation the influence is perhaps less straightforward. Functionally, avoidance motivation serves to temper a person’s desires and impulses. Too little avoidance motivation and a person’s actions become risky. Too much avoidance motivation and a person’s levels of activity are crippled. Revelle (2008) suggested this very thing – that there is probably an optimal level of avoidance motivation, and too much or too
little verges on dysfunctional. The point here is that the BAS and BIS dimensions are likely to be relevant to executive performance. How, it is not yet clear, and this will be worked through in detail over the next two chapters.

Putting executives aside for a moment, what is known about RST at work in general? Executive performance is of course the focus of this project, but it is not even known whether the BIS and BAS dimensions can predict job performance in general. Undoubtedly this topic will make an appearance before too long in academic journals, and theoretical papers on the topic are starting to emerge (e.g., Elliot & Thrash, 2002; Furnham & Jackson, 2008; Hutchison, Burch, & Boxall, 2008); but the question of the BIS and BAS dimensions at work has not yet been comprehensively addressed. Some narrowly focused papers about RST at work are starting to emerge, however. For the purposes of this thesis, this chapter will now present key findings of relevance.

Firstly, there appears to be very little published research on the link between the BIS/BAS dimensions and job performance, though I speculate that the BAS dimension would predict job performance as it reflects a person’s level of drive, and one would presume that the most driven workers are likely to be the ones most likely to achieve results – provided they have the right opportunity and sufficient ability (Blumberg & Pringle, 1982). The relationship between BIS and job performance is slightly less clear – Furnham and Jackson (2008) speculate that high BIS would be related to job performance because fear of punishment would spur someone to action, though one could argue conversely that BIS inhibits behaviour and may therefore inhibit activity that is necessary for job performance, particularly if there are threats or risks present. In any case, it is not known. As there appear to be no studies on BIS/BAS and job performance, there also appear to be no studies on BIS and BAS at the executive level, so this is virgin territory.
Nevertheless, a few studies have explored RST in the workplace, and these have provided some guideposts that could apply to executive performance. Take, for example, Van Yperen’s (2003) finding that a person’s score on the trait positive affectivity (PA; the tendency to experience positive emotions) predicts job performance, and negative affectivity (NA; the tendency to experience negative emotions) negatively predicts job performance, where PA and NA were measured using Watson, Clark and Tellegen’s (1988) ‘Positive and Negative Affect Scales’ (PANAS). This could suggest that the same pattern would be found for the BAS and BIS dimensions as they are correlated with the traits PA and NA, respectively, and are generally associated with positive and negative emotions, respectively (Carver & White, 1994).

Another interesting finding is that people with high BIS scores are likely to react more negatively to negative events (Gable et al., 2000). This could affect a person’s resilience at the executive level as an executive role would inevitably entail some amount of challenging, negative events. Therefore it is possible that BIS will negatively predict executive performance (if it can be expressed this simply). In addition, the BIS and BAS dimensions are related to wellbeing, stress and fatigue, with high BAS individuals more likely to experience wellbeing at work, and high BIS individuals more likely to experience fatigue and stress (Van der Linden, Taris, Beckers, & Kindt, 2007). Again, this hints at a negative relationship between the BIS dimension and desired workplace outcomes.

Overall, studies like those above suggest that the BAS dimension is related to positive work outcomes of various sorts, and the BIS dimension is related to negative work outcomes. However, one study found that a person’s tendency to worry as measured by the worrying scale in the Occupational Personality Questionnaire (OPQ; Saville & Holdsworth Ltd., 1993) is a positive predictor of managerial performance, in cases where cognitive ability is high (Perkins & Corr, 2005). Worrying is an indicator of the BIS dimension (Corr, 2008), and this
highlights the idea that BIS could be a useful mechanism at work if senior executives are worrying about the right things. It also suggests that one must not ignore interactions between cognitive ability and the dimensions of BIS and BAS.

One final point is that the BAS and BIS dimensions are likely to interact with the presence of punishments and rewards in the environment. Therefore, if BAS is related to job performance, it is likely that this relationship can be strengthened or weakened by the presence of rewards, and similarly the effectiveness of any reward or punishment initiatives on an employer’s part might be moderated by an executive’s reinforcement sensitivities. To support this, it is known that extraverts (who are often high in the BAS dimension; Pickering & Smillie, 2008) are more likely to emerge as leaders when conditions are rewarding (Campbell, Simpson, Stewart, & Manning, 2003), and that extraverts in sales positions are most likely to achieve results in cases where their rewards are linked to how well they achieve sales targets (Stewart, 1996). Therefore, one should bear in mind that interactions are important considerations.

What are the implications of all this for executive performance? How might this information help us build hypotheses? First of all, research suggests that the BAS dimension should predict job performance, and that the BIS dimension also might – though more thought needs to be given to the direction of these predictions. Secondly, the dimensions may interact with cognitive ability. Thirdly, thought needs to be given to the interactions between rewards/punishments and the BAS/BIS dimensions, when attempting to predict workplace outcomes.

3.6 A Critical View of Reinforcement Sensitivity Theory

The preceding discussion has taken a supportive stance towards RST, justified by the wealth of empirical evidence behind the approach and avoidance motivation dimensions and their
corresponding conceptual and biological systems. However, critics could challenge this stance on a number of levels, and it is worth briefly considering RST in a more critical light.

One could, for example, question whether RST is at all applicable to humans, given its roots in animal experiments. In addition, one could argue that the theory is not worth using because of the ongoing dispute over neuroscientific details within that theory (Corr, 2008). In response, it is argued that the nomological net supporting RST is strong, despite the debates over certain details. That net is woven from a substantial literature that supports the theory’s broad constructs, the associations between those constructs, and the theory’s predictive capability in given contexts, including human contexts. The most relevant elements of this nomological net have been presented here. The fact that the theory has evolved from a combination of laboratory research and applied human studies makes that net stronger than those of some of the popular organisational behaviour theories being used by business researchers today. Furthermore, the details that have been used to build hypotheses in the present thesis are not the same details that are being debated and disputed in the RST literature.

Quite separately, one could argue that RST does not provide a sufficient explanation of personality, and that using it in isolation is unwise. This criticism is valid, and the personality literature, in its diversity, certainly presents a more complex picture of personality, as noted by S. Cloninger (2009):

… it may be a frequently held assumption that an individual’s personality begins with biologically innate components, both those shared with others and those that are distinct because of heredity or other influences; that over the life course, these innate tendencies are channelled by the influence of many factors, including family experience, culture and other experience; and that the resulting pattern of habitual
behaviours, cognitions, emotional patterns, and so on constitutes personality. (S. Cloninger, 2009, p. 5)

RST does address only the biological components of personality, neglecting the more social or cognitive elements. That said, it would be impossible to encapsulate every aspect of personality in one predictive study; so what the present study does is explore whether RST itself is predictive. The findings then need to be interpreted in the context of wider personality-performance research, which is what this thesis’s discussion chapter will ultimately do.

3.7 Conclusion

To conclude this chapter, let us summarise the argument so far. Overall, this project explores the relationships between two broad areas: on the one hand, the thesis looks at senior executive performance and how it might be predicted; on the other hand, it uses the concepts of approach motivation and avoidance motivation from Gray’s reinforcement sensitivity theory (RST) as the predictors. This chapter’s purpose has been to describe RST and to argue that it is a theory worth using in the context of executive performance.

In this chapter, it has been argued that RST is a well-supported neurobiological theory of personality, and that the empirical support for the basic dimensions of approach and avoidance motivation is good. Research has shown that distinct systems in the brain underpin a person’s sensitivity to reward and punishments, which in turn underpin the two personality dimensions of approach motivation and avoidance motivation – or the ‘BAS’ and ‘BIS’ dimensions respectively. In other words, approach and avoidance motivation have a biological basis.
Despite the fact that RST is well-supported empirically, its implications for the workplace have barely been explored and it seems that there is no research available at the senior-executive level. Nevertheless, intuition suggests that the dimensions of BAS and BIS are likely to predict various workplace outcomes at this level.

The overall goal of this literature review (comprising chapters 2, 3, 4 and 5) is to culminate in a set of hypotheses about the BIS/BAS dimensions and executive performance. The information presented in this chapter is important for these hypotheses, but the RST literature is not the only literature relevant to this project. Now, two further bodies of research will be explored in order to build a well-reasoned set of hypotheses in chapter 5. These bodies of research are (a) the literature on personality and job performance, taken from the field of industrial/organisational psychology, and (b) the literature on senior executives, taken from the field of management. The former will be covered in the next chapter (chapter 4); the latter will be covered in the subsequent chapter (chapter 5). All the literature will be pulled together in chapter 5, in which a set of hypotheses and a model of senior executive performance will be presented. Reinforcement sensitivity theory will be at the heart of this model.
Chapter 4

Personality and Executive Performance

As discussed, the aim of this thesis is to explore the extent to which Jeffrey Gray’s reinforcement sensitivity theory (RST) can predict and explain the performance of top-level executives. The previous chapter discussed the RST-relevant literature and concluded that, beyond speculation, little is known about RST’s applications for the workplace, let alone its ability to predict executive performance. The links between the BIS/BAS dimensions and executive performance remain unclear.

When faced with such little to go on, how should hypotheses be built? One approach would be to carry out exploratory analyses on various relationships between the BIS/BAS dimensions and performance variables without prior expectations of what will be found. However, personality researchers (e.g., Barrick, 2005; J. Hogan & Holland, 2003) advise that validities will be higher if one formulates confirmatory hypotheses based on theoretically-driven arguments. It is also not enough to know that relationships exist: one should understand why and how these relationships operate. Therefore, in this thesis I embarked on a journey to build hypotheses about the links between the BIS/BAS dimensions and executive performance, based on as much information as possible.

The first step in this journey was to explore the relevant areas of personality psychology and industrial/organisational (I/O) psychology. After all, RST is a theory of personality, and this thesis is about personality. If one is serious about looking at personality at work it is essential to consider mainstream approaches, and conduct a study that sits in the context of wider personality research, even if the focus is neurobiological. The field of personality is well-developed, and any study that claims to look at personality at work in a
credible manner should sit comfortably within this discipline. That is why quantitative methods have been used in this study, and why this particular chapter is a critical part of this thesis.

With this in mind, this chapter seeks to understand what is already known about the links between personality and job performance, with a specific focus on senior executives. This information will ultimately be used to build hypotheses about the predictive power of the BIS and BAS dimensions.

The story of personality and executive performance must really be told from the beginning. Therefore this chapter will first define personality, and will describe the dominant personality paradigm used by I/O psychologists. Then the chapter will describe what is already known about personality and job performance in general, before moving on to the links between personality and executive performance. The chapter will conclude that although personality is a proven predictor of job performance, there appears to be room for a quantitative study that focuses purely on senior executives. There is still no satisfactory answer as to whether personality predicts executive performance, and certainly not enough information to build hypotheses about RST’s role. In this chapter, it will be concluded that other disciplines, beyond personality research, should be consulted, in order to build hypotheses about RST and executive performance.

4.1 What is Personality?

What is personality? This question raises arguments from differing schools of thought. However, most would agree that the premise of personality psychology is that there are structures within people (whether biological, cognitive or emotional) that determine behaviour (R. Hogan, 2005). The real interest of personality psychologists is in predicting how someone is likely to behave, based on enduring differences that distinguish them from
someone else. In a nutshell, that is personality. It is about enduring characteristics of people that distinguish one person from another, and that predict how individuals are likely to think, feel, or behave (Ones, Viswesvaran, & Dilchert, 2005).

Beyond this blanket definition lie various debates. The field of personality psychology is wide, encompassing approaches known as constructivist, situationist, psychodynamic, lexical, sociocognitive, and of course neuropsychological (for a summary, see Matthews, Deary, & Whiteman, 2003). Some (rare) psychologists do not even believe personality exists (R. Hogan, 2005). Others believe that personality is an idiographic phenomenon that is so unique to each individual that it cannot be classified and measured (Matthews et al., 2003). However, these viewpoints are difficult to sustain now that proof of the predictive validity of personality emerges repeatedly across situations. This thesis supports Robert Hogan’s (2005) argument that the evidence for the existence of personality, and its predictive validity for a variety of behaviours and outcomes appears to be overwhelming. The famous personality theorist Hans Eysenck stated that it is the nomological network in which personality dimensions are embedded that validates their worth (Eysenck, 1981, 1993, cited in Matthews, Deary, & Whiteman, pp. 14 & 23 respectively). While an in-depth defence against critics of personality psychology is beyond the scope of this thesis, it is hoped that this chapter will demonstrate that the nomological network supporting personality is alive and well, that personality most definitely does exist, and that it is a worthwhile means of understanding executive performance.

4.2 Dominant Paradigms in Personality Research

To move on with this chapter and to fully understand the literature on personality and performance, it is important to understand the dominant paradigm that has underpinned personality research, and to explore how RST fits in. As discussed in chapter 3, RST is a
neuropsychological theory of personality. Like the definition of personality above, it is based on the assumption that there are structures inside people that underpin differences in behaviour. In RST’s case, these structures are biological and also conceptual (Gray, 1972a), and they manifest themselves in the BIS and BAS dimensions that predict behaviour. Predicting how someone is likely to behave at work is the core interest of I/O psychologists. However, the neuropsychological approach is not the dominant paradigm for research on personality at work. I/O psychologists have assumed that other personality theories, most notably trait theories, provide a better paradigm for researching the predictive power of personality (Matthews et al., 2003). It will be interesting to discover in this thesis whether RST can be superior to the dominant paradigm in making predictions about executive behaviour, and chapter 8 will address that question.

As it happens, trait theory’s apparent position as dominant paradigm is not straightforward. Most I/O psychologists think of personality as traits (R. Hogan, 2005), and assume that trait theory is the obvious way to look at personality at work. On closer examination of the literature there appears to be division, and this seems to have affected the progress of research in this field. It is worth a quick digression to understand the issues, as these issues influence the ways in which the body of literature on personality and job performance is interpreted, and they also have important bearings on this thesis’s research methods.

Most I/O psychologists and management theorists will be familiar with the five-factor model of personality (FFM). Some academics state that there is now consensus on how to measure personality, and that consensus lies in the form of the FFM (Ones & Viswesvaran, 1996). Closer review of the literature, however, raises questions about that consensus.
The FFM evolved from the lexical tradition of personality research. The lexical tradition started with Cattell (1943), who brainstormed every possible word used to describe a person, and refined this into a taxonomy for classifying personality. Further research efforts by a variety of researchers (see Matthews et al., 2003, for a review) explored the structure of personality and resulted in the widely-accepted conclusion that personality has a hierarchical structure of dimensions. At the top of the hierarchy are several broad dimensions; and each dimension comprises a cluster of narrower traits (known as facets) that correlate with each other but also have their own unique characteristics (Ones et al., 2005). This hierarchical view of personality underpins many of the personality assessment tools that are used in occupational settings today.

Although the five-factor model (FFM) is widely referred to, and the hierarchical structure of personality is often accepted as a given, there is no one set of broad dimensions to which all researchers subscribe (Matthews et al., 2003). The FFM is just one way to look at personality. Proponents of the FFM (e.g., Costa & McCrae, 1991; Digman, 1990; Tupes & Christal, 1961) advocate that personality can be captured using five broad dimensions. The most common terms used to label these five dimensions are Costa and McCrae’s: extraversion, conscientiousness, openness to experience, agreeableness and emotional stability (Costa & McCrae, 1991; see Table 4.1 for a brief description of these traits).

However, R. Hogan, Hogan, and Warrenfeltz (2007, p.22) argue that extraversion can be split into two core dimensions: ambition (“desire for status, upward mobility, power, recognition and achievement”), and sociability (“need for social interaction”), and that openness should be split into two components: intellectance (“interest in culture and ideas”) and learning approach (“academic performance”). Hough, another well-known personality theorist, believes that personality can only be completely encapsulated using a nine-factor taxonomy (Hough, 1992). As Hogan and Hough are two of the most prominent personality
theorists, it would appear that the FFM is by no means a given. Nevertheless, many researchers refer to the FFM in researching personality at work (e.g., Barrick & Mount, 1991; Hurtz & Donovan, 2000; Salgado, 1997). This division is likely to have hindered research progress, as it is often unclear whether different researchers are really measuring the same constructs.

Table 4.1.

*The Five-Factor Model of Personality (Adapted from R. Hogan, Hogan, & Warrenfeltz, 2007, p. 20)*

<table>
<thead>
<tr>
<th>Factor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>The degree to which a person needs social attention and social interaction</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>The degree to which a person needs pleasant and harmonious relations with others</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>The degree to which a person is willing to comply with conventional rules, norms and standards</td>
</tr>
<tr>
<td>Emotional stability</td>
<td>The degree to which a person experiences the world as threatening and beyond his/her control</td>
</tr>
<tr>
<td>Openness to experience</td>
<td>The degree to which a person needs intellectual stimulation, change, and variety</td>
</tr>
</tbody>
</table>
Adding to the confusion, facets offer the opportunity to go into more detailed measurement of personality. However, there is no widely accepted taxonomy of facets. This is currently being addressed by researchers (Barrick, 2005), but at present different personality assessments use facets in different combinations to form wider traits. Again, this is another example of construct confusion and, presumably, hindered progress.

It is even more important to recognise that within the apparent dominant paradigm lie some fundamental philosophical divisions. For example, trait theory – with its origins in the lexical approach – does nothing more than classify and measure words used to describe personality. After all, it originated from a mass of descriptive words. In fact, this lexical approach formed the basis for one of the most widely used personality assessment tools – the ‘Revised NEO Personality Inventory’ (NEO PI-R; Costa & McCrae, 1991). In short, trait theory provides a way of classifying the various descriptors of a person’s personality.

On the other hand, Hogan proposed a socioanalytic theory of personality, which does more than just describe a person (R. Hogan, 2005; R. Hogan & Shelton, 1998). It explains individual differences in personality based on basic human needs, and has more of a focus on motivation and inner drives than trait theories do. Hogan’s argument underpinning the theory is this: the needs to get along, get ahead and find meaning in life are fundamental aspects of human society. Some people are more effective than others at doing this, and have different levels of motivation in this respect. Robert Hogan used this as the basis for his personality taxonomy, and as a foundation for his well-known personality assessment tool, the ‘Hogan Personality Inventory’ (HPI; R. Hogan & Hogan, 1997). Hogan (2005) fiercely defends his standpoint that his theory is not a trait theory, as it does more than just describe personality. However, some researchers incorrectly classify his theory as a trait theory, as it bears outward similarities.
The point here is that this thesis questions the existence of a dominant paradigm. It is clearly not as simple as looking at the FFM. There is a large body of knowledge on personality at work, but are researchers really measuring the same thing, or clear about what personality is? The conclusion here is that theoretical disputes about the nature and structure of personality have probably slowed progress towards understanding the link between personality and executive performance, and that this thesis should take a well-thought-out position on how personality will be conceptualised.

4.3 Neuropsychology as an Alternative Paradigm

This thesis, of course, focuses on a different approach to personality – the neuropsychological approach. Could this be a strong competitor to the trait approach, in predicting job performance? Hypothetically it can, as (like socioanalytic theory) it is a theory of motivation as much as it is a theory of personality. Motivation is a key factor contributing to work performance (Blumberg & Pringle, 1982; Latham, 2007). Interestingly, R. Hogan and Shelton’s (1998) socioanalytic theory has provided the strongest predictions of work performance yet – compared to trait theories (J. Hogan & Holland, 2003), and perhaps this is because its roots in motivation differences allow more precise hypotheses to be built about work behaviour. In a similar way, this thesis hypothesises that RST will predict work behaviour as it addresses the fundamental drivers of individual behaviour.

The neuropsychological approach to personality is not inconsistent with trait theory or socioanalytic theory. Where trait theories describe personality, RST explains it. It is possible that traits are manifestations of underlying biological differences, and indeed links have been found between the FFM and RST’s dimensions (Smits & Boeck, 2006). Similarly, the motivation-oriented and evolutionary aspects of Hogan’s work are certainly in line with the RST ideology, but as yet researchers do not seem to have ascertained how socioanalytic
theory and RST align. Given these similarities, it is hoped that any research using Hogan’s measures can provide hints that will enable us to build hypotheses about RST and executive performance.

4.4 Personality and Job Performance: What is Already Known?

Before reviewing the literature on personality and executive performance, it is important to understand what is already known about the link between personality and job performance in general. It is generally accepted that personality does predict job performance and other work outcomes (Burch & Anderson, 2008).

There was a period of time from the 1960s to the 1990s where it was thought that personality was a poor predictor of job performance. This was based on the conclusions of a few key researchers, most notably Guion and Gottier (1965) who claimed that validities were too low to be of importance. Over those decades, personality was written off as of little use to the workplace (Hough, 1992), and thus research on personality and job performance became sporadic at best.

Interest in personality at work revived in the 1990s with a spate of meta-analyses that reviewed the link between personality and performance (Barrick & Mount, 1991; J. Hogan & Holland, 2003; Hurtz & Donovan, 2000; Salgado, 1997; Tett, Jackson, & Rothstein, 1991). With each study the meta-analytic methods have improved, culminating in the J. Hogan and Holland (2003) meta-analysis, which – unlike the others – was based on socioanalytic theory. The overall conclusion from all of these meta-analyses is that yes, personality predicts job performance. The unanimous decision is that trait conscientiousness is the strongest predictor of job performance with a predictive validity correlation coefficient of 0.27 estimated by Barrick, Mount, and Judge (2001), who completed a second-order meta-analysis of previous meta-analyses. This is followed by emotional stability, which has a positive
relationship with performance (0.15, Barrick et al., 2001). Beyond this, the other traits are considered niche traits, which may predict performance under certain circumstances (or in certain roles), and these traits have mixed results across the various meta-analyses.

In general, the highest predictive validities sit around 0.25 to 0.3. There are debates about whether this level of validity is good or mediocre. Hurtz and Donovan (2000) suggest that personality researchers are overly optimistic about the predictive power of conscientiousness, reiterating that a validity of around 0.2 is not impressive. This is particularly the case when compared to general mental ability, which has a predictive validity of about 0.5 (Schmidt & Hunter, 1998). R. Hogan (2005), on the other hand, points out that the validities that personality research provides are as good if not better than the validities produced in comparable sciences, such as health science. In fact, Hogan argues that tighter research methods will result in higher validities – even perhaps matching cognitive ability (R. Hogan, 2005). I share Hogan’s (2005) opinion that much of the personality research has not been conducted as well as it could, and that this has attracted criticism of the field of personality psychology in general. In short, personality is worth pursuing.

The criticisms of research to date on personality and job performance have now been pulled together to set a research agenda for future studies in this area (Barrick, 2005; R. Hogan, 2005; Hough & Oswald, 2005; Ones et al., 2005). This agenda is a crucial part of this thesis: Given the weaknesses in personality research to date, one must not fall into the same traps as previous studies have done. The following agenda has therefore been used to structure this thesis’s research methods, and it is argued here that if this agenda is followed, personality research – whether socioanalytic or neuropsychological – has plenty to offer the field of management. With this in mind, let us next consider the key research principles that recent critiques of personality research have brought to the fore.
4.4.1 Use facets.

Personality research to date has tended to focus on the broad traits of the FFM, which (as already discussed) provide reasonable validities. However, there is a necessary trade-off that warrants consideration. This trade-off, known as the bandwidth-fidelity trade-off, was first introduced by Shannon and Weaver (1949) and then publicised by Cronbach (1960). According to Cronbach, bandwidth refers to the complexity and scope of information that one tries to collect at a given point of time; while fidelity refers to the level of accuracy. Bandwidth and fidelity are two separate things, but strength in one does sacrifice strength in the other. In essence, the problem is that it is difficult to collect extensive information when collecting psychometric data because it becomes intrusive for participants, and so one has to decide whether to measure specific constructs more accurately, or focus on a wider, more encompassing predictor. The question here is whether broad traits or narrow facets are the best way to predict and test relationships between personality and executive performance.

While narrow facets are more likely to be accurate predictors of specific behaviours (Barrick, 2005), broad traits hold the potential to predict more complex phenomena (Ones & Viswesvaran, 1996), and, as is shown in chapter 2, executive performance is indeed a complex criterion. Some personality researchers (e.g., Barrick, Mount & Judge, 2001; Burch & Anderson, 2008) have called for a move to facet-level research while others (e.g., Ones & Viswesvaran, 1996) argue that this is of little use, citing evidence to prove that facets do not provide any further use above and beyond the predictive power of broader traits. The point here is that the bandwidth of the criterion (i.e., the dependent variable) should be an important consideration in making a decision about the bandwidth of the predictor. This thesis follows Schneider, Hough, and Dunnette’s (1996) and J. Hogan and Roberts’ (1996) advice that the predictor’s characteristics should be driven by the characteristics of the dependent variable. This will be discussed in the methods chapter further, but for now it is
enough to say that it is essential to understand the criterion and to take bandwidth-fidelity into account when developing hypotheses.

### 4.4.2 Apply situational moderators.

It has been found that the same trait can have a positive relationship with job performance in certain situations, but a negative relationship in other situations (Tett, Jackson, Rothstein, & Reddon, 1999). When this happens, relationships between traits and performance – even if strong in their own right – can cancel each other out in meta-analyses, weakening the overall predictive validities. Known as bi-directionality, this phenomenon suggests that some studies to date have not been careful to take into account situational moderators.

Tett and Burnett (2003) advise that the way around this is to measure characteristics of the situation that may moderate any relationship, and to confine samples to specific situations. Unfortunately, there is no widely accepted taxonomy of situational characteristics (Hough & Oswald, 2005). Nevertheless, the message to take from all this is that situational moderators must be considered. This will be discussed further in chapter 5. For a start, though, even exploring a specific job family such as senior executive positions, can help mitigate bi-directionality because traits will be likely to predict performance in the same direction for most roles within a particular job family.

### 4.4.3 Develop confirmatory rather than exploratory hypotheses.

Research has shown that predictive validities are higher when hypotheses are carefully constructed based on theoretical arguments for a relationship between a particular predictor and a specific work outcome; that is, predictive validities are higher when hypotheses are confirmatory (J. Hogan & Holland, 2003). The alternative – which tends to have been the popular choice to date – is to carry out exploratory analyses using every trait, to ascertain
which trait is the most predictive. Researchers such as J. Hogan and Holland exhort that future studies use confirmatory rather than exploratory hypotheses. This advice will be followed in this thesis.

4.4.4 Develop the right taxons.

Hough and Oswald (2005) raised the question of whether FFM traits really provide the best structure to predict a particular work outcome. Within a given trait, different facets may have different impacts on different work outcomes, and in fact, the right predictor (or “taxon”; Hough & Oswald, 2005, p. 382) for any given outcome may incorporate specific facets from several traits, and this is known as a compound variable. A good example that Hough and Oswald (2005) cite is the compound variable customer service, which apparently has a validity in the mid 0.20s for customer service jobs, as high as it gets for personality. It is not clear whether this compound trait is superior to a FFM measure, but Hough and Oswald argue that researchers must carefully think about the criterion that they are trying to predict, and carefully develop the right predictors.

4.4.5 Consider curvilinearity.

The final point in this agenda is that relationships between personality and performance may not be linear. Take Ames and Flynn’s (2007) recent study on assertiveness. They found that extremely low and extremely high assertiveness were both detrimental for leadership effectiveness, but moderate levels were positively related to effectiveness. Graphically, with assertiveness on the horizontal axis and effectiveness on the vertical axis, this would look like an inverted U shape, rather than a linear representation (see Figure 4.1).

Although Ames and Flynn’s study did not use self-report psychometric assessments to measure assertiveness, nor did they include management-level leaders in their sample, the
findings show that linearity should not be assumed. Indeed, curvilinearity has also been demonstrated by Benson and Campbell (2007), who tested the relationship between personality flaws, as measured by the Hogan Development Survey (HDS; R. Hogan 1997), and leader effectiveness using a sample of middle and senior managers in a large American corporation, and found that personality flaws predict positive performance up to a point, and then performance declines steeply as the personality flaw increases. Therefore, this thesis will not make automatic assumptions of linearity, and will consider the curvilinear possibilities in the formulation of hypotheses.

Figure 4.1.

_The Curvilinear Relationship Between Assertiveness and Leader Effectiveness_

_(Ames & Flynn, 2007, p. 318)_

With this agenda set, this thesis will rise to the challenge of a sound research design that addresses the criticisms of past studies. Minimal research has been done since the recent calls for improvements mentioned above, so it is hoped that this thesis will make an original contribution to the literature on personality at work. The key is to think very carefully about
the performances that this thesis is trying to predict, and to develop robust, confirmatory hypotheses that are based on theoretical, process explanations about how personality might relate to work outcomes.

This thesis will do this by looking at the BIS and BAS dimensions, but will also look at the more mainstream predictors using Hogan’s socioanalytic theory, which I advocate as superior to the FFM in workplace applications, given its higher predictive validities and focus on motivation.

This assertion of socioanalytic superiority could, of course, be criticised. For example, one may argue that, although socioanalytic theory has produced better predictive validities, it is not as well-supported and widely-researched as Hans Eysenck’s (1967) three factors, or the FFM (Digman, 1990). Moreover, the three- or five-factor solutions of these respective theories are potentially more parsimonious than the socioanalytic solution with its seven factors. In addition, the factor analyses behind other theorists’ work (most notably Hans Eysenck’s work) did not uncover the surgency-ambition dichotomy, within the extraversion trait, that Robert Hogan did.

Despite these criticisms, Hogan’s predictive validities (J. Hogan & Holland, 2003) indicate that there is merit in exploring socioanalytic theory further in a workplace context, and, in particular, there is merit in separating surgency from sociability in predictive studies. It is important that further work be done to uncover socioanalytic theory’s relevance to the personality-performance literature. Given socioanalytic theory’s similarity to RST – in logic, and evolutionary underpinnings, it will also be useful to explore whether Hogan’s constructs are a better way of predicting performance than neuropsychological constructs, and to tie all of this together into a robust research study, which is what this thesis will do.
4.5 Executive Performance and Personality

Enter now the topic of executive performance. An executive position is a specific type of role with specific job demands (as discussed in chapter 2). This final section of the chapter will discuss what the personality literature has revealed about the link between executive job performance and personality. It will become evident that, if judging executive performance by the guidelines set out in chapter 2, the literature on the topic is sparse. There appears to be very little quantitative personality research that focuses on the executive level, so it is difficult to determine the extent to which traits predict performance at that level. Therefore, studies that came close were considered here. Note, however, that none of these studies actually measure executive performance as defined in chapter 2 of this thesis.

As discussed already, a series of recent meta-analyses investigated the relationships between personality traits and performance (Barrick & Mount, 1991; Barrick, Mount & Judge, 2001; J. Hogan & Holland, 2003; Hurtz & Donovan, 2000; Salgado, 1997; Tett et al., 1991). These meta-analyses categorised data according to job type, but none looked at senior executives specifically. They did, however, examine managers as a group, and this is the closest one can get to exploring the relationship between traits and executive performance. The findings from those studies are summarised in Table 4.2 below.

It is worth noting that the meta-analyses blend a variety of FFM measures – including the NEO PI-R and the HPI, which – as has been discussed – are not necessarily consistent with each other. Digman’s (1990) terms are used to refer to the FFM traits in this section, as these are the labels most commonly used in the literature. However, the ideology behind this thesis is most in line with Hogan’s socioanalytic theory, and the following should be read bearing that distinction in mind.
Table 4.2.

**Personality Traits and Managerial Performance: Meta-Analytic Findings**

*(Barrick & Mount, 1991; Barrick, Mount, & Judge, 2001; Hurtz & Donovan, 2000; Salgado, 1997)*

<table>
<thead>
<tr>
<th>Trait</th>
<th>Range of Estimated True Validities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>0.05 – 0.21</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-0.04 – 0.10</td>
</tr>
<tr>
<td>Emotional stability</td>
<td>0.08 – 0.12</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.22 – 0.25</td>
</tr>
<tr>
<td>Openness</td>
<td>-0.03 – 0.10</td>
</tr>
</tbody>
</table>

In addition to the above-mentioned meta-analyses, two further studies have proved useful to this section of the literature review. These are Judge, Ilies, Bono, and Gerhardt’s (2002) meta-analysis, and J. Hogan, Hogan, and Murtha’s (1992) quantitative study of managerial performance. Judge et al.’s study was a meta-analysis of the relationships between FFM traits and leader emergence and effectiveness. However, what Judge et al. did not do was extract a separate sample of senior executives, and their term ‘leader’ applied to any sort of leader, including low-level supervisors. So, while leadership is interesting, the results must be considered with caution as this is not an executive sample, and is not about executive performance as such. J. Hogan, Hogan, and Murtha’s study is more relevant to this particular chapter. J. Hogan et al. tested a sample of junior and middle managers using the Hogan Personality Inventory (HPI; R. Hogan & Hogan, 1997) to measure personality and supervisors’ ratings of the managers to measure job performance. J. Hogan et al. also collected a measure of each manager’s position within the organisation, with the rationale
that the organisation promotes from within and therefore position is a measure of performance. However, given the discussion in chapter 2 of this thesis, little weight will be put on that measure because it is still an indirect measure of performance, and indeed J. Hogan et al.’s results showed that the personality facets that predicted status were quite different to those that predicted performance. The results of the J. Hogan et al. study will be viewed alongside the meta-analyses and Judge et al. study in this section of the chapter.

Let us consider what the literature does reveal about personality and executive performance. The results of the above body of meta-analyses were almost unanimous: conscientiousness is the best predictor of managerial performance (with estimated true validity coefficients ranging from 0.16 to 0.25\(^4\)), with suggestions that extraversion and emotional stability could also be predictors, though the results from these last two factors are mixed, as will be illustrated.

Looking closer at conscientiousness, it appears that facets are more enlightening than the trait itself. According to Dudley, Orvis, Lebiecki, and Cortina (2006), only certain facets of trait conscientiousness are predictive of managerial performance – achievement-orientation (0.13) and dependability (0.19). However, this study was based on Hough and Ones’ (2001) taxonomy of conscientiousness. It is clear from the ‘Hogan Personality Inventory’ (HPI; R. Hogan & Hogan, 1997) that Hogan’s equivalent of conscientiousness, ‘prudence’, does not include an achievement-orientation facet. Instead, achievement-orientation falls under Hogan’s trait ‘ambition’ (which, together with sociability, forms the equivalent of FFM extraversion). This achievement orientation is seen in two facets of ambition: ‘competitive’ (the extent to which someone is competitive, ambitious and persistent), and ‘leadership’ (the extent to which someone is interested in assuming leadership positions). Prudence, meanwhile, did not have a significant relationship with

\(^4\) All correlations given in this chapter are estimated true validities unless otherwise stated.
managerial job performance in J. Hogan et al.’s (1992) study. This raises the question of whether conscientiousness is really that useful for predicting executive performance.

Continuing with the issue of conscientiousness, Dudley et al. (2006) found that another facet of global conscientiousness, order, is negatively related to managerial performance (0.12). It has been suggested that order interferes with creativity, or the ability to carry out multiple tasks effectively (Tett et al., 1999), both of which could be important executive competencies; particularly given the fact that an executive must consider multiple priorities – short-term, long-term, fiscal and non-fiscal (see chapter 2). In short, the value of conscientiousness has become unclear, and it may not necessarily predict top-level executive performance. It appears that achievement orientation is important, but not necessarily the global trait of conscientiousness.

If achievement orientation falls under extraversion rather than conscientiousness, it would follow that extraversion might predict executive performance. However, here another interesting conundrum reveals itself. Extraversion is indeed related to managerial performance, moderately, with correlations ranging from 0.12 to 0.25 (Barrick & Mount, 1991; Barrick et al., 2001; Hurtz & Donovan, 2000). In addition, Judge et al. (2002) found that extraversion is related to leader effectiveness (0.24). However, Salgado (1997) found only a predictive validity of 0.05 for managers, so the results were not entirely consistent.

It has been argued that extraversion has two components: ambition and sociability (Bartram, 2005; Digman, 1990; R. Hogan et al., 2007), and that these may have different relationships with job performance. J. Hogan and Holland (2003) seized this idea, matched these two facets of extraversion (i.e., sociability and ambition) to performance in specific contexts, and found that it is the ambition side of extraversion (not the sociability side) that predicts performance elements of jobs where “getting ahead” is an important job demand
(estimated true validity 0.26). This would be relevant to executives, particularly as J. Hogan and Holland’s (2003) performance criterion was “behaviour that produces results and advances an individual within the group and the group within the competition” (p. 7). This also fits with achievement orientation. So the suggestion here is that achievement orientation and ambition are important, while other dimensions (e.g., sociability) are not.

Turning now to a different trait, the various meta-analyses showed that emotional stability also has a significant but lower relationship with managerial performance (0.08 to 0.12). This is supported by J. Hogan et al.’s (1992) work. In addition, emotional stability appears to have a significant relationship with leader effectiveness (0.22; Judge et al., 2002). J. Hogan and Holland (2003) even suggest that it has a stronger relationship with general job performance than was originally thought. Conversely, however, Perkins and Corr (2005) found that amongst those with high cognitive ability, one particular facet – worrying – is positively related to performance. Perhaps this is another example of a facet having specific relationships with performance. Beyond this, there is little to go on when it comes to understanding the relationship between emotional stability and executive performance. Certainly, common sense would suggest that emotional stability would enable an executive to overcome obstacles and perform well under pressure.

As for agreeableness, the classic meta-analyses of personality and performance found weak or no significant relationships between that and managerial performance (Barrick & Mount, 1991; Hurtz & Donovan, 2000; Tett, Jackson, & Rothstein, 1991). For example, Bentz (1985) conducted a large quantitative study of senior executives in Sears, a large American retailer – though using the ‘Guilford-Martin Personality Inventories’ (Guilford & Martin, 1943) rather than more contemporary measures. He found no significant relationship between agreeableness and executive performance. In addition, Marcus, Goffin, Johnston, and Rothstein (2007) conducted a study of middle managers using the ‘Sixteen Personality
Factor Questionnaire’ (16PF; Cattell, Eber, & Tatsuoka, 1970), and also found no significant relationship between agreeableness and performance. In both of the above studies, performance was measured using superiors’ ratings, and in the Bentz study the relationships between personality and performance were analysed using different areas of desired competence.

However, Robertson, Gibbons, Baron, MacIver, and Nyfield (1999) found that low agreeableness, as measured by the Occupational Personality Questionnaire (OPQ; Saville & Holdsworth Ltd., 1993) is related to managerial performance, when performance is viewed in terms of specific competencies. Specifically, Robertson et al. found that agreeableness was negatively correlated with “action, motivation, and creativity” (-0.20), positively correlated with “flexibility, sensitivity and resilience” (0.14), and positively correlated with “specialisation and analysis” (0.25) (p. 10). However, further details of these competencies are not given, and it should be noted that these were junior managers rather than senior executives.

Adding to the confusion, Judge et al. (2002) actually found a positive relationship between agreeableness and leader effectiveness (0.21), though caution should be applied in accepting the applications of this for executive performance, given Judge et al.’s focus on leadership of all types, and the fact that they were measuring leadership rather than performance. In truth, the results for agreeableness appear varied. For instance, Davies (2004) reviewed the literature on agreeableness and transformational leadership, and concluded that the results were equivocal; while J. Hogan et al. (1992) also found no relationship between agreeableness and managerial performance. Based on this review, there is reasonable evidence to suggest that agreeableness would not be a strong factor in executive performance.
All of this suggests that the FFM might not necessarily provide the best structure for understanding executive performance and that one might obtain stronger validities by using an alternative approach to trait taxonomies. However, what does appear promising is the idea that some personality facets (rather than traits) probably do predict specific aspects of performance. It should be noted, though, that all research cited has been conducted on managers rather than executives.

4.6 Conclusion

This chapter has shown that RST is certainly not contradictory to mainstream personality theories, and that a study of RST and executive performance can sit comfortably alongside more mainstream research on personality in the workplace.

The chapter has also highlighted that there is a dearth of quantitative research that adequately addresses the link between personality and performance at the senior-executive level; and even studies of managers (rather than executives) do not provide clear answers as to which traits or facets will be the most informative in the senior management context, because the body of research is surprisingly mixed in terms of personality frameworks. There is definitely opportunity to contribute to the question of whether, and how, personality predicts senior executive performance.

So where should one go from here? It is interesting that those facets that are related to performance (most notably achievement orientation and the wider trait ambition) appear to be motivation-related in nature, leading to the question of whether motivation-oriented traits might prove to be particularly valuable in executive performance prediction. Indeed, J. Hogan and Holland’s (2003) study found higher validities (up to 0.35) by focusing on the motivation-related facets of personality based around socioanalytic theory, and linking those predictors to aspects of performance that would satisfy human motives. This increase in
predictive validity does support the suggestion that one will gain higher predictive strength by using actual measures of motivation-related traits, rather than lexical-based personality traits. In other words, R. Hogan and Shelton’s (1998) socioanalytic theory and RST both provide promising theoretical frameworks.

If looking for a psychometric measure of individual differences in motivation, RST provides an obvious option. As such it could be a competing, but also a complementary predictor of performance to trait theories – or indeed to socioanalytic theory. The personality research has certainly provided us with a research agenda to work with, but in terms of hypothesis-building there are only hints, possibilities, and questions, with nothing particularly substantial. The thesis therefore turns, next, to a somewhat different body of literature for further clues about the psychological predictors of executive performance – that of the management literature. The next chapter will explore that literature, combining it with the material in chapters 2, 3, and 4, to produce a set of hypotheses and a proposed model of senior executive performance prediction.
Chapter 5
Towards a Model of Executive Performance

This thesis has used diverse bodies of literature to explore the link between reinforcement sensitivity theory’s dimensions of approach and avoidance motivation, on the one hand, and executive performance, on the other. This chapter now aims to use diverse strands of literature to build a set of hypotheses and a wider model of executive performance. Before doing this, it is first important to summarise what the thesis has discovered so far.

The thesis started out with the primary step of defining executive performance. The reader is referred to Figure 2.2 of this thesis, which illustrates the executive performance domain (as operationalised in this project). As is shown in Figure 2.2, the performance domain will be divided into task and contextual performance outcomes: task performance will be viewed as how well the executive achieves his/her short-term, long-term, fiscal and non-fiscal objectives; while contextual performance will be measured in terms of subordinate outcomes: that is, how satisfied and committed the executive’s subordinates are. In addition to performance outcomes, chapter 2 highlighted the need to consider what kinds of behaviours constitute task and contextual performance. While chapter 2 was not able to answer that question, this current chapter does, as will become evident in due course.

Once performance had been defined, the thesis then explored the predictive capability of reinforcement sensitivity theory (chapter 3), and mainstream personality theories (chapter 4), to discover what is already known about the prediction of top-level executive performance. The conclusions from chapters 3 and 4 suggested that personality-based research has not provided adequate information about the psychological predictors of executive performance; certainly not enough information to build hypotheses about the role
of reinforcement sensitivity theory (RST). In addition, RST is only a newly emerging theory in management research. This lack of information highlighted in chapters 3 and 4 has prompted a journey to search elsewhere for clues – clues that will help formulate a set of rational hypotheses. This leads us to a shift in direction towards the wider management literature, and in particular the body of literature on senior executive performance, which will be reviewed now.

This chapter’s purpose is to present relevant research from the management literature, and to ultimately build a model of executive performance using the combined findings from this and the previous chapters. This chapter makes the point that the literature reveals a set of core characteristics that predict executive performance. This set - comprising drive, cognitive ability, and relationship-building – proves central to the model proposed here.

The remaining sections of this chapter will describe these characteristics in more detail, and explain how this information can be used to build hypotheses about the relationships between RST and executive performance. In exploring these factors, the argument here is that the evidence supporting the BAS dimension’s role in executive effectiveness is strong. In addition, a case emerges for the role of the BIS dimension.

5.1 Characteristics of Effective Executives

Firstly, this section considers what is already known about the personal characteristics of effective executives – besides what has already been covered in chapter 4. A number of major studies have researched what makes an effective executive. There does not appear to be an abundance of empirical research about senior executives as a distinct group, but several major studies have provided some pointers for the purposes of this thesis.
Though each of the following studies has used different methodology, all reveal the same set of themes: drive, cognitive ability, and relationship-building. Of this group, drive emerges as the strongest theme, though each of these themes features prominently in the management literature.

First, let us consider Kaplan’s (1991) six-year qualitative study of 42 senior managers from Fortune 500 companies. Kaplan conducted intensive interviews with these executives and their peers, superiors, subordinates, friends and family. He used the data to develop a grounded theory of executive performance. The key theme that emerged from the data was that there is one overriding trait that characterises effective executives. Termed ‘expansiveness’, this trait bears striking resemblance to the concept of approach motivation:

Expansiveness … is all about the drive to mastery – the ambition for it, the willingness to expend great energy in its pursuit, the willingness to push other people hard to attain it, and the hunger for the rewards that come with it (Kaplan, 1991, p. 51).

Kaplan in fact describes expansiveness as a theory of motivation and argues that it is overwhelmingly related to productivity and performance. In RST terms, the “hunger for rewards” described above is very much aligned with ‘BAS’ characteristics (see chapter 3).

This provides an interesting start. However, even more interesting is the fact that the theme of expansiveness was similar (though not identical) to a theme uncovered by another major work on executive performance: Bray and colleagues’ longitudinal 20-year study of managers at the Bell System, a subsidiary of AT&T (Bray, Campbell, & Grant, 1974; Howard & Bray, 1988). Bray and colleagues used a mixture of qualitative and quantitative methods to track the career paths of 274 entry-level graduates as they progressed within the company. Using interviews, psychometric tests, assessment centre exercises, and projective
tests to measure predictors, they found that there is a distinct type of person who is particularly likely to be successful at work. They termed this type of person an ‘enlarger’, and described this as someone who “consistently looks for responsibility on the job, and is likely to seek and achieve a position of influence” (p. 103). According to Bray and colleagues, the enlarger’s focus is all about extending his/her sphere of influence, breaking from tradition, and focusing on growth.

The enlarger theme is not quite as similar to BAS as the expansive theme, but nevertheless the two themes are similar in that they appear to capture a person’s level of drive, and reflect a broad, achievement-oriented characteristic that seems to predict success. Turning to the next major work on senior executives, “The General Managers” by Kotter (1982), an intensive qualitative study of 15 general managers from nine major American corporates, a similar theme emerges. Kotter used a range of methods, including observations and interviews, to explore the behaviours and characteristics of effective executives. Once again, the theme of drive emerges, with Kotter arguing that ambition and achievement orientation were the biggest defining characteristics of top-performing executives.

Consider also Spencer and Spencer’s (1993) review of the behaviours that differentiate superior employees from those who are only typical, with a distinct sample of senior executives. Spencer and Spencer reviewed a number of studies of managerial jobs using behavioural event interviews (interviews with the subjects themselves about the behaviours they have displayed in various situations), and concluded that achievement/action is the competency cluster that best predicts whether an executive will be outstanding; In fact, the biggest single competency was achievement orientation.

At this point the role of drive seems striking, but there is more: in the 1960s the Standard Oil Company of New Jersey (SOCNJ) conducted a study of 443 senior executives.
This was a corporate initiative and, unfortunately, the results remained proprietary but the study was described in detail by Campbell and colleagues and was hailed as an example of methodological rigour (Campbell, Dunnette, Lawler, & Weick, 1970). Using psychometric measures of personality and cognitive ability, researchers at SOCNJ were able to produce a composite predictor measure that had correlations of 0.7 with overall supervisor ratings of performance, an impressive correlation. These results were applicable across functions, business units and even countries. From Campbell et al.’s account, this study held promise for important contributions to knowledge in this area. The study director revealed to Campbell in personal correspondence that the top performing executives displayed a “life pattern of successful endeavours”. They were “good in college, active in taking advantage of leadership opportunities, forceful, dominant, assertive, and confident” (Campbell et al., p. 169). Again the theme of drive is suggested here. While it is disappointing that the results were never published, this study holds promise: the correlation of 0.7 gives hope that it is possible to improve on the moderate correlations described in chapter 4.

Two further studies are cited in writings about executive performance. The first is a 21-year longitudinal study of 136 managers in the American firm Sears Roebuck, directed by Bentz (1985). Bentz used the ‘Guilford-Martin Personality Inventories’ (Guilford & Martin, 1943) along with a battery of assessment centre exercises and interviews to measure personality characteristics, and correlated these predictors with various ratings of overall job performance throughout the manager’s career. The second study of note is Lombardo, Ruderman, and McCauley’s (1988) quantitative study of the link between competencies and senior executive performance, as measured by gathering superiors’ ratings of each executive’s overall performance against various competencies and then testing whether competency ratings predicted whether an executive would fall into one of two categories: derailed and successful. Unfortunately, Lombardo et al.’s study is somewhat discredited by
the fact that the same rater was used to rate the competencies and the overall derailed/successful rating. Lombardo et al. did find that ‘drive for excellence’ predicted whether an executive was considered successful, but it is possible that there is common-method bias here (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003). On the other hand, Bentz did use a robust research design, and also found that drive is a top predictor of executive performance, Bentz’s version of drive being “competitive leadership: a heightened concern with status, power, money and social ascendancy” (p. 112).

The recurring theme of drive appearing throughout such a range of studies is striking. This is also in line with chapter 4’s argument that the personality facet of achievement orientation predicts managerial performance and is likely to predict executive performance. It seems reasonable to conclude that drive or achievement orientation is critical at the executive level. The obvious question from here is whether the BAS dimension plays a role in this drive for performance. This question will be discussed in section 5.2 below. First, let us briefly consider the other determinants of executive performance.

Besides drive, a wider group of characteristics emerges from the literature on executive performance. Each study mentioned above revealed the same core group of characteristics (though occasionally one or two of these characteristics were omitted, see Table 5.1). The group consists of drive, cognitive ability, and relationship-building. Kirkpatrick and Locke (1991) support these conclusions.

To summarise, Table 5.1 lists the major studies of executive performance and the core characteristics that each study revealed. Though the labels vary, the table presents a clear picture of the areas that characterise an effective executive.
Table 5.1.

*The Core Characteristics of Effective Executives*

<table>
<thead>
<tr>
<th>Drive</th>
<th>Ambition</th>
<th>Achievement orientation</th>
<th>Activity</th>
<th>Drive for excellence</th>
<th>Expansive character</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive</td>
<td>Ambition</td>
<td>Achievement</td>
<td>Activity</td>
<td>Drive for excellence</td>
<td>Expansive character</td>
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<td>Bravement orientation</td>
<td>Achievement orientation</td>
<td>Activity</td>
<td>Drive for excellence</td>
<td>Expansive character</td>
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</tr>
<tr>
<td>Enlarging character</td>
<td>Socialised power</td>
<td>Heightened concern with status, power, money and social ascendancy</td>
<td>Drive for excellence</td>
<td>Expansive character</td>
<td></td>
</tr>
<tr>
<td>Cognitive ability</td>
<td>Cognitive ability</td>
<td>Intelligence</td>
<td>Mental ability</td>
<td>Intelligence</td>
<td></td>
</tr>
<tr>
<td>Relationship-building</td>
<td>Positiveness, optimism</td>
<td>Relationship-building</td>
<td>Sensitivity</td>
<td>Likeability</td>
<td></td>
</tr>
</tbody>
</table>

In fact, each of these characteristics could conceivably be explained by RST; and this very argument is the focus of the rest of this chapter. The chapter will therefore explore these characteristics in finer detail and put forward hypotheses about RST’s involvement.

5.2 Drive

In the above studies, drive is described in several different ways: as a need for power or social ascendancy (Bentz, 1985; Kaplan, 1991; Kotter, 1982), achievement orientation (Bray et al., 1974; Kaplan, 1991; Kotter, 1982; Lombardo, Ruderman, & McCauley, 1988), a focus on action and goals (Boyatzis, 1982; Spencer & Spencer, 1993) and energy, effort, and
activity levels (Bass, 1990; R. Hogan, Raskin, & Fazzini, 1990; Kirkpatrick & Locke, 1991). What these definitions have in common is that drive is about an *intense focus on results*.

From an evolutionary perspective, drive involves mastering our corner of the world as best we can (Kaplan, 1991). Organisations are just one example of a social community where we do try to master our ‘corner’ to the best of our capability, forming social hierarchies, seeking leadership positions, building political relationships, and so on (Nicholson, 2000). One of the ultimate rewards of life is getting ahead (social ascendancy; R. Hogan, 2007), which in turn can presumably satisfy the basic drives of survival and reproduction.

Continuing with the evolutionary theme for a moment, it is worth asking whether the Behavioural Approach System (BAS) is responsible for executive drive. At a basic level, RST argues that the human brain has an adaptive biological mechanism – the BAS – that activates and controls reward-seeking behaviour, to enable us to achieve evolutionary goals such as survival and reproduction. RST also argues that some people have a more active mechanism than others, enabling them to be the stronger members of society, or of the workforce. It is argued here that the BAS is responsible for the intense drive that Kaplan (1991) referred to, and that individual differences in BAS predict executive performance. The following presents speculations of how, and develops these speculations into hypotheses.

It is known that the BAS is responsible for anticipatory pleasure that is related to rewards (Corr, 2008; Gray, 1994; see chapter 3). It is also known, from the management literature, that driven executives see their own career advancement, salary level, and their business results as a symbol of their social ascendancy, and take great pride in such achievements (Kaplan, 1991). When asked about the high points in their lives, Kotter (1982) found that it was common for a senior executive to cite a recent promotion or their own
outstanding business results. In addition, successful executives were found to have a heightened concern with status, power, money and social ascendancy (Bentz, 1985). So, perhaps the emotional function of BAS – activated by the prospect of various rewards – spurs top executives on to repeatedly achieve and satisfy their desires for rewards.

Besides using emotions to propel an individual towards rewards, the BAS has an important planning influence on drive and achievement of rewards. The BAS is responsible for activating sequential behaviours to attain a desired goal (Beevers & Meyer, 2002; Corr, 2008). It is a highly complex system that plans behaviour and executes those plans at every stage of the approach. With long-term goals in mind, this involves ‘sub-goal scaffolding’ – breaking down the approach into several smaller goals, and even restraining short-term impulsive behaviour that might be counter-productive, to achieve the right balance between restraint and impulsivity (Corr, 2008). At the executive level, it would take a strong cerebral capacity to deal with the various long-term and short-term goals inherent in executive work. It makes sense that a person with a strong BAS would have this long- and short-term planning capacity that would enable them to be productive in such a complex role.

The above hints at the BAS’s role as a driving force behind executive effectiveness. The fact that drive is about focus on results and achievement suggest that BAS may predict performance, particularly the achievement of the executive’s objectives. The following hypothesis is therefore proposed:

**Hypothesis 1(a):** The BAS dimension is positively related to the executive’s achievement of performance objectives.

It is at this point that mediators come in. Hypothesis 1 suggests that the BAS dimension predicts performance, but this hypothesis in itself is not particularly revealing. If a

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5 Although there is some debate about the extent to which this process is cognitive and conscious (Corr, 2008).
relationship is found, will it explain *why* and *how* BAS underpins performance? After all, the BAS dimension could predict performance for many different reasons. The above argument suggests that it predicts performance because it underpins drive. Therefore, an additional hypothesis should be tested:

\[ \text{Hypothesis 1(b): The relationship between the BAS dimension and the executive’s achievement of performance objectives is mediated by an executive’s drive for results.} \]

To provide further support for the inclusion of a mediator, consider Hunter’s (1983) study. Hunter argued that models of performance prediction should differentiate between antecedents and determinants of performance (an argument supported by Campbell, McCloy, Oppler, & Sager, 1993; and Borman, Motowidlo, & Schmit, 1997). Antecedents are fundamental characteristics of a person such as personality and cognitive ability, whereas determinants are the expressions of those antecedents, (i.e., behaviours, habits, skills, and motivation). Hunter found that the antecedents do not predict performance directly; rather, the relationship is *always* mediated by determinants. It is therefore argued that mediators will inform us as to how BAS and BIS operate in the work place.

If drive for results is included as a mediator, how should it be operationalised? The decision here is that drive for results should be expressed as a behaviour. In a way, Carver and White’s (1994) psychometric measure of the BAS dimension (using the ‘BIS/BAS Scales’) measures an executive’s cognition and emotions through a self-report questionnaire. What is of interest here is whether this predicts an executive’s behaviour on the job, in terms of their focus on results, and then whether this in turn predicts their achievement of objectives. Therefore, drive will be operationalised here as behaviour on the job. In this model, BAS will provide the personality information, and a behavioural measure will be used to provide further information about how drive is manifested in a way that predicts the
achievement of an executive’s objectives. Chapter 7 will cover the measurement of executive behaviour in more detail.

5.3 Cognitive Ability

While evidence points to drive being extremely important, it is argued here that cognitive ability also has to be a key predictor of executive performance. Schmidt and Hunter (1998) demonstrated that cognitive ability is a strong predictor of performance across occupations, with an overall estimated predictive validity of 0.51. In fact, according to Schmidt and Hunter, the predictive validity of cognitive ability increases with job complexity, reaching 0.58 for professional/managerial jobs. While Schmidt and Hunter did not conduct an analysis on senior executives as a distinct group, their meta-analysis clearly shows a steady increase in predictive validity with job complexity, suggesting that cognitive ability would be an important predictor of executive performance.

Cognitive ability is not sufficient for executive success, however. As discussed in chapter 1, it has been estimated that up to 50% of executives derail – that is, they perform poorly, or leave due to failure to meet the requirements of the position (Lombardo et al., 1988). McCall and Lombardo (1983) investigated the characteristics of executives who derail. They found that cognitive ability is not related to derailment; in fact many derailed executives are bright, but their failure is often linked to some form of personality issue. This suggests that one should search for other factors besides cognitive ability for a fuller picture of executive success. This is exactly what this chapter is doing.

The studies highlighted in Table 5.1 certainly support the idea that cognitive ability is important. In the Sears study, Bentz (1985) stated that cognitive ability was the best single predictor of all performance criteria, while other studies found that it was a major predictor of executive effectiveness along with other factors (Bray et al., 1974; Lombardo et al., 1988).
These studies indicate that cognitive ability is important – firstly, because it influences the acquisition of job knowledge (Bentz, 1985), which some studies have listed as a key factor (Bentz, 1985; Lombardo et al., 1988); secondly, because it facilitates the complex reasoning, memory, planning, and processing required in order for an executive to achieve their objectives (Hunter, 1983); and thirdly, perhaps because it may influence subordinates’ perceptions of the executive’s capability, facilitating competence-based respect. R. Hogan (2007) argues that the literature has shown that perceived competence is an essential part of leadership effectiveness – without it a leader will have difficulty establishing respect and credibility that is necessary to achieve effective leadership. Furthermore, perceived intelligence has been shown to be related to various measures of leadership – including emergence and intelligence (Judge, Ilies, & Colbert, 2004). In fact, Judge et al.’s (2004) research showed that the way a leader is perceived is almost as important as their actual cognitive capability. This gives rise to two further hypotheses:

**Hypothesis 2 (a):** Cognitive ability predicts the executive’s achievement of performance objectives.

**Hypothesis 2 (b):** The relationship between cognitive ability and the executive’s achievement of performance objectives is mediated by functional and technical expertise.

Turning now to RST, it is possible that the BAS dimension is related to cognitive ability, given the BAS’s role in the functions of processing and planning. If so, this would render the BAS even more important in executive performance. The BAS is a highly complex system that involves achieving a fine balance between short-term and long-term goals, and addressing heterogeneous stimuli (Corr, 2008). It is possible that the BAS

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6 See Corr (2008) for discussion about the extent to which these functions are cognitive and conscious.
dimension is related to cognitive ability, or has an impact on the cognitive processing element of executive performance. Therefore, the following hypothesis has been added:

**Hypothesis 3: Cognitive ability and the BAS dimension are positively related.**

5.4 Relationship-Building

The third major determinant of executive performance is relationship-building. This factor featured as an important determinant of executive performance in almost all studies cited above, but it was in Kaplan’s (1991) work where its importance was described in the most detail.

Kaplan’s study highlighted the point that it is not enough for an executive to possess cognitive capability and drive; they also need to be skilled at building positive relationships with others. Kaplan demonstrated that in some cases leadership behaviour can be simultaneously productive and destructive (see also Padilla, Hogan, & Kaiser, 2007): productive in terms of achieving results, but destructive in terms of the impact on people. It is possible that, at times, an executive’s superiors may only see the business results, without seeing the impact that an executive’s behaviour has on the commitment and satisfaction of their subordinates, and perhaps for this reason anti-social behaviour can go unchecked at the executive level (Babiak & Hare, 2007). However, ultimately, dissatisfied or disengaged subordinates will either leave (Boxall, Macky, & Rasmussen, 2003) or demonstrate lower performance (Rich, LePine, and Crawford, 2010). With all of this in mind, it is argued that drive and cognitive ability must be combined with some form of positive relationship-building capability in order for an executive to be effective.

What is relationship-building? In the management literature, this factor is often described as a high level of interpersonal skill and is often couched in behavioural terms
It is not just about being sociable, pleasant, or able to manage others’ impressions. Rather, it is about developing genuine, long-term, high-quality relationships that build morale and foster a positive culture of open communication and teamwork (Kotter, 1982). This aligns with chapter 2’s discussion of contextual performance, which addressed the fact that executives need to foster a positive social climate. To reinforce the point, it is worth considering the work of Sessa and Taylor (2000) who interviewed 500 executives about their selection decisions at the executive level. They asked half to describe a successful selection, and half to describe an unsuccessful selection, asking the executives to describe the incumbent’s performance, behaviours, and measures of success. The top factor mentioned by these executives – more than bottom-line results or achievement of strategic objectives – was relationship-building.

Kotter (1982) provided further insight into how this works at the executive level. He found that top-performing executives spent much of their time in informal conversations, deliberately building relationships with subordinates, peers and superiors. Although informal in appearance, these conversations can be part of an unarticulated strategy, leveraging the strengths of one’s network in order to set and achieve an agenda for each area of his/her responsibility.

Kaplan (1991) also noted that (based on his qualitative research) this high-quality relationship-building results in staff who are empowered, coached, encouraged and supported. Most likely, this relationship-building skill would also extend directly to impacts on customer relationships and inter-departmental relationships, as well as the executive’s relationship with the board.
Given all of this, it is argued that relationship-building should be an important part of the model of executive performance, and therefore some thought should be given to how to operationalise this variable. The above descriptions portray the relationship-building factor as a behaviour or skill, so in this model it will be reflected as a behavioural competency, just like drive was. Further details of how this will be measured are presented in chapter 7.

A promising explanation for relationship-building lies in the brain mechanisms described by RST. First, it is argued that the FFFS and BIS could (in part) be responsible for negative relationship-related behaviour; and second, it is argued that the BAS could underpin positive relationship-building behaviour. These two assertions are discussed below.

First, high punishment sensitivity (or avoidance motivation) that results from an active FFFS/BIS combination is related to a trait labelled negative affectivity (NA), the tendency to experience negative emotions (Carver & White, 1994), and research has shown that high-BIS individuals are likely to experience negative emotions with greater frequency than low-BIS individuals (Gable, Reis, & Elliot, 2000). It is argued that negative emotions could, in turn, prevent an executive from building positive relationships with others.

Evidence for this claim includes the fact that a leader’s negative affect has been shown to be linked to low performance of their subordinates, and related to defensive social interactions, conflict with others, and distancing oneself from others, as well as affecting the overall tone of the working unit (Schaubroeck, Walumbwa, Ganster, & Kepes, 2007). Furthermore, Schaubroeck et al. (2007) argued that NA could be related to toxic or destructive leadership, due to high levels of hostility and anger. These authors support their case with evidence from a study by Lim and Ployhart (2003), who found that NA is negatively related to transformational leadership, a set of leadership behaviours that are characterised by high empowerment and influence of other people. It has also been shown
that teams composed of individuals with NA develop negative affective tones, which in turn relate to decreased performance, and even one person displaying negative affect (“anxiety, fear, moodiness, and tension”) can have this impact (Mount, Barrick, & Stewart, 1998, p. 151).

Given that the BIS dimension is so closely linked with negative emotions (e.g., fear, anxiety, hostility) and NA, it is argued that it could constrain an executive’s relationship-building capabilities. In other words, a high-BIS individual might be more likely to experience and express negative emotions in the workplace that, in turn, would have a negative effect on their relationships with colleagues and, importantly, subordinates. This leads to the following hypotheses:

**Hypothesis 4(a): The BIS dimension is negatively related to subordinate outcomes.**

**Hypothesis 4(b): The relationship between the BIS dimension and subordinate outcomes is mediated by relationship-building behaviours.**

What about the BAS dimension? It is argued that this follows a similar pattern. Firstly, the BAS dimension is correlated with positive affectivity (Carver & White, 1994). In turn, positive affectivity (PA) has been shown to predict the quality of relationships between leaders and their subordinates in a military setting (Chemers, Watson, & May, 2000), and related to overall job performance in an office setting (Van Yperen, 2003). The logic is that PA has a positive impact on an executive’s ability to build relationships, which in turn will lead to better job performance.

Beyond this, one can argue that getting along with others is an evolutionary imperative in that it helps us to survive and reproduce (R. Hogan, 2007). It is possible that the BAS is responsible for ‘getting along’ types of reward-seeking behaviour, (i.e.,
behaviours that help people build relationships). That is, people who are high in BAS may be more motivated to build good relationships and develop the skills that enable them to get along with others. Therefore, drawing together the above points of view, it is hypothesised here that the BAS dimension will predict an executive’s relationship-building skills, and that this in turn will affect subordinate outcomes such as subordinate job satisfaction and subordinate organisational commitment. These hypotheses are:

*Hypothesis 5(a): The BAS dimension predicts subordinate outcomes.*

*Hypothesis 5(b): The relationship between the BAS dimension and subordinate outcomes is mediated by relationship-building behaviours.*

5.5 When Drive Becomes too Much

Turning back to the concept of drive, the above discussion presented drive for results as a positive executive behaviour that differentiates the effective from the less effective. However, there is an alternative possibility. Kaplan’s (1991) study revealed that extreme ‘expansiveness’ (i.e., excessive levels of drive) can manifest itself in exploitation and mistreatment of subordinates. The drive for power, status, and results can be so intense that an executive sacrifices human relationships for personal gain, placing excessive demands on staff, and providing little support, minimal empowerment, and no encouragement. According to Kaplan, the end result is the destruction of employee commitment, satisfaction, and consequently productivity.

Interestingly, extreme drive is a key characteristic of ‘narcissistic leadership’ (R. Hogan et al., 1990), a phenomenon that manifests itself as an intense sense of self-aggrandizement, quests for adulation and exploitative behaviour of others (Judge, LePine, & Rich, 2006), reflecting the desire for personal accomplishment and assertion of one’s
dominance and superiority (Brown & Zeigler-Hill, 2004). Narcissistic leadership is not uncommon in the top levels of organisations (R. Hogan et al., 1990), and just like Kaplan’s concept of ‘expansiveness’, narcissistic leadership has been found to be positively and negatively related to work performance as it can result in extreme productivity but also exploitative behaviour (R. Hogan et al., 1990; Maccoby, 2003).

Excessive drive is also a feature of psychopathy, a personality disorder that is characterised by extreme impulsivity, low conscience and emotional shallowness (Babiak & Hare, 2007). Anecdotal evidence presented by Babiak and Hare suggests that it is not unusual for psychopathic personalities to reach senior positions in organisations because their characteristics enable them to get ahead. Once in these positions, they are driven to advance (though not necessarily driven to perform), and they use dysfunctional and destructive methods to satisfy their drives to get ahead.

While this thesis is not about narcissism or psychopathy, or in fact toxic leadership, the suggestion here is that drive may not be entirely positive. To borrow Ames and Flynn’s (2007) analogy (though used in a different context), perhaps drive is like salt: it is noticeable when it is lacking, but too much is far from a good thing. The point is that the relationship between drive and performance may not be linear. It is quite feasible that drive predicts performance up to a tipping point, at which point it starts to have a detrimental impact on the achievement of results, perhaps because of negative impacts of excessive drive on relationships.

Next, consider whether the BAS dimension could also have a curvilinear relationship with performance outcomes and relationship-building behaviours. If the BAS is active, the motivation to get along with others could result in positive relationship-building behaviours. However, if the BAS is excessively active, this could result in a level of drive for status and
achievement that holds no bounds. It is possible that BAS could underpin drive that results in high executive productivity, but that excessive drive also affects personal relationships in a negative way. The idea of an executive being driven and focused on their objectives, while simultaneously treating their subordinates in a toxic manner was discussed in chapter 2. This will be tested using two hypotheses:

_Hypothesis 6: Drive has a curvilinear relationship with relationship-building behaviours._

_Hypothesis 7: The BAS dimension has a curvilinear relationship with relationship-building behaviours._

5.6 The Interaction Between the BIS and BAS Dimensions

The above discussion has built hypotheses about the BIS and BAS dimensions using some key themes from the management literature. In addition to this, though, the details of RST from chapter 3 give rise to another hypothesis about RST’s role in executive performance. Specifically, the BIS dimension may moderate a relationship between the BAS dimension and performance. The argument is as follows: when the BIS dimension is high, it curtails approach behaviour that would otherwise occur (Corr, 2008). This is because the BIS and FFFS control fear and nervousness in the face of threat (Carver, 2004), and sensitivity to dominance and aggression by others (Gray, 1976). ‘Threats’ in some form or other, including dominance and aggression on the part of others, would presumably be faced by those who hold a senior executive role. If a person has high drive (and presumably an active BAS), but also high levels of punishment sensitivity, that drive could be rendered unproductive as any activity would be crippled by behavioural inhibition. Hence the following hypothesis:
Hypothesis 8: The BIS dimension weakens the relationship between the BAS dimension and the executive’s achievement of performance objectives.

5.7 The Moderating Role of Rewards and Punishments

This chapter has discussed the role of executive characteristics in predicting performance. Though the discussion has been comprehensive, it is just not enough to look at characteristics in a vacuum. One has to understand the context in which these factors operate. Of course, there are countless ways to look at that context. It is difficult to know where to start and, in truth, this is beyond the scope of this thesis. However, there is one set of environmental stimuli that should not be ignored here, and that is the role of rewards and punishments. This whole thesis is about a person’s sensitivity to rewards and punishments. Common-sense suggests that the level of rewards and punishments in an executive’s work environment would have an impact on performance by interacting with the BAS and BIS dimensions. Therefore, this interaction should be addressed in the present study.

Let us consider rewards first. A high-BAS individual is likely to be more sensitive to rewards at work than an individual with lower scores on the BAS dimension. This would mean that their affective reactions and behaviours are more likely to be influenced by rewards in the environment. It is therefore important to include a measure of available rewards (as perceived by the individual), to understand how this influences an executive’s behaviour in the workplace.

Furthermore, there is a phenomenon known as frustrative non-reward, documented by Corr (2002) and Gray (1987). This is where reward is anticipated and expected, but then fails to materialise. When this occurs, animals have been shown to display inhibited behaviour similar to the behaviours they would display if faced with punishment cues (Amsel, 1994). Although, to my knowledge, this phenomenon has not been thoroughly researched in human
contexts, Corr hypothesises that frustrative non-reward could quite feasibly result in negative emotional reactions, such as anger, in humans, and could also result in inhibited behaviour. Furthermore, Corr hypothesises that high reward sensitivity might increase a person’s likelihood of experiencing frustrative non-reward. While this remains a speculative line of thinking, it could hypothetically apply to executives.

Studies have shown that rewards do motivate staff, if carefully managed, particularly in the case of incentive compensation (Guthrie, 2007; Lazear, 1999). With this in mind, let us consider two scenarios. In the first scenario, an executive scores high on the BAS dimension (i.e., has high levels of reward sensitivity). In this scenario, it is likely that high ‘BAS’ would strengthen the relationship between reward and achievement of objectives. In the second scenario the executive scores low on the BAS dimension. In this scenario, it is possible that low BAS would weaken the relationship between reward and achievement of objectives. These scenarios pose two additional factors to be considered in the present study. First, an executive’s level of perceived reward must be measured; and, second, the study should test whether the BAS dimension interacts with reward levels in predicting performance.

The experience and anticipation of reward lies entirely in the eye of the beholder. The same reward or punishment might be perceived differently by different people. Therefore, to operationalise reward levels in terms of actual rewards received would not be wise. A better measure would be perceived rewards in the environment. This will be discussed further in chapter 7. The next two hypotheses were formed with this in mind:

*Hypothesis 9 (a): The executive’s perceived level of reward predicts the executive’s achievement of performance objectives.*
Hypothesis 9 (b): The relationship between rewards and the executive’s achievement of performance objectives is strengthened by high scores on the BAS dimension.

Similarly, it is possible that the presence of punishments will predict performance outcomes, and may interact with BIS in that prediction. This could work in one of two ways: first, perceived punishments in the environment could serve to spur an executive on to action, driven by the fear of failure. Alternatively, that same fear of failure could inhibit positive, constructive, and result-oriented behaviour. In any case, whatever direction the prediction, it is possible that BIS would moderate the relationship. High BIS might strengthen a punishment-performance linkage, while low BIS might weaken that relationship. This leads to the following hypotheses:

Hypothesis 10 (a): The executive’s perceived level of punishment predicts his/her achievement of performance objectives.

Hypothesis 10 (b): The relationship between perceived levels of punishment and the executive’s achievement of performance objectives is moderated by the BIS dimension.

5.8 A Coherent Set of Hypotheses

We now have a set of hypotheses that can be pulled together into a proposed model of executive performance. The basic model is set out in Figure 5.1 below. This model addresses a variety of questions about how specific antecedents of executive performance – the BIS/BAS dimensions and cognitive ability – predict facets of job performance. The aims here are to (a) test whether these relationships exist, (b) test the paths through which these relationships operate, and (c) ascertain the amount of variance that the various variables contribute to executive performances.
The model is in fact more complex than Figure 5.1 shows. As discussed, the study needs to test whether the BAS dimension and/or drive in fact have curvilinear relationships with the relationship-building skills (hypotheses 6 and 7). In addition, the study will test whether an executive’s level of perceived rewards and punishments at work predict the executive’s achievement of objectives, and, if so, whether the BIS/BAS dimensions moderate those relationships (hypotheses 9(a), 9(b), 10(a), 10(b)). See chapter 6 for the full list of hypotheses.

Figure 5.1.

A Proposed Model of Senior Executive Performance

Two final points remain. Firstly, subordinate outcomes in themselves are a dependent variable of interest. However, the most relevant dependent variable for organisations is whether the executive meets their performance objectives (long-term, short-term, fiscal and non-fiscal). It will be interesting to discover the extent to which subordinate outcomes
predict the achievement of objectives (certainly, the work of Kaplan (1991) discussed in section 5.4 suggests that these outcomes are important) and, therefore, let us consider one final hypothesis:

*Hypothesis 11: Subordinate outcomes (job satisfaction, organisational commitment and intention to stay) predict the executive’s achievement of performance objectives.*

5.9 Ambition and Adjustment

In addition to the above hypotheses, it will be useful to explore whether R. Hogan and Shelton’s (1998) socioanalytic theory, and its associated Hogan Personality Inventory (R. Hogan & Hogan, 1997), can provide a superior performance prediction, compared to the BIS and BAS dimensions. After all, socioanalytic approaches to personality measurement have produced the best predictive validities to date (J. Hogan & Holland, 2003). Like RST, R. Hogan’s ideas have a heavy motivational and evolutionary focus, but provide a more mainstream way of framing personality, because of outward similarities to the five-factor model of personality. Therefore, inclusion of socioanalytic measures will help answer the question of whether mainstream personality approaches provide a superior predictive and explanatory framework, compared to RST.

It is quite possible that R. Hogan and Hogan’s (1997) ambition trait will predict performance when substituted for the BAS dimension in the hypotheses. After all, extraversion is a potential measure of BAS (see section 3.4.3) and, looking at the facets of the ambition trait, it is clear that the ‘leadership’ and ‘competitive’ facets7 are similar to the manifestations of the BAS dimension or approach motivation (see section 4.5). Therefore, this study will explore whether ambition is a superior predictor to the BAS dimension, where relevant.

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7 See the ‘Hogan Personality Inventory’ manual for full descriptions of these facets (Hogan & Hogan, 1997).
It is also possible that R. Hogan and Hogan’s (1997) adjustment\(^8\) trait could be a superior predictor of relationship-building, when substituted for the BIS dimension in the relevant hypotheses. Adjustment (or ‘emotional stability’, in five-factor-model terms) is a somewhat different construct to the BIS dimension (section 3.4.3). It reflects a person’s level of emotional stability, manifested in terms of low guilt, hostility, anger, temperamental outbursts, and anxiety, amongst other emotion-oriented behaviours. The BIS dimension, on the other hand, revolves around fear and anxiety in response to punishment cues, and associated behavioural inhibition tendencies (see chapter 3). Because adjustment reflects a wider range of negative emotional reactions, it is possible that it could be an even stronger predictor of relationship-building than the BIS dimension (see the rationale in section 5.4, which addresses the potential links between the BIS dimension and relationship-building). Therefore, the study will also explore whether adjustment is a superior predictor to the BIS dimension, where relevant.

5.10 Conclusion

In conclusion, there is a case for the role of the BAS and BIS dimensions in executive performance, despite the lack of research directly confirming this. A set of core characteristics that predict executive success have been identified by various management research efforts. These characteristics are drive, cognitive ability, and relationship-building.

The present chapter has argued that these characteristics could feasibly have their roots in biological brain mechanisms, and the associated personality dimensions of approach and avoidance motivation (the BAS and BIS dimensions, respectively). Moreover, the chapter has pulled together the relevant management literature on executive leadership, and combined it with the personality literature from chapter 4, the reinforcement sensitivity

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\(^8\) Adjustment is Hogan and Hogan’s (1997) measure of the five-factor model trait of emotional stability (or, reversed, neuroticism).
theory literature from chapter 3, and the performance literature from chapter 2, to produce a clear set of hypotheses and an overall model of executive performance prediction that can be tested.

The next chapter (chapter 6) provides a summary of the research objectives and hypotheses, and then the following chapter (chapter 7) describes how these hypotheses and the resulting model were actually tested.
Chapter 6
Summary of Research Objectives and Hypotheses

6.1 Research Objectives
The prediction of senior executive performance is a topic of relevance to any organisation. This thesis aims to discover the extent to which certain personality traits predict whether someone is likely to perform well at the executive level. In other words, can one identify executive potential early on in someone’s career, or early on in the selection process, using knowledge of personality?

More specifically, this thesis focuses on a particular personality theory that is neurobiological in nature, does not fall within the mainstream paradigm of personality measurement, and therefore has not yet featured extensively in the fields of industrial/organisational (I/O) psychology, organisational behaviour, or human resource management. That theory is Jeffrey Gray’s reinforcement sensitivity theory of personality (referred to here as ‘RST’; Gray, 1972a, 1972b, 1982; Gray & McNaughton, 2000).

The fundamental research question is whether that theory, RST, can predict and explain (in part) senior executive performance. However, this question raises two additional issues that must be addressed in order to provide as full a contribution as possible to the RST and senior executive performance literatures. These are outlined below.

Firstly, given the extensive research that has already been done on personality as a performance predictor, the study should explore whether RST is a superior predictor to more mainstream personality theories. The key competing theory here (given its good predictive validities and relevant ideological background relating to motivation) is R. Hogan’s socioanalytic theory (R. Hogan 2005; R. Hogan & Shelton, 1998; see chapter 4). Therefore,
the question of RST’s superiority relative to socioanalytic theory will be answered alongside the hypotheses below. To do this, certain Hogan traits will be substituted for BIS and BAS in the hypotheses where appropriate (see chapter 8).

Secondly, this thesis proposes a model of senior executive performance prediction that suggests that two key behaviours – drive and relationship-building – predict executive results. These behaviours hypothetically explain how and why RST might predict executive performance. Nevertheless, even if RST does not predict performance, it will still be of interest to explore the role of those behaviours in predicting results. It will be useful to learn whether an executive’s drive behaviours predict whether he or she achieves his/her objectives. Similarly, it will be valuable to learn whether an executive’s relationship-building skills predict whether his/her subordinates are satisfied and committed to the organisation, and whether this in turn predicts the achievement of objectives. If these behaviours do predict performance outcomes, then the next step will be to explore whether other factors besides RST (i.e., Hogan traits, perceived levels of reward, and even years of work experience) predict those behaviours.

Therefore, even though the research question is whether RST can predict and explain executive performance, the discussion of RST’s role requires that a broad model of executive performance prediction is tested, and that wider issues are addressed in order to fully answer the research question.

6.2 Hypotheses

Using the material in chapters 2, 3, 4, and 5, several hypotheses were built based on a combination of the personality, management, and neurobiological literatures. These hypotheses are listed below.
Hypothesis 1(a) *(see section 5.2):*

The BAS dimension is positively related to the executive’s achievement of performance objectives.

Hypothesis 1(b) *(see section 5.2):*

The relationship between the BAS dimension and the executive’s achievement of performance objectives is mediated by an executive’s drive for results.

Hypothesis 2(a) *(see section 5.3):*

Cognitive ability predicts the executive’s achievement of performance objectives.

Hypothesis 2(b) *(see section 5.3):*

The relationship between cognitive ability and the executive’s achievement of performance objectives is mediated by functional and technical expertise.

Hypothesis 3 *(see section 5.3):*

Cognitive ability and the BAS dimension are positively related.

Hypothesis 4(a) *(see section 5.4):*

The BIS dimension is negatively related to subordinate outcomes.
Hypothesis 4(b) (*see section 5.4*):

The relationship between the BIS dimension and subordinate outcomes is mediated by relationship-building behaviours.

Hypothesis 5(a) (*see section 5.4*):

The BAS dimension predicts subordinate outcomes.

Hypothesis 5(b) (*see section 5.4*):

The relationship between the BAS dimension and subordinate outcomes is mediated by relationship-building behaviours.

Hypothesis 6 (*see section 5.5*):

Drive has a curvilinear relationship with relationship-building behaviours.

Hypothesis 7 (*see section 5.5*):

The BAS dimension has a curvilinear relationship with relationship-building behaviours.
Hypothesis 8 (see section 5.6):

The BIS dimension weakens the relationship between the BAS dimension and the executive’s achievement of performance objectives.

Hypothesis 9(a) (see section 5.7):

The executive’s perceived levels of reward predict his/her achievement of performance objectives.

Hypothesis 9(b) (see section 5.7):

The relationship between rewards and the executive’s achievement of performance objectives is strengthened by high scores on the BAS dimension.

Hypothesis 10(a) (see section 5.7):

The executive’s perceived level of punishment predicts the achievement of his/her performance objectives.

Hypothesis 10(b) (see section 5.7):

The relationship between perceived punishment and the executive’s achievement of performance objectives is moderated by the BIS dimension.
Hypothesis 11 (see section 5.8):

Subordinate outcomes (subordinates’ job satisfaction, organisational commitment, and intention to stay) predict the executive’s achievement of performance objectives.

These hypotheses were designed to test whether RST can predict and explain specific aspects of executive performance. However, the aim was also to gain a fuller picture of executive performance prediction. Therefore, in the results chapter certain hypotheses will be re-tested using Hogan traits instead of BAS and BIS, in line with chapter 4’s discussion of socioanalytic theory’s alignment with BIS and BAS. This will be discussed further in chapter 8.

Now that the research objectives and the hypotheses have been clarified, the next step is to describe the methods used to test those hypotheses. This will be covered in the next chapter. Following that, the results of the hypothesis testing will be reported in chapter 8, before discussing the results in chapter 9.

For now, though, and in conclusion, it is worth reiterating the aim of this thesis: to explore the role of reinforcement sensitivity theory in executive performance prediction. A set of hypotheses has been presented here, each of which addresses a different element of the overall research question. With these objectives and hypotheses firmly in place, the methods chapter will be presented next.
This chapter describes the research methods used to answer the research question of whether Jeffrey Gray’s reinforcement sensitivity theory (Gray, 1976; Gray and McNaughton, 2000; see also Corr, 2008) can predict and explain various facets of senior executive performance. The thesis explores whether two personality dimensions — the BAS dimension (reward sensitivity) and BIS dimension (punishment sensitivity) — can predict aspects of executive performance. A set of hypotheses and a wider model of executive performance were developed in chapters 2, 3, 4 and 5, based on a literature review. The next step is to test those hypotheses and that model. This chapter sets out how this was done, documenting each research decision that was made. For the reader’s reference, the model is depicted in Figure 5.1 of chapter 5.

This chapter starts by discussing three major choices. The first is whether to use qualitative or quantitative research methods or a mixture of the two; the second is the choice of research design; and the third is the approach to measurement. Each of these choices will be discussed in turn.

7.1 Quantitative Versus Qualitative Research

First, the choice was made to use a quantitative approach for this research. The reason for this was that quantitative techniques are the dominant techniques used by researchers to explore the relationships between personality and performance. As chapter 4 argued, a body of literature surrounds the personality-performance linkage, and this literature almost exclusively relies on quantitative measures of both personality and performance. The
methods used here had to align with the wider literature in order to be considered credible by other applied psychologists.

Furthermore, this project addresses a specific theory of personality: reinforcement sensitivity theory. Reinforcement sensitivity theory was developed using experimental methods (see Corr, 2004, for a review), and the theory’s personality dimensions can only be tested using quantitative techniques. It would be unwise to explore the variables of punishment sensitivity and reward sensitivity (i.e., the BIS and BAS dimensions) using qualitative methods.

Admittedly, it is feasible that management theorists (as opposed to psychologists) would embrace qualitative research on the topic of personality and senior executive performance. However, the management literature on ‘what makes an effective executive’ has been adequately addressed by qualitative research (see chapter 5). That research has been extensive and it is deemed unlikely that a further qualitative effort would reveal anything beyond what is already known. Conversely, there is a dearth of quantitative research at the senior-executive level. Therefore, this thesis deliberately focuses on quantitative methods to explore virgin territory in as much depth as possible. Ultimately, the discussion chapter (chapter 9) will reflect further on the value of qualitative research, but for this present study, quantitative methods are the most appropriate choice.

7.2 Research Design Decisions

The next decision was that of research design. It is noted that this project’s purpose is to explore relationships between variables that occur naturally in the workplace: broadly, ‘personality’ on the one hand, and ‘performance’ on the other. It is not possible to manipulate a person’s personality to explore resulting changes in performance, so an experimental design was not appropriate. Instead the aim was to understand whether certain
personality and performance variables co-vary; and, if so, how and why. Therefore, a correlational design (Dancey & Reidy, 2008) was used: variables were measured as they occur in the natural world without manipulation, and statistical techniques were used to test whether relationships exist.

The correlational design was implemented as follows: 189 senior executives underwent a battery of personality (‘predictor’) measures and performance (‘criterion’) measures. Thus, a single data-set was compiled with 189 cases (executives) and numerous variables. Due to the time constraints of the project, it was necessary to use a cross-sectional design, collecting the predictor and criterion measures at the same time (Breakwell, Hammond, & Fife-Shaw, 1995), rather than a longitudinal design that would measure executives’ personality initially and performance at a later date. The implications of this decision will be discussed further in chapter 9.

7.3 Measurement Approach

The final major choice was how to elicit data for both the predictor variables (personality) and criterion variables (performance).

7.3.1 Predictor and criterion measurement.

For the predictor (personality) variables, self-report questionnaires were used in line with the trait approach to personality. Self-report measures are not the only way to measure personality (Matthews, Deary, & Whiteman, 2003), but it is rare to see any other approach published in high-quality, peer-reviewed research (for rare examples see Ames & Flynn, 2007; Peterson, Martorana, Smith, & Owens, 2003; Resick, Whitman, Weingarden, & Hiller, 2009). Self-report measures are the dominant approach to personality measurement, and allow this project to align with mainstream personality research.
As for the performance (criterion) domain, performance was measured using others’ ratings of the executive’s performance. Multiple ratings (in this case, ratings from the executive’s superior, peers and subordinates) were collected, rather than the superior’s ratings alone, to optimise the comprehensiveness of the performance data.

One could argue that only the superior is capable of judging an executive’s performance: it is the superior who is formally accountable for the executive’s performance, has greatest access to relevant performance data, and presumably has achieved the personal competence required to rate other executives’ performance (Hutchison, Burch, & Boxall, 2009). However, some have argued that subordinates are in some ways best-placed to rate aspects of executive performance because they see behaviours that superiors do not (R. Hogan & Hogan, 2001), and others have argued that peer ratings produce the most reliable and valid research results (Campbell, Dunnette, Lawler, & Weick, 1970).

Resolving the above arguments, statistical research has shown that rater type (i.e., peer, subordinate, or superior) does not influence the rating as much as the idiosyncrasies of individual raters (Mount, Judge, Scullen, Sytsma, & Hezlett, 1998), which include the personality, mood, and belief-system of each individual rater (Yammarino, 2003). Therefore, the present study will not place particular emphasis on rater ‘type’. That said, it is important to consider which rater is in the best position, and appropriately qualified, to rate each of the various executive performances, and rater ‘type’ plays a necessary part in this decision (see section 7.4.4.2 below). The chapter will therefore document which rater type was chosen for each facet of performance, where appropriate.

7.3.2 Multi-source feedback: To aggregate, or not to aggregate?

While 360-degree data were collected from multiple sources, it was not deemed appropriate to aggregate ratings either within rater types (e.g., all peers’ ratings for a particular variable)
or across rater types (i.e., all raters’ ratings for a particular variable), because statistical theorists have argued against this. Although Oh and Berry (2009) suggested that the predictive validity of personality is higher when 360-degree ratings are used, and in fact did aggregate because they had unusually high levels of inter-rater reliability, the reality is that usually the inter-rater reliability is not sufficiently high to indicate construct validity, and therefore aggregation of multi-source ratings tends not to be statistically justifiable (even though logic suggests that multiple raters will make data more reliable). Mount et al. (1998) proved this point with their own analysis of multi-source data, and firmly argued against aggregation. Their arguments are also supported by Beehr, Ivanitskaya, Hansen, Erofeev, and Gudanowski (2001), and Yammarino (2003).

Therefore, considering the literature, multi-source data were collected, but not aggregated. The aims of using 360-degree data were purely to (a) ensure that sufficient performance data were available for each executive, (b) allow for the model to be validated using different raters, and (c) use different raters for different performance measures to mitigate common-method bias. This use of multiple raters resulted in a comprehensive data-set, which allowed additional flexibility in the model-testing process.

### 7.4 Method

#### 7.4.1 Participants.

The participants were senior executives from 138 organisations across New Zealand and Australia. All executives had the term ‘chief’, ‘general manager’, ‘director’, or ‘head’, in their title. The chief executives in the sample came from a range of organisations of different sizes. All reported to a board or to a senior public servant, in the case of public sector chief executives. All second-tier executives came from medium to large sized organisations with high profiles in New Zealand or Australia. Of the organisations being represented, 48 were from Australia, and 90 were from New Zealand. For the most part, the organisations were
Australian- or New Zealand-owned. However, in some cases the ‘organisation’ was the national subsidiary of a larger multi-national corporation.

Table 7.1.

*Professional Specialisation of Executive Participants*

<table>
<thead>
<tr>
<th>Professional Specialisation</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief executive, managing director, or country manager</td>
<td>31%</td>
</tr>
<tr>
<td>Chief financial officer or equivalent</td>
<td>7%</td>
</tr>
<tr>
<td>Chief operating officer or equivalent</td>
<td>19%</td>
</tr>
<tr>
<td>Head of human resources or equivalent</td>
<td>6%</td>
</tr>
<tr>
<td>Head of sales or marketing or equivalent</td>
<td>6%</td>
</tr>
<tr>
<td>Other (includes heads of retail, customer services, information services, etc.)</td>
<td>31%</td>
</tr>
</tbody>
</table>

The sample was deliberately diverse, the aim being to generalise findings to senior executives in general. Some 66% of the executives worked in the private sector, 29% in the public sector (local or central government), and 5% in non-profit organisations. The executives in the sample also represented various professional specialisations (see Table 7.1).
The sample comprised 134 (71%) males and 55 (29%) females, ranging in age from 25 to 65. The mean age was 47.2 years, with a standard deviation of 8.0 years, and the mean tenure was 8.4 years, with a standard deviation of 7.8 years, a minimum of one year, and a maximum of 38 years. Some 40% had a postgraduate qualification, 40% had an undergraduate qualification, 14% were not tertiary qualified, and 6% did not give details about their education. All executives had been with their employer for at least one year.

Each executive’s position in their organisation’s hierarchy was checked to ensure that the executive was part of the organisation’s senior leadership team. In general, only chief executives, or executives who reported to a chief executive and had significant strategic responsibility for a distinct function, were included in the sample.

For the most part, the sample consisted of one executive per organisation. However, there were some instances in which several executives represented one organisation. The maximum number of executives in any one organisation was 14. Whilst it would have been ideal to have only had one executive per organisation for independence’s sake, the difficulty of data collection meant that several executives from one organisation had to be included in order to achieve the necessary sample size, and this was considered to be an acceptable compromise.

An alternative course of action would have been to collect data from one organisation alone, or perhaps two or three major organisations, with the subsequent analysis controlling for organisational effects. This would have allowed for non-independence to be mitigated. However, this was not practical, given the fact that a large sample of senior executives was required. No organisation in New Zealand, and very few in Australia, would have been able to offer the participation of that many executives, particularly considering that one would attain a participation rate of 50% at best within any one organisation (see section 7.4.2.1.
below for further details of response rates). One must also consider how difficult it is to gain access to any chosen organisation, even if there is one that large. Besides this, though, a more diverse sample allows for more confident conclusions to be drawn around the generalisability of findings to executives across organisations, industries, and professions. Therefore, while the diversity of the sample was, in part, dictated by practical imperatives, it also had some advantages.

7.4.2 Procedure

The procedure involved two phases. In phase 1, personality data were collected from the executives; in phase 2, performance ratings were collected from the executives’ colleagues. Phases 1 and 2 are described in more detail below.

7.4.2.1 Phase 1: Recruitment and participation of senior executives.

A total of 613 executives were contacted by letter and invited to participate in the study. See Appendix A for a copy of the letter. Some 254 (41%) executives responded by completing and returning a consent form. Of those, 40 did not take the survey or withdrew from the study, making the final response rate 35%. A further 24 executives were removed from the sample, either because they had not worked with their colleagues for at least one year or because their raters did not provide performance data later in the study. This reduced the response rate to 31%.

Three methods were used to recruit participants:

1. Access was gained to organisations’ entire executive teams by approaching their chief executives. In such cases, the letter in Appendix A was distributed by the chief executive to each executive team member. The response rate from this method was 50%, and 39% of the sample was obtained using this method.
2. ‘Word of mouth’ was used to gain extra participants, as was an email advertisement (see Appendix B) that was circulated through various channels. Prospective participants contacted the researcher of their own accord and were then sent the letter in Appendix A. Only 4% of the sample was obtained using this method.

3. Finally, mailing lists of senior executives were compiled using organisations’ websites. The letter in Appendix A was sent to one or two executives from each organisation. For ethics reasons, it was decided not to contact the entire executive team of any single organisation without the chief executive’s permission. The response rate from this method was 18%, and 54% of the sample was obtained using this method.

Once executives had consented to participate, they were emailed a 90-minute internet survey comprising several psychometric assessments (see Appendix C for the full survey). Each executive was given a deadline to complete the survey and sent up to three reminders. As an incentive, all executives who participated were entered into a series of prize draws. Prizes included a dinner for two, and an Air New Zealand Mystery Weekend.

7.4.2.2 Phase 2: Recruitment of performance raters.

Each executive was asked to nominate a superior, up to three peers, and up to three direct reports, whom the researcher could contact to collect ratings of the executive’s performance. Each nominated colleague was then sent a letter and a 5-minute paper-and-pencil survey to complete and return in a postage-paid envelope (see Appendix D). In total 1,138 raters were sent a survey, and 794 surveys were returned – a total response rate of 70%. Of the different rater types, 73% of superiors returned their surveys, 68% of peers, and 71% of direct reports. This meant that not all executives had a superior’s rating, though all had a performance rating of some sort, even if only from a peer or direct report. Only raters who had worked with the executive for at least one year were included in the final analysis.
Prior to the performance surveys going out, the participating executive was contacted by email and told that their nominated colleagues were about to be contacted. In many cases the executives in question informed their raters, which helped to optimise the raters’ response rate. The raters were told that their responses would not be shared with the executive at all, not even in aggregated or anonymous format.

7.4.3 Data Collection Issues

Some specific issues emerged during the data collection process, and these were issues that were unique to senior executive research. It is worth describing these in order to put the sample size into context, and in order to document the challenges and solutions for the benefit of other researchers who attempt to collect data from this very unique segment of the workforce, particularly where 360-degree ratings are involved.

To achieve the sample size of 189 executives, with an average of 4.23 performance ratings per subject, it took two years. This was because several steps needed to be followed, from gaining organisational access and executive participation, to the collection of missing data, and the collection of 360-degree performance ratings. These steps are described below.

In terms of organisational access, it was an ethical requirement that chief executive approval be obtained prior to approaching executive teams. This involved careful marketing of the study and face-to-face meetings with chief executives, in which the project had to be verbally ‘sold’. It was not uncommon for the chief executive to decline access because the project would interfere with the organisation’s other leadership development initiatives or pressures on the business. It was also difficult to gain these initial meetings with chief executives in many cases.
Once access to the organisation was gained, the executives themselves had to agree to participate, and, as is documented in section 7.4.2.1, usually about 50% of the team would participate. In most organisations, the executive team was small, consisting typically of a chief financial officer, a human resources director, a head of marketing, perhaps a chief operating officer, and the chief executive themselves, in addition to other niche executive positions, such as risk management or customer services roles. This small team size is not unique to New Zealand organisations, if one is studying the very top people in an organisation. For example, West, Patterson, and Dawson (1999) documented similar observations during their own study of senior management teams. In any case, the small size of the executive team in each organisation meant that the amount of work required to gain the participation of a handful of executives (or sometimes only one executive) was large. Ultimately, for the present study, every organisation in New Zealand with over 100 staff was contacted during the data collection process, with differing degrees of success. Eventually, the New Zealand opportunities were exhausted, and this was why Australian executives were included in the sample.

Once executives had agreed to participate, the next challenge was to collect a complete data-set for each executive, including multi-source performance ratings. Executives were being asked to complete a 90-minute survey, which was challenging given their competing work demands. To optimise survey completion rates, each executive was given a survey deadline of three weeks. They were sent a reminder one week before the deadline, and then a reminder on the day of the deadline. The day after the deadline, their survey completion was checked. It was not uncommon for the executive to have neglected one or all of the Hogan assessments. If that was the case, they were emailed immediately and asked to complete the missing section. As one might imagine, this was an administratively heavy process, particularly for a doctoral project with only one researcher, and it was a process that
was ongoing for two years. To aid this process, a series of prize draws were used to encourage each executive to complete the survey by their given deadline (see section 7.4.2.1). It is not clear how much the prize draws contributed to participation, but they provided an opportune reason for sending out reminders.

The final challenge was to contact the executives’ nominated colleagues, asking them to complete a survey about that executive’s performance. This involved contacting up to seven colleagues per executive (one superior, up to three peers, and up to three direct reports). As noted above, 1,138 raters were contacted, and 794 returned their surveys. This was also a large administrative task, but perhaps the biggest challenge here was gaining the participation of the executives’ superiors and peers (who, of course, were executives themselves). For example, the superior was, in all cases, either a chief executive, a chairman, or a public service official, such as a mayor or government minister. These people are inevitably extremely busy and not always easy to access, particularly by post or email. Therefore, obtaining these data required intensive effort in terms of sending reminders, and contacting personal assistants. It also required some acceptance that there would be missing data.

It is clear from this that senior executive research presents certain challenges, as does the collection of multi-source performance data. When these two tasks are combined into one study, particularly across a range of organisations, the data collection process is administratively heavy and time-consuming. More importantly, one has to accept that the sample size will be inevitably lower than if one were conducting research at the middle management level or below, and it is simply impossible to obtain data on several hundred cases, at least for a doctoral project. That said, any study should always have enough data for there to be sufficient statistical power, and the sample in the present study meets that requirement.
7.4.4 Ethics

Before commencing phases 1 and 2 above, an ethics application was submitted to the University of Auckland Human Participants Ethics Committee (UAHPEC), and approval was granted. Throughout the study, subjects were treated in accordance with the UAHPEC’s guiding principles for research.

According to these principles, participation had to be entirely voluntary, and this meant that no executive could be forced to take part by their organisation. In addition, data had to be handled in accordance with the principles of the Privacy Act (1993), meaning that all data needed to be treated in the strictest of confidence, stored securely, and used only for the purposes of this research. In all cases, executives and their raters were asked to sign a form giving their informed consent before they participated (see Appendices A and E).

7.4.5 Measures

The following section describes the measures used in this study. Broadly, the variables fall into two categories: (1) predictor variables, collected in phase 1; and (2) criterion variables, collected in phase 2.

It was important to use reliable and valid measures of each variable to minimise measurement error. Therefore, for each variable, measures were chosen that had demonstrated validity in good-quality, peer-reviewed published research; and for each measure the Cronbach’s alpha reliability was considered, which measures the extent to which test items intercorrelate. Matthews, Deary and Whiteman (2003) suggest that a reliability score of 0.7 or above is ideal.
7.4.5.1 Predictor measures.

Reward and punishment sensitivity.

To measure reward sensitivity and punishment sensitivity, Carver and White’s (1994) ‘BIS/BAS Scales’ were used. These scales have already been discussed in chapter 3. Respondents indicate their agreement with 20 items using a 4-point Likert scale, from 1 (‘strongly agree’) to 4 (‘strongly disagree’). The scale measures reward sensitivity and punishment sensitivity (‘BAS’ and ‘BIS’) as two orthogonal dimensions. Coefficient alphas range from 0.59 to 0.74 (Carver & White, 1994) and test-retest reliabilities range from 0.59 to 0.69 (Torrubia, Avila, & Caseras, 2008). Though reliability should ideally be higher, Torrubia et al. state that these figures are acceptable.

There is no one best way to measure RST’s personality dimensions. There are four available categories of measures that other researchers have used in predictive validity studies (Torrubia et al., 2008), and these are: (1) Eysenckian measures such as the ‘Eysenck Personality Questionnaire’ (H. Eysenck & Eysenck, 1975b) or ‘Eysenck Personality Inventory’ (H. Eysenck & Eysenck, 1975a), which are not uncommon (see, for example, Farrell, 1997; Jackson & Francis, 2004; Quilty & Oakman, 2004); (2) measures of trait anxiety and trait impulsivity from other psychometric instruments; (3) measures developed from similar theories to RST (such as R. C. Cloninger’s, 1989, Harm-Avoidance and Novelty-Seeking scales); or (4) specific RST-based tools.

Within the latter category, there are several options, some being more appealing than others. Ball and Zuckerman’s (1990) ‘General Reward and Punishment Expectancy Scales’ (GRAPES) and MacAndrew and Steele’s (1991) ‘MS-BIS’ were developed to specifically address RST’s dimensions, but were ruled out here because of validity issues (see Torrubia et al., 2008). The remaining options were Jackson and Smillie’s (2004) ‘Appetitive Motivation’
scale, Torrubia, Avila, Molto, and Caseras’s (2001) ‘Sensitivity to Punishment and Sensitivity to Reward Questionnaire’ (SPSRQ), and Carver and White’s (1994) ‘BIS/BAS Scales’. An additional tool, the ‘Jackson-5’, has just been published (Jackson, 2009), but it was published too recently to be used here.

Ultimately, the ‘BIS/BAS Scales’ were chosen for three reasons. Firstly, they are the most popular and consequently have accumulated strong evidence of their validity, supported by laboratory and social studies (see chapter 3). Secondly, they are based specifically on RST, which is intuitively more appropriate than using Eysenck’s or Cloninger’s measures or any other arbitrary measure of impulsivity or anxiety, particularly given that this thesis is about RST; and, thirdly, because the ‘BIS/BAS Scales’ measure sensitivity to reward and punishment in general whereas the SPSRQ and ‘Appetitive Motivation’ scale tend to gear their items around specific stimuli, such as money, sex and status (Torrubia et al., 2008). The value of stimulus-specificity remains to be researched, but RST does not address specific stimuli, and therefore the relative ‘vagueness’ of the ‘BIS/BAS Scales’ seems theoretically appropriate. Studies that have used Carver and White’s (1994) ‘BIS/BAS Scales’ are plentiful, and include the work of Beevers and Meyer (2002), Carver, Meyer, and Antoni (2000), Dillard and Anderson (2004), Elliot and Thrash (2002), and Van der Linden, Taris, Beckers, and Kindt (2007).

Unfortunately, however, the ‘BIS/BAS Scales’ were developed using the original version of RST (Gray, 1982), rather than Gray and McNaughton’s (2000) revised RST, which is not ideal. The only scales to be based on the revised RST are in fact the ‘Jackson-5’ (Jackson, 2009) scales, which were not available at the time of data collection. However, Jackson suggests that the fear items could be removed from the BIS scale to provide a more theoretically appropriate BIS measure, which would be more in line with Gray and
McNaughton’s revisions. This approach will be taken here, and will be detailed in section 7.6.2.2, and chapter 8.

**Socioanalytic personality measures.**

Executive participants also completed the ‘Hogan Personality Inventory’ (HPI; R. Hogan & Hogan, 1997), a widely-used mainstream personality measure. The HPI is a 206-item online assessment that takes 15-20 minutes. It was first developed in the 1970s, and has since accumulated excellent evidence of validity from over 400 studies. It has seven primary factors: ambition, adjustment, sociability, prudence, likeability, intellectance, and school success, with co-efficient alphas in the range of 0.80 (J. Hogan, Hogan, and Murtha, 1992) and test-retest reliabilities ranging from 0.69 to 0.87 (Hogan Assessment Systems Inc., 2009). The Hogan assessments have been used by various researchers, including Benson and Campbell (2007), and J. Hogan, Hogan, and Murtha (1992).

This measure will allow us to compare the predictive validities of selected socioanalytic traits with BAS and BIS, to explore whether Carver and White’s (1994) ‘BIS/BAS Scales’ can provide a more predictive solution than mainstream personality theories (although, whether Hogan’s approach is truly ‘mainstream’ is another matter – see chapter 4). The HPI was chosen because of its motivational basis (see chapter 4) and because it appears to have produced higher predictive validities than other five-factor model (FFM) measures (J. Hogan & Holland, 2003).

**Cognitive ability.**

To measure cognitive ability, participants completed the Hogan Business Reasoning Inventory (HBRI; R. Hogan, Barrett, & Hogan, 2007), a measure based on intelligence theories and expressly developed to predict work performance of managerial and professional
participants. It has 24 items, is completed online, and takes 25-30 minutes to complete, reflecting the fact that the items are more detailed than other, more abstract (and non work-related), cognitive ability measures. Participants are given a score out of 24, which is converted into a percentile, based on management norms. It is these percentile data that were used for the present study’s analysis. The HBRI correlates with the widely-accepted ‘Watson-Glaser Cognitive Ability Test’ (Watson & Glaser, 2002), and to date validation tests conducted by R. Hogan et al. (2007) support its validity. Furthermore, R. Hogan et al. report a Cronbach’s alpha of 0.82.

Admittedly, this is a newer tool than other cognitive ability tests. The decision to use this was based on the fact that it is part of the Hogan suite of psychometric assessments and therefore it was practically easier to incorporate into the overall survey along with the HPI. More importantly, it was geared towards professionals in a work context, based on normed data from professional populations (R. Hogan et al., 2007), and therefore it was considered more likely to differentiate between cognitive ability levels amongst an already high-functioning sample. It seemed that a more standard cognitive ability test like the ‘Watson-Glaser Cognitive Ability Test’ (Watson & Glaser, 2002) might produce too homogenous a set of scores, because homogeneity of cognitive ability scores is more marked amongst job-specific samples (Sackett & Ostgard, 1994).

*Perceptions of reward and punishment in the environment.*

Finally, participants completed two self-report measures of the perceived rewards and punishments in their environment, the aim being to explore whether the BAS and BIS dimensions moderate any influence that rewards and punishments have on an executive’s performance (see hypotheses 9a, 9b, 10a, and 10b, in chapter 6).
A scale was developed, for the present study, to measure the executive’s perceived level of reward at work. This comprised four items which were answered using a 4-point Likert scale, 1 being ‘strongly agree’ and 4 being ‘strongly disagree’. The items were (1) ‘I feel that I am remunerated fairly for my performance’, (2) ‘I feel that the remuneration I received in the last year fairly reflects my contribution to the organisation’, (3) ‘I feel that I receive fair recognition for my performance’, and (4) ‘I feel that I have been accorded the right amount of status in the organisation’. A principle components analysis (PCA) was conducted using a scree test to guide factor retention. The PCA revealed only one factor with an eigenvalue exceeding 1, the remaining eigenvalues were 0.57 or below, and the scree test supported a single-factor solution. The one-factor solution accounted for 63.1% of the variance, and factor loadings ranged from 0.77 to 0.85.

In addition, each executive completed a scale from Litwin and Stringer’s (1968) organisational climate questionnaire, to measure punishing aspects of their employer’s culture. This was a 3-item questionnaire with a 4-point Likert scale, 1 being ‘definitely agree’, and 4 being ‘definitely disagree’. These items were ‘there is a great deal of criticism in this organisation’, ‘there is not enough reward and recognition given in this organisation for doing good work’, and ‘if you make a mistake in this organisation you will be punished’. Litwin and Stringer report a Cronbach’s alpha of 0.42 for that scale, which is not high. However, the present study’s data revealed a Cronbach’s alpha of 0.58, which is somewhat more acceptable.

**7.4.5.2 Criterion measures.**

To capture the multi-faceted nature of performance, executive performance was measured in three separate ways. The reader is reminded of chapter 2’s discussion that defined executive performance, and the performance domain diagram in Figure 2.2 of that chapter. The three measures were developed from that discussion. They are:
1. The executive’s achievement of his/her performance objectives, as rated by his/her superior. The superior was chosen here because only he/she is in a position to adequately assess whether an executive has achieved or exceeded their objectives, all things considered.

2. A measure of how well the executive displays certain key behaviours, as rated by his/her superior, peers, and/or direct reports. Based on chapter 5’s discussion, these behaviours fall broadly under the headings of: \textit{drive for results}, \textit{relationship-building}, and \textit{demonstrated functional and technical expertise}.

3. Measures of the job satisfaction, organisational commitment, and turnover intentions of the executive’s direct reports.

We now discuss each of these criteria in more detail. The performance measures can also be viewed in Appendix D.

\textit{Achievement of performance objectives.}

Each executive’s superior was asked to rate how well the executive had met their objectives. Superiors were asked to answer four items, using a 5-point Likert scale, with 1 being ‘greatly exceeded objectives’ and 5 being ‘objectives were not met; results were well below target’. Developed specifically for the present study, this measure was based on chapter 2’s discussion. The items asked superiors to rate how the executive had ‘achieved the following categories of objectives, all things considered, for the most recent year end’: (1) fiscal, (2) non-fiscal, (3) short-term, and (4) long-term objectives.

These four items (one for each category), together, constitute the overall achievement of an executive’s objectives. In contrast to this approach, it could be argued that multiple items per category should have been used. However, it was difficult to envisage how items could be worded differently to capture the achievement of any one of these categories of objective. Instead, this measure was a way of measuring the executive’s overall job
performance, but designed and worded in a way that focused the superior on results, in line with chapter 2’s operationalisation of executive performance.

A principle components analysis (PCA) was conducted to explore the structure of this measure. The PCA revealed only one factor with an eigenvalue exceeding 1, with remaining eigenvalues sitting at 0.61 or below. This single-factor solution was supported by a scree test, and accounted for 69.6% of the variance, with factor loadings ranging from 0.75 to 0.89.

**Executive behaviours.**

All raters (superiors, peers and direct reports) were asked to rate their executive colleague against a set of ten behavioural statements using a 5-point Likert scale, 1 being ‘among the best I’ve seen’, and 5 being ‘among the worst I’ve seen’. The statements, listed in Table 7.2, were taken from the Lominger Leadership Architect® Competency Sort Card Deck, 5th edition, with the permission of Korn/Ferry International.

The reader is reminded of chapter 5’s discussion, which proposed that effective executives display three behavioural themes: (1) an intense drive for results, (2) constructive relationship-building behaviours, and (3) demonstrated functional and technical expertise. Consideration was given to how these three categories of behaviours should be measured. One option would be for the researcher to observe and rate the behaviours of the 189 participants, but this was too time-consuming to be practical and, even if it were practical, the presence of an observer would most likely alter the executive’s behaviour during the measurement process (Muckler & Seven, 1992). Instead, the decision was made to ask the executives’ colleagues to rate the executives’ behaviours.

A set of behavioural statements was therefore needed that could apply to executives across organisations. One option would have been to produce a set of statements from scratch, but other researchers have already done this work (for example, researchers from
Saville Holdsworth Ltd, the Centre for Creative Leadership, and Lominger Limited Inc., which is now a subsidiary of Korn/Ferry International), so it seemed more sensible to use a well-established behaviour-measurement tool; and one with an academic basis. Ultimately, the Lominger competencies were chosen because they originated from the work of Lombardo and colleagues, who had found that certain executive behaviours predicted performance (Lombardo, Ruderman, & McCauley, 1988). Lombardo and colleagues’ work was influential in chapter 5, and helped develop the hypotheses around executive behaviour. Unfortunately, Lombardo and colleagues’ research became proprietary, and little else was available to the public, so the only published research available was from the 1980s. It is assumed that the 1980s work developed into the Lominger competencies, but this is not confirmed. However, the validity of these behavioural measures will be tested as a matter of course in this study, using a range of quantitative analyses in chapter 8.

Lominger International’s Leadership Architect® Sort Cards comprise a set of 67 competencies. Each competency card lists four or five behavioural statements. The researcher read through each card and carefully selected the competencies that best reflected the theoretical ideas of (1) drive, (2) relationship-building, and (3) demonstrated expertise, as detailed in chapter 5. This proved a straightforward exercise, and the Lominger competencies chosen were (1) ‘Drive for results’, (2) ‘Interpersonal savvy’, and (3) ‘Functional and technical expertise’. These are presented in Table 7.2.

A choice had to be made as to which rater’s rating would be used to measure each behaviour, or ‘competency’. This needed to be the rater who was in the best position to observe that competency, but also the rater most qualified to evaluate performance (i.e., sufficiently competent to assess others’ competence, Kruger & Dunning, 1999). In addition, the aim was to use different raters for different latent variables, wherever possible, so that common-method bias could be mitigated.
All things considered, for ‘drive for results’, superiors’ ratings were used. After all, the superior is most likely to engage in discussion with the executive about goals, and is in a position to assess the extent to which the executive demonstrates interest in, and commitment to, their goals.

For ‘relationship-building’, a peer’s rating was used (one peer, chosen at random). The rationale here is that peers may see interpersonal behaviours that superiors do not, particularly negative behaviours (Babiak & Hare, 2007). Admittedly, a subordinate rating could have been used, but the subordinates’ ratings were used for other variables, as is noted in the next section, and common-method bias needed to be avoided wherever possible.

Finally, for ‘demonstrated functional and technical expertise’, the superior’s rating was used, because the superior is the one most likely to have the levels of competence to judge another executive’s expertise. However, a subordinate’s rating was also used in the model testing process (see chapter 8) – because subordinates’ perceptions of the executive’s competence could be important to overall leadership success, and therefore could contribute to the variance in achievement of objectives (see section 5.3). If one also considers an executive such as a chief financial officer (CFO), it stands to reason that the finance middle managers (i.e., the senior management accountants or financial controllers) might be the only people in the organisation who have sufficient finance expertise to judge that CFO’s levels of finance competence, even more so than the superior (if the superior is the chief executive or chairman of the board). On the other hand, the superior will be best-placed to judge the executive’s levels of decision-making capability and other areas of more generic executive expertise. Therefore, a superior’s rating and a subordinate’s rating were used in the analysis.
### Table 7.2.

*Executive Behaviours*

<table>
<thead>
<tr>
<th>Drive for results</th>
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<tr>
<td>Can be counted on to exceed goals successfully</td>
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<td>Is constantly and consistently one of the top performers</td>
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<tr>
<td>Is very bottom-line oriented</td>
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<td>Steadfastly pushes self and others for results</td>
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<table>
<thead>
<tr>
<th>Relationship-building</th>
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</thead>
<tbody>
<tr>
<td>Relates well to all kinds of people – up, down, and sideways, inside and outside the organisation</td>
</tr>
<tr>
<td>Builds appropriate rapport with others</td>
</tr>
<tr>
<td>Builds constructive and effective relationships with others</td>
</tr>
<tr>
<td>Uses diplomacy and tact</td>
</tr>
<tr>
<td>Can diffuse even high-tension situations comfortably</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Functional and technical expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the functional and technical expertise necessary to do the job.</td>
</tr>
</tbody>
</table>

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This work is derived from the Lominger LEADERSHIP ARCHITECT ® Competency Sort Cards. No part of this work may be used, reproduced, or transmitted in any form or by any means without the prior written permission of Lominger Limited Inc., a subsidiary of Korn/Ferry International.
It should be noted that Table 7.2 lists the items used to measure these areas of competence. So, the ‘drive for results’ variable has four items, the ‘relationship-building’ variable has five items, and the ‘functional and technical expertise’ variable has one item. This is the way in which Lominger has structured these areas of competence, and so the decision was made to retain this structure in the present study.

**Subordinate outcomes.**

The executives’ subordinates were asked to complete three scales:

(a) The ‘Organisational Commitment Questionnaire’: A 15-item self-report questionnaire that measures an employee’s commitment towards their employer (Mowday, Steers, & Porter, 1979). Respondents answer items using a 7-point Likert scale: ‘strongly agree’ to ‘strongly disagree’, with some items being reverse scored. Mowday et al. report a Cronbach’s alpha of 0.90, and test-retest reliability coefficients of 0.53 to 0.75. This questionnaire is well-established, having been used in numerous published studies (e.g., Macky & Boxall, 2007).

(b) A measure of turnover intentions: A 2-item measure with a 5-point Likert scale based on a scale used by Jackson and Corr (2002). The two items are: ‘which of the following statements most clearly reflects your feelings about your future with your employer?’ and ‘do you expect to leave your job in the near future?’ Respondents complete a 5-point Likert scale, with 1 being ‘definitely will not leave’ and 5 being ‘definitely will leave’.

(c) A measure of job satisfaction: A 2-item measure. The first asks respondents the following question: ‘in general, how satisfied are you with your current job?’, with 1 being ‘not at all’ and 5 being ‘a great deal’ (adapted from Jackson and Corr, 2002). The
second item asks ‘how do you feel about your job?’ with a 5 point scale where 1 is ‘I love it’ and 5 is ‘I hate it’ (Keenan & McBain, 1979).

The reader will recall that up to three subordinates provided this data for each executive. Of these, one subordinate was used to rate expertise (see above). Given Mount et al.’s comments on aggregation, discussed earlier, the analysis was set up to allow the other two subordinates’ sets of scores to be represented separately in a structural equation model, rather than aggregated. This is discussed further in section 7.6.2.1.

7.4.5.3 Personal characteristics (control variables).

It is acknowledged that other personal characteristics may confound results. Therefore, in phase 1 all participants were asked their years of professional work experience, professional specialisation, and gender. Years of experience were included because Schmidt and Hunter (1998) showed this to be a reasonable predictor of job performance, and therefore this variable needed to be included in the model. In addition, gender could be a factor in predicting performance ratings either because of prejudicial attitudes towards women leaders lowering performance ratings, which is a known factor (Eagly & Karau, 2002), or because women and men have different styles which could underpin different strengths (Eagly & Carli, 2003; Sidanius, Levin, Liu, & Pratto, 2000). While hypotheses around gender are outside the scope of this thesis, it is an important variable that needs to be collected and considered.

7.5 Pilot Study

A pilot study was carried out in four organisations for both phases 1 and 2. The aims of this were (a) to ensure that the process worked; (b) to test whether executives would actually
participate in this potentially intrusive and time-consuming study; and (c) to ensure that the study provided a range of scores and a mix of participants.

Overall, the pilot study confirmed that the online survey worked well, and the questions and process were easily understood by participants. The response rate also proved to be acceptable. In phase 1 of the pilot study, 35 executives were sent letters, of whom 15 participated (42%). In phase 2, 90 colleagues were sent performance surveys, and 66 completed their survey (73%). Data came in from superiors, peers and direct reports alike.

The mix of participants was also satisfactory: Of the 15 participants, six were female and nine were male, representing various executive functions: there were three chief executives, one human resource executive, four finance executives, three operations executives, and four sales/marketing executives. In addition, a range of performance ratings were obtained, with achievement of objectives having a normal distribution, and when items were summed the scores for this variable ranged from 5 to 17, with a mean of 9.85 and a standard deviation of 3.31. In addition, the mean and standard deviation for all items were 2.46 and 1.01, respectively. Similar patterns were indicated for each of the competency ratings (i.e., normal distribution, and adequate spread of scores), indicating that it was not just top-performing executives who would agree to participate in this study.

The data collected during the pilot study were retained and used in the final sample, because the process did not change. In summary, the pilot study confirmed that the study could go ahead as planned.

7.6 Data Analysis Plan

7.6.1 Overall approach.

This study’s aim is to test whether personality predicts executive performance. Here, numerous measures of ‘personality’ and ‘performance’ have been collected for a single data-
set of executive participants. It is complicated, though: amongst the predictor and criterion variables, it is hypothesised that certain criterion variables (drive and relationship-building) play a mediating role. In addition, the model will be explored using various measures of performance, not just one; and the predictive power of Carver and White’s (1994) ‘BIS/BAS Scales’ will be compared with that of R. Hogan and Hogan’s (1997) socioanalytic personality trait measures. Clearly, the set of questions here is complex.

One could systematically work through the hypotheses, testing each one using multiple regression. However, instead, structural equation modelling (SEM) was applied, using AMOS as the software package. SEM is a set of statistical techniques commonly used to test a theoretical model (Bentler & Chou, 1987). It is ideally suited to a situation like this where there are multiple statistical questions, because it can simultaneously conduct factor analysis, multiple regression, and model comparisons, as well as testing mediating relationships, curvilinear hypotheses, and moderation hypotheses in one fell swoop.

This approach sheds light on the nuances surrounding the prediction of executive performance, and the relative contributions of the diverse predictors and mediators to the overall performance prediction, which is more useful than testing hypotheses separately. In addition, SEM takes measurement error into account when conducting calculations (Schumacker & Lomax, 2004). Most measures in this study will naturally incur some error, so this advantage was appealing. Therefore, in this thesis the analysis consists purely of structural equation modelling.

SEM is not without pitfalls. It relies on the assumption of multivariate normality (Arbuckle & Wothke, 1999; Bentler & Chou, 1987), which will be discussed in the next chapter. It also requires a larger sample size than, say, a simple multiple regression or factor analysis, and is perhaps less straightforward to implement. Nevertheless, it offers
considerable flexibility to the researcher, and for this reason it was the technique of choice for this study.

7.6.2 Model structure.

This section describes how the criterion and predictor variables were configured for the purposes of SEM.

7.6.2.1 Criterion variables.

First, to avoid the model becoming unstable through the use of excessive variables, the various subordinate outcome items were parcelled into their actual scales, that is, the job satisfaction scale, the turnover intentions scale, and the organisational commitment scale. A subordinate outcome latent variable was set up to load onto two individual subordinate latent variables (‘subordinate 1’ and ‘subordinate 2’), which in turn loaded onto the three indicator scales separately, as illustrated in Figure 7.1. The regression weights between each subordinate and subordinate outcomes were set to be equal.

Figure 7.1.

*The Structure of Subordinate Outcomes in the Structural Equation Model*
For all other criterion variables (i.e., achievement of objectives, and the behavioural competencies), the separate items were used as observed variables, onto which the broader latent factors loaded. Thus, in the model, the broad latent factors were: ‘achievement of objectives’, ‘drive for results’, ‘relationship-building’, and ‘functional and technical expertise’, each of which loaded onto their relevant indicator variables (i.e., items). As ‘functional and technical expertise’ had only one item, the error variance for that item was fixed (see chapter 8 for further details).

7.6.2.2 Predictor variables.

For the predictor variables, item-parcelling was once again used. For the BAS dimension, the items were parcelled into Carver and White’s (1994) BASD, BASR and BASF scales, to reduce the number of observed variables in the model. In addition, the BIS dimension was parcedled into BIS anxiety items (items 1, 2, 4, 5, and 7), and the BIS fear items (items 3 and 6), as discussed in section 3.4.3. Similarly, the Hogan scales were parcelled into their facets (‘homogenous item composites’; Hogan, Hogan, & Warrenfeltz, 2007). This item-parcelling was deemed to be acceptable given the fact that the psychometric properties of these scales are well-established. It is also noted that Diefendorff and Mehta (2007) parcedled their BAS dimension in a similar way using Carver and White’s (1994) ‘BIS/BAS Scales’ in structural equation modelling.

For cognitive ability, the overall Hogan Business Reasoning Inventory (HBRI) score was the single indicator of that factor, and, as with any single-indicator latent variable, the error variance was fixed, as detailed in chapter 8.

Finally, for the perceived rewards and punishments scale, the actual items were used as observed variables, rather than parcelling items. This was because the psychometric
properties of that scale were not established by prior research, so it was important to explore these items separately in the modelling process.

7.7 Conclusion

In conclusion, a study has been set up here, testing 189 senior executives on a battery of predictor (personality) and criterion (performance) measures. The study breaks new ground by focusing purely on senior executives, using quantitative techniques, and a range of measures. To my knowledge, there is no other published study with a substantial data-set of senior executives that measures personality and performance in a way that aligns with contemporary personality and performance theories. There also appears to be no published work that addresses the predictive power of reward sensitivity (the BAS dimension) and punishment sensitivity (the BIS dimension) at the senior-executive level, and therefore this study adopts an original approach.

This study is quantitative and correlational. It uses Carver and White’s (1994) ‘BIS/BAS Scales’ and the Hogan assessments to measure the predictors of performance, and it uses 360-degree ratings of a variety of performance measures. These include outcome measures, such as how well the executive has achieved their objectives, and subordinate outcomes (i.e., the job satisfaction, organisational commitment, and turnover intentions of the executive’s direct reports), as well as the mediating behavioural measures, such as drive-for-results and relationship-building. The study will use structural equation modelling to test the model, and this will include an exploration of curvilinear relationships and moderating influences in the model.

All that remains now is to test the model of executive performance, and its constituent hypotheses using statistical techniques. The next chapter will describe the analysis, and will present the resulting research findings.
Chapter 8

Results

This chapter presents the results from this quantitative study of top-level executives. Briefly, the thesis’s aim has been to explore the extent to which the reinforcement sensitivity theory of personality predicts senior executive performance. The literature review chapters (chapters 2, 3, 4, and 5) have led to the development of several hypotheses that address the link between the dimensions of approach motivation (the BAS dimension) and avoidance motivation (the BIS dimension), on the one hand, and executive performance, on the other. Together, those hypotheses form a model that can be tested, illustrated in Figure 5.1 of chapter 5.

To test the model and its constituent hypotheses, data were collected from 189 executives who underwent various predictor and performance measures. This was a within-participants design, because there is one sample with all participants being tested on all variables. In addition the research design was correlational but not experimental, because relationships between variables were tested but no variables were manipulated.

This chapter will first present the data’s descriptive statistics and the modelling approach. Following that, a series of structural equation models will be presented, illustrating the various predictors of senior executive performance.

8.1 Preliminary Steps

The first step was to examine each variable’s sample characteristics. SEM relies on the assumption that variables are normally distributed, and also relies on the assumption of
multivariate normality\textsuperscript{10}, meaning that all linear combinations of the variables should be normally distributed (Schumacker & Lomax, 2004). Unfortunately, multivariate normality is difficult to assess because the number of possible linear combinations is so large (Tabachnick & Fidell, 2007). Nevertheless, Tabachnick and Fidell (2007) state that if all variables in the data-set are normally distributed then multivariate normality will probably (though not certainly) follow. Therefore, each variable’s distribution was assessed by inspecting histograms, box-plots, normality probability plots and skew statistics produced by SPSS. In some cases, it was necessary to apply a transformation to the data in order to achieve normality, as described later in the chapter.

The variables were also checked for outliers using box-plots, with any outliers documented later in the chapter. In addition, the linearity of all key relationships was checked by visually examining scatterplots of pairs of variables, including the standardised predicted values plotted against the standardised residuals from each pair’s regression equation, as recommended by Tabachnick and Fidell (2007). No curvilinearity was found.

Some data were missing, which was inevitable. Some 10\% of executives did not complete the cognitive ability assessment, 13\% did not complete the ‘Hogan Personality Inventory’ (R. Hogan & Hogan, 1997), 38\% did not have a superior rate their performance, 24\% had no peer ratings, and 11\% had no direct report ratings. However, all executives had a performance rating from at least one rater. Based on inspection, there were no apparent patterns and so the data were assumed to be missing at random.

It was not ideal to delete cases with missing data because this would have reduced the sample size too much. Studies have shown that listwise deletion tends to create inefficient and biased estimates (Schafer, 1999; Schafer & Olsen, 1998). However, AMOS calculates

\textsuperscript{10} Although moderate violations are usually acceptable (Schumacker & Lomax, 2004).
estimates in the presence of missing data using full information maximum likelihood (FIML) estimation, a well-known method of conducting statistical analysis with incomplete data (Arbuckle, 1996). Arbuckle and Wothke (1999) provide support for this method, showing examples to illustrate how the results from a reasonably incomplete data-set do not differ markedly from the same data-set if it is complete. Based on Arbuckle and Wothke’s guidance, it was concluded that AMOS’s FIML estimation would work for this particular data-set.

The statistics for the various variables are described below. A correlation matrix was also produced, presented in Table 8.1 overleaf. This table includes the means, standard deviations, and Cronbach’s alpha reliability coefficients where relevant.

8.1.1 Criterion variables.

The latent criterion variables were (a) achievement of objectives and (b) subordinate outcomes. Each latent variable was measured using several indicators as discussed in chapter 7. In all cases, the scoring was such that a high score reflected high performance.

For achievement of objectives, the four observed variables, or items, (i.e., achievement of fiscal, non-fiscal, short-term and long-term objectives) were normally distributed. The means and standard deviations for the scales’ items are listed in Table 8.1.

With subordinate outcomes, all variables were skewed, with subordinates tending to respond more positively than negatively. To correct this, a logarithmic transformation\(^{11}\) was applied to each observed variable once the items had been summed; that is, the organisational commitment score, job satisfaction score, and intention-to-stay score for each direct report. Table 8.1 shows the means and standard deviations for the scales’ items prior to transformation.

\(^{11}\) This used the natural logarithm (ln); that is, ln(x), or log\(_e\)(x).
Table 8.1.

Zero-Order Correlations and Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
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<tbody>
<tr>
<td>1. BAS</td>
<td>2.06</td>
<td>0.77</td>
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<td></td>
<td></td>
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<td>2. BIS</td>
<td>2.34</td>
<td>0.70</td>
<td>-.07</td>
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<td>3. Cognitive ability</td>
<td>4.60</td>
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<td>4. Adjustment</td>
<td>2.47</td>
<td>0.45</td>
<td>-.10</td>
<td>-.11</td>
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<tr>
<td>5. Ambition</td>
<td>2.32</td>
<td>0.78</td>
<td>.22**</td>
<td>.06</td>
<td>.06</td>
<td>.36**</td>
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<tr>
<td>6. Prudence</td>
<td>19.38</td>
<td>4.40</td>
<td>-.24**</td>
<td>.06</td>
<td>-.04</td>
<td>.39**</td>
<td>-.09</td>
<td></td>
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<tr>
<td>7. Rewards</td>
<td>1.86</td>
<td>0.71</td>
<td>.07</td>
<td>.06</td>
<td>.03</td>
<td>.13</td>
<td>.11</td>
<td>.18*</td>
<td>.80</td>
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<tr>
<td>8. Punishment</td>
<td>3.01</td>
<td>0.81</td>
<td>.00</td>
<td>-.05</td>
<td>.17*</td>
<td>-.18*</td>
<td>-.04</td>
<td>-.15*</td>
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<tr>
<td>9. Years experience</td>
<td>23.81</td>
<td>8.30</td>
<td>-.13</td>
<td>.02</td>
<td>.05</td>
<td>.03</td>
<td>-.12</td>
<td>.08</td>
<td>-.04</td>
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<tr>
<td>10. Drive</td>
<td>2.12</td>
<td>0.78</td>
<td>-.07</td>
<td>.00</td>
<td>.10</td>
<td>.05</td>
<td>.04</td>
<td>.07</td>
<td>.26**</td>
<td>-.24**</td>
<td>.06</td>
<td>.85</td>
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</tr>
<tr>
<td>11. Relationship-building</td>
<td>2.23</td>
<td>0.84</td>
<td>.04</td>
<td>.06</td>
<td>.05</td>
<td>.15</td>
<td>-.01</td>
<td>.10</td>
<td>.14</td>
<td>-.18*</td>
<td>.07</td>
<td>.21*</td>
<td>.87</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Expertise (a)</td>
<td>1.79</td>
<td>0.69</td>
<td>-.02</td>
<td>.00</td>
<td>.13</td>
<td>.06</td>
<td>.05</td>
<td>.07</td>
<td>.18*</td>
<td>-.21*</td>
<td>.02</td>
<td>.60**</td>
<td>.21*</td>
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<tr>
<td>13. Expertise (b)</td>
<td>1.78</td>
<td>0.77</td>
<td>-.02</td>
<td>.13</td>
<td>.22</td>
<td>.10</td>
<td>.13</td>
<td>-.06</td>
<td>.17</td>
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<td>.18</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Achievement of objectives</td>
<td>2.46</td>
<td>0.87</td>
<td>-.09</td>
<td>.04</td>
<td>.09</td>
<td>.07</td>
<td>-.04</td>
<td>.11</td>
<td>.20*</td>
<td>-.21*</td>
<td>.09</td>
<td>.61**</td>
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<td>.02</td>
<td>.85</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>15. Job satisfaction (1)</td>
<td>2.32</td>
<td>1.11</td>
<td>-.07</td>
<td>-.01</td>
<td>.07</td>
<td>.05</td>
<td>.19*</td>
<td>.04</td>
<td>.18*</td>
<td>-.25**</td>
<td>.18*</td>
<td>-.19</td>
<td>.21*</td>
<td>-.08</td>
<td>.22</td>
<td>.06</td>
<td>.83</td>
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<tr>
<td>16. Org. commitment (1)</td>
<td>2.52</td>
<td>1.75</td>
<td>.01</td>
<td>.07</td>
<td>.02</td>
<td>.12</td>
<td>.16*</td>
<td>.01</td>
<td>.34**</td>
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<td>.24</td>
<td>.21</td>
<td>.75**</td>
<td>.91</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>17. Intention to stay (1)</td>
<td>1.75</td>
<td>0.76</td>
<td>.05</td>
<td>.07</td>
<td>.07</td>
<td>.11</td>
<td>.20*</td>
<td>.01</td>
<td>.20**</td>
<td>-.27**</td>
<td>.12</td>
<td>.05</td>
<td>.15</td>
<td>.16</td>
<td>.41**</td>
<td>.01</td>
<td>.53**</td>
<td>.69**</td>
<td>.72</td>
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<tr>
<td>18. Job satisfaction (2)</td>
<td>2.32</td>
<td>1.15</td>
<td>-.04</td>
<td>-.02</td>
<td>.13</td>
<td>.05</td>
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<td>-.01</td>
<td>-.01</td>
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<td>.10</td>
<td>.23*</td>
<td>.21*</td>
<td>.20*</td>
<td>.84</td>
<td></td>
<td></td>
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<tr>
<td>19. Org. commitment (2)</td>
<td>2.37</td>
<td>1.68</td>
<td>-.06</td>
<td>-.11</td>
<td>.08</td>
<td>.08</td>
<td>-.01</td>
<td>.02</td>
<td>.06</td>
<td>-.17</td>
<td>.26**</td>
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<td>.35**</td>
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<td>.25**</td>
<td>.24*</td>
<td>.69**</td>
<td>.89</td>
<td></td>
</tr>
<tr>
<td>20. Intention to stay (2)</td>
<td>1.71</td>
<td>0.79</td>
<td>-.07</td>
<td>-.07</td>
<td>.03</td>
<td>.02</td>
<td>.10</td>
<td>.11</td>
<td>.04</td>
<td>-.06</td>
<td>.25**</td>
<td>.08</td>
<td>.11</td>
<td>.17</td>
<td>.30*</td>
<td>.18</td>
<td>.14</td>
<td>.13</td>
<td>.26**</td>
<td>.42**</td>
<td>.58**</td>
<td>.85</td>
</tr>
</tbody>
</table>

N=189.

* p≤ 0.05; ** p≤ 0.01 (two-tailed significance tests).

Note: Co-efficient alphas are on the diagonal in bold, where relevant. Where a (1) or (2) is indicated, this refers to data collected from subordinate 1 or 2 respectively.

12 Boss’s rating of expertise
13 Subordinate’s rating of expertise
8.1.2 Mediator variables.

The mediators were the latent variables of drive, relationship-building, and expertise. These latent variables had four, five, and one item(s) (observed variables) respectively, and all items were normally distributed. Because expertise only had one observed variable, the error variance for that variable was fixed to 0.25\(^14\). The means and standard deviations for the drive, relationship-building, and expertise items are listed in Table 8.1. For all mediator variables, a high score reflected high performance.

8.1.3 Predictor variables.

The predictors consisted mostly of personality and cognitive ability measures. However, there were two additional predictors that are not shown in the model in Figure 5.1. These were: (a) the executive’s years of professional work experience, and (b) the executive’s level of perceived rewards and punishments at work. The personality and cognitive ability predictors are discussed first, followed by the additional predictors.

For reward sensitivity (the BAS dimension) and punishment sensitivity (the BIS dimension) and their individual items, the distributions were normal. As discussed in the methods chapter, the items were parcelled into Carver and White’s (1994) subscales of BASD, BASR and BASF. There were a few outliers, but these were checked for accuracy and then left unadjusted. Given that the scale for each item only consisted of four values, the outliers were simply extreme responses, which would be expected. The means and standard deviations of the BIS and BAS items are listed in Table 8.1.

For cognitive ability, a square root transformation was applied to the ‘Hogan Business Reasoning Inventory’ scores (HBRI; R. Hogan, Barrett, & Hogan, 2007) in order to correct a

\(^{14}\) The error variance was fixed using Bentler & Chou’s (1987) suggested formula: \((1 - \text{estimated reliability coefficient}) \times (\text{standard deviation, squared})\).
skew (as expected, most executives tended to have high cognitive ability). Prior to transformation, the mean was 74.8 and standard deviation was 22.0. In the matrix, a high HBRI score reflects a high level of cognitive ability.

In terms of the Hogan assessments, this chapter focuses only on three Hogan traits that are of particular theoretical interest, these being ambition (i.e., a subscale of extraversion\(^{15}\)), adjustment (i.e., emotional stability\(^{16}\)), and prudence (i.e., conscientiousness), all of which were measured using the ‘Hogan Personality Inventory’ (R. Hogan & Hogan, 1997). The adjustment and ambition scales were negatively skewed. Therefore, these variables were reflected and, then, a logarithmic transformation was applied to the adjustment scale and a square-root transformation was applied to the ambition scale. Prior to transformation, the adjustment mean and standard deviation were 27.0 and 5.6 respectively, and the ambition mean and standard deviation were 24.0 and 4.0 respectively.

In the models, the traits’ facets, or homogenous item composites (HICs; R. Hogan & Hogan, 1997), were treated as observed variables, onto which the latent factors of adjustment, prudence, and ambition loaded. The HICs were skewed in a similar way to their respective traits, and logarithmic transformations were applied in each case. The means and standard deviations of each trait (post-transformation) are listed in Table 8.1. There were a few outliers, and these were left untouched for the same reason as the BIS and BAS item outliers. In other words, there was a limited number of values for these HICs, and therefore any outliers were extreme but accurate scores.

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\(^{15}\) R. Hogan & Hogan (1997) break extraversion into two traits: ambition and sociability.

\(^{16}\) The converse of the big-five trait neuroticism.
Turning now to the executive’s level of perceived rewards and punishments at work, the items from these scales (the observed variables) were normally distributed, and the means and standard deviations for the item scores are listed in Table 8.1.

Finally, the years of professional work experience variable (an observed variable) was normally distributed. Its mean was 23.8 and its standard deviation was 8.3.

8.1.4 Analysis of gender differences.

A set of t-tests was conducted to explore whether gender was a confounding factor that contributed to the variance in executive performance. Four t-tests were conducted, assessing the difference in means between males and females for four key performance variables: achievement of objectives, relationship-building, drive for results, and expertise. In line with Dancey and Reidy’s (2008) recommendations, the test statistics were assessed against a significance level of 0.013\(^{17}\), given that four t-tests were being run on the same sample. For all four performance variables, independent-sample t-tests indicated that there were no significant differences in performance between male and female executives. This meant that the analysis could go ahead as planned using a sample that combined male and female executives. The resulting statistics are presented in Table 8.2.

8.2 Modelling and Interpretative Approach

On viewing the correlation matrix in Table 8.1, it appeared that the BIS and BAS dimensions would not predict performance outcomes, and even the Hogan and cognitive ability traits did not look overly promising as predictors. Despite these suspicions, it was inappropriate to adapt the model at this point based on these correlations (Bentler & Chou, 1987). Rather, the original model was tested as planned. The correlation matrix suggested that the model would

\(^{17}\) Dancey and Reidy (2008) recommend that the significance level of 0.05 be divided by the number of t-tests being run, to account for the fact that there is greater chance of producing a significant finding by chance. In this case, 0.05 was divided by 4, giving a significance cut-off of 0.013.
need to be adjusted, but ultimately any adjustments were based on theoretical rationales, not on the correlation matrix, nor on atheoretical experimentation.

Table 8.2.

*Performance Differences between Male and Female Executives*

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>Significance</th>
<th>Degrees of freedom</th>
<th>Confidence interval: difference between means (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement of objectives</td>
<td>1.74</td>
<td>p = .09</td>
<td>117</td>
<td>-.14 to 2.13</td>
</tr>
<tr>
<td>Relationship-building</td>
<td>.40</td>
<td>p = .69</td>
<td>139</td>
<td>-.98 to 1.47</td>
</tr>
<tr>
<td>Drive for results</td>
<td>.76</td>
<td>p = .45</td>
<td>113</td>
<td>-.64 to 1.44</td>
</tr>
<tr>
<td>Functional and technical expertise</td>
<td>.18</td>
<td>p = .86</td>
<td>119</td>
<td>-.30 to .25</td>
</tr>
</tbody>
</table>

It is worth a few words on the interpretative approach taken in this chapter. Statisticians vary in their strictness when hypothesis testing (for some debate see Krantz, 1999; Loftus, 1996; Nickerson, 2000). Dancey and Reidy (2008) discuss how some researchers set a clear line in considering a result significant or not, while others advocate interpreting probability statistics with a little more flexibility. I had to make a choice here as to how flexible to be. The following summarises my approach to interpreting fit statistics and the resulting regression estimates.
When testing a model, one checks whether the model in question fits the data. If the model fits, the resulting regression statistics can be considered findings. However, if the model does not fit one cannot be sure that the resulting regression statistics are good estimates; the model then needs to be adapted until it fits.

To assess the fit, one can opt for various tests (see Schumacker & Lomax, 2004, for a review). This thesis follows Hu and Bentler’s (1999) guidance, aiming for a standardised root mean square (SRMS) statistic of $\leq 0.08$, and either a comparative fit index (CFI) of $\geq 0.95$, or a root mean square error of approximation (RMSEA) statistic of $\leq 0.06$. However, the lead of others was also followed (e.g., Bagozzi & Edwards, 1998; Oh & Berry, 2009; Rich, LePine, & Crawford, 2010) in being a flexible about this. For example, in line with Bagozzi and Edwards’ advice, a CFI of 0.90 was considered close enough if it simply was not possible to get a better fit with the present data, providing that the model made theoretical sense.

It is also standard practice to report the $\chi^2$ statistic as a fit indicator, the $\chi^2$ being non-significant if the model fits. However, with this study’s sample size, the $\chi^2$ is not considered a useful assessment of fit (Bagozzi & Edwards, 1998; Gellatly, 1996; Schumacker & Lomax, 1994). Therefore, the $\chi^2$ statistics were reported here as per convention, but were not used as definitive indicators of fit. In some cases it was not possible to test the SRMR statistic because AMOS does not allow that test in cases where there are missing data. In that case, the CFI and RSMEA were jointly relied upon to assess fit.

Once fit is clear, one can consider the significance of the resulting regression estimates to be findings. With the regression estimates, a decision must be made as to whether to strictly consider $p < 0.01$, $p < 0.05$, or even $p < 0.10$ as ‘significant’, or whether to interpret statistics more flexibly without strict cut-offs. The reason for the 0.01 or 0.05
significance level is that these probabilities enable the researcher to strike a good balance in avoiding different types of errors (Dancey & Reidy, 2008). I opted for a 0.05 significance cut-off. However, I also followed Dancy and Reidy’s guidance in choosing to apply a little flexibility: for example, a 0.06 or 0.07 probability was considered of interest and reported, even if not officially ‘significant’.

Finally, it is worth noting that the model development here is presented in stages. The reason for this is that there are too many variables in this study to present in one model. Bentler and Chou (1987) argued that if a model has more than twenty observed variables it can become unstable. This rather extensive process was therefore condensed into the following four key stages of model development.

(1) A confirmatory factor analysis of the study’s measures.

(2) A model showing the relationship between competencies and performance outcomes.

(3) The full model showing the predictors, mediators (competencies), and performance outcomes.

(4) A separate exploration of curvilinearity, interactions and further mediating effects.

These four stages are now presented below.

8.3 Stage 1: Confirmatory Factor Analysis

A confirmatory factor analysis (CFA) was conducted, incorporating the study’s main measures; that is, the BIS and BAS dimensions, the competency variables, and the performance outcomes. For the CFA’s purposes, the competency ratings were taken from one peer per executive while, of course, the achievement of objectives ratings were taken from superiors and the subordinate outcomes were taken from the executives’ subordinates.

The hypothesised model fit well (CFI: 0.93, RMSEA: 0.05, and \( \chi^2 \) of 383.1 with 274 degrees

\[ \text{This refers to type 1 and type 2 errors, the discussion of which will not be included here, but see Dancey & Reidy (2008) for a full discussion.} \]
of freedom). Furthermore, when compared to the specified alternatives listed in Table 8.3, it was found to be an optimal measurement model.

All factors had standardised regression weights of 0.52 or more with each of their respective items. With the competencies, the correlations between the latent factors (i.e., drive, relationship-building, and expertise) were 0.56 (expertise and relationship-building), 0.61 (relationship-building and drive), and 0.91 for expertise and drive. The first two are of moderate to large size, statistically significant, but clearly less than 1.0, supporting those factors’ discriminant validity. However, the 0.91 correlation between drive and expertise challenges the discriminant validity of these two factors. In this light, an alternative model was included in Table 8.3 (see model 5), with the drive and expertise items combined into one latent variable, but that model did not fit as well as the hypothesised model. It makes theoretical sense to separate drive and expertise, and this is clearly the decision that Lominger made when developing these competences. Therefore, the decision was made to retain drive and expertise as two separate competencies.

Table 8.3 also shows that parcelling the BIS and BAS items (see model 1) is an acceptable approach, even when compared to using all items as observed variables (models 2 and 3). Therefore, the decision was made to move forward with the proposed parcelling for the BIS and BAS dimensions.

Overall, it is concluded from this confirmatory factor analysis that the hypothesised measurement framework is an acceptable way of representing the various latent variables and their measures.

8.4 Stage 2: The Relationship Between Competencies and Performance Outcomes

Next, a model was tested showing the three competencies (relationship-building, expertise
Table 8.3.

**Confirmatory Factor Analysis of the Study’s Measures: BIS and BAS Dimensions and Performance Measures**

<table>
<thead>
<tr>
<th>Model</th>
<th>Model Fit Indices</th>
<th>Model Differences</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \chi^2 )</td>
<td>df</td>
<td>CFI</td>
</tr>
<tr>
<td>1) Hypothesised 7-factor model: BIS, BAS, drive, relationship-building, expertise, achievement of objectives, and subordinate outcomes (loading onto subordinate 1 and 2 latent variables).</td>
<td>383.05</td>
<td>274</td>
<td>.930</td>
</tr>
<tr>
<td>2) As model 1, but with BIS items separated, rather than parcelled into fear and anxiety items.</td>
<td>543.81</td>
<td>401</td>
<td>.917</td>
</tr>
<tr>
<td>3) As model 1, but with BAS items separated, rather than parcelled into BASD, BASR, and BASF.</td>
<td>775.25</td>
<td>559</td>
<td>.891</td>
</tr>
<tr>
<td>4) Alternative 5-factor model: As model 1, but with one competency latent variable, loading onto all competency items.</td>
<td>556.47</td>
<td>276</td>
<td>.821</td>
</tr>
<tr>
<td>5) Alternative 6-factor model: As model 1, but with only two competency latent variables – relationship-building, and drive/expertise combined.</td>
<td>433.79</td>
<td>276</td>
<td>.899</td>
</tr>
<tr>
<td>6) Alternative 8-factor model: As model 1, but with subordinate 1 and 2 as separate latent variables, and no over-arching ‘subordinate’ latent variable.</td>
<td>391.55</td>
<td>275</td>
<td>.926</td>
</tr>
</tbody>
</table>
and drive) predicting the two performance outcomes (achievement of objectives, and subordinate outcomes), according to the model in Figure 5.1 (see chapter 5).

In that model, expertise was rated by superiors, as was drive. This is because superiors were considered to be in the best position to judge these particular competencies. However, this exposed the study to common-method bias because within each case the same rater (i.e., the superior) rated the mediator and the criterion measures. To control for this, a common-method latent variable, reflecting the superior, was added to the model in line with Podsakoff, Mackenzie, Lee, and Podsakoff’s (2003) recommendations. That variable loaded onto each indicator for the drive, expertise, and achievement of objectives variables (i.e., onto all of the items that were being rated by the superior). This enabled the model to capture any effects that were coming from the superiors themselves, as individuals.

The resulting model fit well (CFI: 0.95, RSMEA: 0.05, $\chi^2$ 225.45 with 160 degrees of freedom), and produced an important finding. With the common-method factor present, it was clear that drive and expertise did not predict achievement of objectives as distinct factors. Their standardised regression weights with the achievement of objectives variable were -0.05 (p=0.84) and 0.03 (p=0.96) respectively. In fact, the common-method factor accounted for much of the variance in these indicators, with standardised regression estimates between the common-method factor and the superior-rated indicators (i.e. drive, achievement of objectives, and expertise) all exceeding 0.46 and all being significant at the 0.05 level.

These results suggested that the superior is not distinguishing between drive, expertise and achievement of objectives when they provide these ratings; instead, they appear to be rating one general performance factor. Perhaps that factor is a general task performance (as opposed to contextual performance) factor. In any case, the decision was made to treat achievement of objectives as the dependent variable of interest (as this is the ultimate
outcome of interest) and remove the drive for results factor. When one looks at the kinds of questions asked as part of the drive competency, those questions are not dissimilar to the achievement of objectives questions. Therefore, the conclusion was drawn that achievement of objectives would suffice here. The expertise factor, on the other hand, will be discussed again shortly.

The model did reveal that the executive’s relationship-building skills (as rated by peers) might predict subordinate outcomes (0.27; p=0.08). Although the regression estimate is not significant, it is close to significant and one must be aware that the significance levels may change once predictors have been added to the model. Therefore, the relationship-building competency remained in the model as a potentially important executive behaviour.

The above findings were replicated by re-running the model with three changes: (a) the superior’s rating of expertise was replaced by a subordinate’s ratings of the executive’s expertise (in each case this was a different subordinate to the subordinates who provided the job satisfaction, organisational commitment, and intention-to-stay measures); (b) the drive competency was removed; and (c) the common-method factor was removed because it was no longer necessary. Again, the model fit adequately (CFI: 0.96, RMSEA: 0.04, χ²: 138.70 with 103 degrees of freedom). The model showed that expertise (as rated by a subordinate) did predict subordinate outcomes (0.67; p=0.01); that relationship-building behaviours predicted subordinate outcomes, this time significantly (0.28; p=0.05); and that subordinate outcomes in turn predicted achievement of objectives (0.35; p=0.04). Critical ratios suggested the removal of a path between subordinate-rated expertise and achievement of objectives. Therefore, the relationship between expertise and achievement of objectives appeared to be wholly mediated by subordinate outcomes. Overall, these were powerful findings, because different raters were used to measure each variable, thus removing all common-method variance. The resulting model is presented in Figure 8.1.
At this point, it is concluded that:

1. An executive’s level of functional and technical expertise (as rated by subordinates) is likely to predict subordinate outcomes; supporting the idea that competence-based respect is an important predictor of subordinate job satisfaction, organisational commitment and turnover intentions.

2. The drive-for-results competency is not considered to be a substantially different concept to the achievement of objectives concept in the eye of an executive’s superior. Therefore, the drive competency will be removed from the model, and achievement of objectives will be used as the sole task performance measure.

3. Relationship-building behaviours appear to predict subordinate outcomes.

4. Subordinate outcomes (subordinates’ job satisfaction, organisational commitment and intention to stay) appear to predict achievement of objectives.

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19 The standardised regression estimates will change in the final model once predictors are added.
The chapter will now move on to stage 3, retaining relationship-building and subordinates’ ratings of expertise as key competencies that predict performance outcomes, but removing drive.

8.5 Stage 3: The Predictors of Executive Performance

Next, the hypothesised predictors (the BIS and BAS dimensions, perceived rewards, cognitive ability and years of experience) were added to the model in Figure 8.1 with the aim of producing a final model of executive performance. The final model is presented in Figure 8.2 below. The model had a CFI of 0.94, a RMSEA of 0.04, and a $\chi^2$ of 398.44 with 320 degrees of freedom, which is an acceptable level of fit.

8.5.1 Model development process for Stage 3.

It is worth explaining how this model was arrived at, and this will be described briefly now.

8.5.1.1 The BIS, BAS and cognitive ability variables.

During the model development process, the critical ratio estimates repeatedly suggested that the links between the BAS/BIS dimensions and the performance measures (competencies and outcomes) should be removed, thus suggesting that the various hypotheses around BAS and BIS would ultimately be rejected, and prompting the removal of those variables from the model. This was true whether or not the fear items were included in the model (see section 7.6.2.2).

Secondly, the critical ratios suggested that cognitive ability would not predict the performance measures, suggesting that this variable should also be removed. This was surprising, considering Schmidt and Hunter’s (1998) finding that cognitive ability is a key predictor of performance, but in the case of cognitive ability there are suggestions elsewhere that cognitive ability is not the differentiator between effective and ineffective executives
(Van Velsor & Leslie, 1995). In addition, there was a strong skew and some kurtosis in the cognitive ability variable which, although corrected by transformation, could still have been influential here. Furthermore, the tool used to measure cognitive ability (the ‘Hogan Business Reasoning Inventory’; R. Hogan, Barrett, & Hogan, 2007) is newer than some other more established measures of cognitive ability. All of these factors will be discussed further in chapter 9.

Figure 8.2.

The Predictors of Executive Performance

As part of the modelling process, the interaction between the BIS dimension and cognitive ability was also explored. This was a necessary step, given the fact that Perkins and
Corr (2005) found that cognitive ability strengthens the relationship between trait anxiety and performance (anxiety predicts performance when cognitive ability is high, in non-managerial roles). The interaction was tested using Ping’s (1995) recommendations for assessing interactions with SEM. To do this, a BIS-cognitive ability interaction variable was produced by standardising the individual BIS items, summing those items, and then multiplying that summed score by the standardised cognitive ability score. As this produced a single-indicator latent variable, the error variance was set at 8.17 (0.38 when fear items were removed), in line with Bentler and Chou’s (1987) suggested formula.\(^{20}\) Once again, critical ratio estimates suggested that the interaction variable had no predictive relationship with the achievement of objectives variable, and this was true whether or not the fear items were included when producing the interaction variable.

8.5.1.2 The ambition and adjustment variables.

Before rejecting the BIS- and BAS-relevant hypotheses, the question remained as to whether the Hogan traits of ambition and adjustment (R. Hogan & Hogan, 1997) are in fact superior predictors and should be substituted for the BAS and BIS dimensions in the model. Ambition and adjustment are conceptually similar to the BAS and BIS dimensions respectively (though not the same). Therefore, the Hogan trait ambition was substituted for the BAS dimension, and the Hogan trait adjustment was substituted for the BIS dimension (high ‘BIS’ being aligned with low adjustment). As discussed in chapter 7, the Hogan traits’ items were parcelled so that the facets (Hogan Item Composites, or ‘HICs’) instead of the items were used as observed variables.

Unlike BAS, ambition did prove to be predictive of performance. This was true only when the facets of ‘no depression’, ‘identity’, ‘self confident’, ‘accomplishment’, and ‘no

\(^{20}\) (1-estimated reliability) x (standard deviation squared).
social anxiety’ were removed, leaving the more drive-oriented (or ‘BAS-like’) facets of ‘competitive’ and ‘leadership’ in the model.

It is worth clarifying what these HICs actually measure. Full details of the HICs, including descriptors, can be accessed in the work of R. Hogan, Hogan, and Warrenfeltz (2007). However, it is worth noting here that ‘competitive’ refers to the extent to which someone is “competitive, ambitious, and persistent”, working to get ahead, and enjoying competition (p. 35); and ‘leadership’ reflects the extent to which a person has a “capacity for leadership”, enjoying taking on positions of authority, and naturally being one who takes charge (p. 35). These are certainly aligned with the concepts of approach motivation, as noted in sections 4.5 and 5.9.

Adjustment predicted subordinate outcomes, particularly when the HICs of ‘no somatic complaints’, ‘trust’, ‘no guilt’ and ‘good attachment’ were removed, leaving ‘empathy’, ‘calmness’, ‘even-tempered’, and ‘no anxiety’ in the model. The former subscales were removed because their loadings with the latent factor were less than 0.5, but also because section 5.9 of this thesis had speculated that emotional stability predicts relationship-building because of observed negative emotions causing a negative tone in the workplace. The selected subscales were those that (for the most part) would be more visible to colleagues and therefore perhaps more predictive of relationship-building.

Again, the various adjustment HICs can be viewed in the work of R. Hogan et al. (2007), but it is worth describing the facets of interest here. ‘Empathy’ measures the extent to which someone is irritated by, and critical of, others’ faults; ‘calmness’ measures a person’s level of visible emotionality, such as how well they stay calm in a crisis; ‘even-tempered’ refers to a person’s level of moodiness, temperamentality, and visible irritability; and, finally, ‘no anxiety’ reflects a person’s levels of tension and anxiety (p. 32).
8.5.2 Further explorations of adjustment and ambition.

Figure 8.2 represents the model with only the selected subscales. Unfortunately, the analysis would not run with all adjustment facets (due to too many variables), but earlier model development showed that the selected facets provided the optimal fit and optimal prediction.

To validate this conclusion about the ambition and adjustment facets, two sub-sets of the model in Figure 8.2 were tested. Firstly, a model was tested with only ambition (all facets), rewards, and subordinate outcomes predicting achievement of objectives. That model fit acceptably (CFI: 0.94, RMSEA: 0.04, \( \chi^2 \): 227.2 with 168 degrees of freedom), and ambition did not predict achievement of objectives significantly (0.13, p=0.27). However, when only the ‘leadership’ and ‘competitiveness’ facets were included (i.e., none of the other ambition facets), ambition did predict achievement of objectives significantly (0.24, p=0.05) with a model fit of CFI: 0.95, RMSEA: 0.05, and \( \chi^2 \): 142.5 with 102 degrees of freedom. Therefore, the findings show that ambition is predictive of achievement of objectives only when the facets of leadership and competitiveness are included.

Similarly, a sub-set of the model in Figure 8.2 was tested to confirm the conclusion about the adjustment facets. The model only included adjustment, relationship-building, and expertise predicting subordinate outcomes. That model fit acceptably (CFI: 0.93, RMSEA: 0.04, \( \chi^2 \): 255.88 with 188 degrees of freedom), and showed that adjustment did not predict relationship-building when all facets were included (0.17, p=0.13). However, when only the selected facets of empathy, calmness, even-tempered, and no anxiety were included, the adjustment factor did become predictive of relationship-building (0.25, p=0.02). The model fit for the latter model was CFI: 0.97, RMSEA: 0.04, \( \chi^2 \): 145.54 with 118 degrees of freedom. This confirms that adjustment is predictive of relationship-building, only when the above selected facets are included.
Following this, a sub-set of the model in Figure 8.2 was tested to explore whether prudence (i.e., Hogan’s measure of conscientiousness) predicted achievement of objectives and/or subordinate outcomes. Although there were not specific hypotheses about conscientiousness, a study about personality prediction at the senior-executive level could not ignore this very important trait, and therefore its predictive power was tested as part of the model-testing process. It was not possible to add prudence to the complete model in Figure 8.2, because the analysis would not run with so many variables, but a variety of permutations were explored, and in all cases where model fit was achieved, prudence did not predict achievement of objectives, or subordinate outcomes, or the competencies (i.e., expertise, or relationship-building). During the model development process, the critical ratio estimates suggested that the ‘not autonomous’ facet of prudence (R. Hogan et al., 2007) should be removed. Even with this facet removed, prudence was not found to be predictive of any performance criteria.

8.5.3 Concluding comments for Stage 3.

In the midst of all this, it appears that the non-personality predictors are in fact the strongest predictors of all. With a standardised regression estimate of 0.31 (p=0.01), perceived rewards clearly predicted achievement of objectives. This was topped only by the executive’s years of professional work experience, which predicted subordinate outcomes with a standardised regression estimate of 0.35 (p=0.01).

In summary, the final model shows that perceived rewards predict whether an executive will achieve their objectives, as does ambition. In addition, adjustment and years of experience predict whether an executive is likely to have committed and satisfied staff. These relationships are mediated by an executive’s relationship-building behaviours and the subordinates’ perceptions of the executive’s expertise, respectively.
8.6 Interactions, Curvilinearity, and Further Mediating Effects

Sometimes relationships can be weak because interactions exist, or because a curvilinear rather than linear relationship is present and, indeed, chapter 6 included several hypotheses about curvilinear relationships and interactions. Because of the large number of variables in this study, these hypotheses were tested separately to the model in Figure 8.2 above.

The first question is whether drive has a curvilinear relationship with relationship-building behaviours, in line with hypothesis 6 in chapter 6. A model was set up to test this hypothesis using the recommendations of Ping (1995) for assessing curvilinear relationships in SEM. In this model, the latent drive-for-results variable (rated by superiors) was allowed to predict the relationship-building competency (rated by peers), as was a latent quadratic drive variable. The quadratic variable had one indicator: the sum of the four drive-for-results items (rated by superiors), which was then squared. Each of these items had first been standardised in line with the recommendations of Frazier, Tix, and Barron (2004). The error variance of the quadratic drive error variable was set to 3.33, in line with Bentler and Chou’s (1987) formula for estimating error variances in the case of single-indicator factors. The drive and quadratic drive variables were allowed to covary because they would be expected to be strongly related to one another statistically.

The resulting model had excellent fit (CFI: 0.99; RMSEA: 0.02; $\chi^2$: 34.33 with 33 degrees of freedom). It showed that both drive and the quadratic drive latent variables did not significantly predict the relationship-building variables. The beta coefficients were 0.16 (p=0.14) for the quadratic drive variable, and 0.19 (p=0.10) for the drive variable. From this, it is concluded that there is unlikely to be any relationship between drive-for-results and relationship-building, whether curvilinear or linear.

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21 The error variance was fixed using Bentler & Chou’s (1987) suggested formula: (1-estimated reliability coefficient) x (standard deviation, squared).
Next, a model was tested to explore whether the BAS dimension has a curvilinear relationship with relationship-building. The model included a BAS latent factor and a quadratic BAS factor, which was set up in the same way as the quadratic drive factor; that is, the BAS items were standardised, summed, and squared, resulting in one indicator. Both factors were allowed to predict relationship-building. The BAS factor and quadratic BAS factors were allowed to co-vary, and the BAS quadratic factor’s error variance was set to 2381, in line with Bentler and Chou’s (1987) formula mentioned earlier. The model had reasonable fit, with a CFI of 0.90, RMSEA 0.06, and $\chi^2$ of 236.6 with 150 degrees of freedom. Both the BAS and BAS quadratic variables clearly did not predict the relationship-building competency. The standardised regression estimates were 0.08 ($p=0.41$) and 0.12 ($p=0.42$) respectively. It is concluded from this that neither the BAS dimension nor drive have a curvilinear relationship with an executive’s relationship-building behaviours; nor do they in fact have a linear relationship with relationship-building.

Following this, a model was tested to explore whether the BAS dimension moderates the relationship between reward and achievement of objectives (hypothesis 9(b)), and whether the BIS dimension moderates a relationship between punishment and achievement of objectives (hypothesis 10(b)). The model allowed the ‘BAS’, ‘BIS’, rewards, and punishment variables, all of which were latent, to predict achievement of objectives. In line with Ping’s (1995) and Frazier, Tix, and Barron’s (2004) recommendations, to test for interactions, a latent BAS-reward interaction variable was produced by standardising the individual BAS and reward items, summing them into a BAS scale and a rewards scale respectively, and then multiplying the two scales by one another. That latent (single-indicator) variable was added to the model, and was allowed to predict achievement of objectives. The same was done to produce a BIS-punishment interaction variable. The error variances were set at 158 for the BAS-reward interaction indicator, and 43 for the BIS-
punishment interaction indicator, once again in line with Bentler and Chou’s (1987) recommended formula. The model fit adequately (CFI: 0.89, RMSEA: 0.06, $\chi^2$ of 193.1 with 112 degrees of freedom).

The findings from this model showed that perceived rewards significantly predicted achievement of objectives ($r=0.30$, $p=0.01$), as was evidenced earlier in Figure 8.2 ($0.31$, $p=0.01$). However, this relationship was not moderated by the BAS dimension, as evidenced by a lack of significant prediction by the BAS-reward interaction variable ($0.11$, $p=0.33$). Punishment alone did not significantly predict achievement of objectives ($-0.19$, $p=0.11$), and any relationship was certainly not moderated by the BIS dimension, as evidenced by the non-significant beta coefficient between the BIS-punishment interaction variable and the achievement of objectives variable ($0.15$, $p=0.22$).

As already discussed earlier in this chapter, BAS and BIS themselves did not predict achievement of objectives. Confirming this, the standardised regression weight between BAS and achievement of objectives was $-0.13$ ($p=0.22$), and the standardised regression weight between BIS and achievement of objectives was $0.08$ ($p=0.59$).

To test the hypothesis that the BIS dimension moderates any effect the BAS dimension has on the achievement of objectives (hypothesis 8), a latent BIS x BAS variable was also included in the above model. This variable was allowed to predict the achievement of objectives, and of course was allowed to correlate with the BIS variable, and the BAS variable. The error variance was set at 326.7, in line with Bentler and Chou’s (1987) recommended formula. The results showed that this latent BIS x BAS variable did not predict the achievement of objectives ($0.09$, $p=0.47$), and therefore there was no interaction between the BIS and BAS dimensions in predicting the achievement of an executive’s objectives.
8.7 Assessment of Hypotheses

With these results in place, let us briefly assess what the results tell us in relation to the hypotheses themselves.

8.7.1 Hypotheses 1(a) and 1(b).

_Hypothesis 1(a): The BAS dimension is positively related to the executive’s achievement of performance objectives._

_Hypothesis 1(b): The relationship between the BAS dimension and the executive’s achievement of performance objectives is mediated by an executive’s drive for results._

The BAS dimension did not predict achievement of objectives, or in fact any of the performance variables, suggesting that hypothesis 1(a) should be rejected. That said, Hogan’s ambition trait, which could be considered an alternative measure of the BAS dimension (see section 8.5.1), was predictive. Therefore, I conclude that hypothesis 1(a) can only be accepted if ambition is used to measure the BAS dimension.

Hypothesis 1(b), the mediation hypothesis, ultimately could not be tested because superiors were deemed to be the only suitable raters. Those raters also rated achievement of objectives, and unfortunately the models showed that common-method variance was so influential that the drive variable had to be removed from the analysis. Therefore, hypothesis 1(b) was neither accepted nor rejected.

8.7.2 Hypotheses 2(a), 2(b), and 3.

_Hypothesis 2(a): Cognitive ability predicts the executive’s achievement of performance objectives._

_Hypothesis 2(b): The relationship between cognitive ability and the executive’s achievement of performance objectives is mediated by functional and technical expertise._
Hypothesis 3: Cognitive ability and the BAS dimension are positively related.

Cognitive ability did not predict achievement of objectives, therefore this relationship could not be mediated by functional and technical expertise. This means that hypotheses 2(a) and 2(b) are rejected.

It is worth noting, however, that expertise did predict achievement of objectives but this was wholly mediated by subordinate outcomes (i.e., the job satisfaction, organisational commitment, and intention to stay on the part of executives’ subordinates). This prediction was only present when subordinates rated expertise (section 8.4). Common-method variance made it infeasible to test this prediction using superiors’ ratings of expertise (section 8.4).

During the model development process, the critical ratio estimates suggested no covariance between cognitive ability and the BAS dimension (see section 8.5.1). Therefore, hypothesis 3 is rejected.

8.7.3 Hypotheses 4(a) and 4(b).

Hypothesis 4(a): The BIS dimension is negatively related to subordinate outcomes.

Hypothesis 4(b): The relationship between the BIS dimension and subordinate outcomes is mediated by relationship-building behaviours.

The BIS dimension did not predict subordinate outcomes, and therefore the relationship could not be mediated. However, hypotheses 4(a) and 4(b) were true when adjustment was substituted for the BIS dimension. Ultimately, though, R. Hogan & Hogan’s (1997) adjustment trait is not a measure of the BIS dimension despite their similarities (see section 5.9). Therefore, hypotheses 4(a) and 4(b) are rejected.

8.7.4 Hypotheses 5(a) and 5(b).

Hypothesis 5(a): The BAS dimension predicts subordinate outcomes.
Hypothesis 5(b): The relationship between the BAS dimension and subordinate outcomes is mediated by relationship-building behaviours.

Both of these hypotheses are rejected, because the BAS dimension did not predict subordinate outcomes (whether measured using Carver and White’s, 1994, ‘BIS/BAS Scales’ or R. Hogan & Hogan’s, 1997, ambition trait). Therefore, the relationship could not be mediated. However, I did find that relationship-building behaviours predicted subordinate outcomes, so hypothesis 5(b) is true in part.

8.7.5 Hypotheses 6 and 7.

Hypothesis 6: Drive has a curvilinear relationship with relationship-building behaviours.

Hypothesis 7: The BAS dimension has a curvilinear relationship with relationship-building behaviours.

These hypotheses were tested using structural equation models. The results showed that the hypothesised curvilinear effects were not present (see section 8.6). Therefore, hypotheses 6 and 7 are rejected.

8.7.6 Hypothesis 8.

Hypothesis 8: The BIS dimension weakens the relationship between the BAS dimension and the executive’s achievement of performance objectives.

No interaction was found between the BAS and BIS dimensions in the prediction of achievement of objectives (see section 8.6), and therefore hypothesis 8 is rejected.

8.7.7 Hypotheses 9(a), 9(b), 10(a), and 10(b).

Hypothesis 9(a): The executive’s perceived level of reward predicts the executive’s achievement of performance objectives.
Hypothesis 9(b): The relationship between rewards and the executive’s achievement of performance objectives is strengthened by high scores on the BAS dimension.

Hypothesis 10(a): The executive’s perceived level of punishment predicts the achievement of his/her performance objectives.

Hypothesis 10(b): The relationship between the executive’s perceived levels of punishment and his/her achievement of performance objectives is moderated by the BIS dimension.

Hypothesis 9(a) is accepted, as perceived rewards at work clearly predicted achievement of objectives (see section 8.6). However, hypothesis 9(b) is rejected, as no interaction was found between the BAS dimension and perceived rewards in the prediction of achievement of objectives.

With punishment, punishment itself did not predict the achievement of objectives. In addition, it did not interact with the BIS dimension to predict the achievement of objectives (see section 8.6). Therefore, hypotheses 10(a) and 10(b) are rejected.

8.7.8 Hypothesis 11.

Hypothesis 11: Subordinate outcomes will predict the executive’s achievement of performance objectives.

In the final model of executive performance (Figure 8.2), the link between subordinate outcomes and achievement of objectives was non-significant, with a regression estimate of 0.28 (p=0.07). In the previous model (Figure 8.1) this relationship was significant at the 0.05 level. Though officially non-significant, given the interpretative approach discussed earlier in the chapter (section 8.2), I interpret that there is a relationship of theoretical importance, and hypothesis 11 is accepted.
8.7.9 Additional findings.

What was found, outside of these hypotheses, was that direct reports’ ratings of the executive’s expertise predicted subordinate outcomes. It was also found that the executive’s amount of experience is a good predictor of subordinate outcomes – that is, more experienced executives have staff who are more satisfied and committed, and less likely to leave. This is mediated by the direct reports’ perceptions of the executive’s functional and technical expertise. In other words, executives who have more experience are rated as having greater expertise, and their staff are more committed, satisfied, and likely to remain with the organisation.

Contrary to expectations, though, the results also suggest that the BIS and BAS dimensions do not predict senior executive performances. The BAS and BIS dimensions did not predict the competencies of drive and relationship-building; nor did they predict the outcome measures, which were achievement of objectives and subordinate outcomes. There were no curvilinear effects of the BAS dimension; nor did the BAS dimension interact with perceived rewards to predict the achievement of objectives. The results also showed that conscientiousness did not predict any aspects of executive performance, at least when measured using R. Hogan and Hogan’s (1997) prudence scale. Nevertheless, the results have uncovered other predictors of executive performance.

The above points provide plenty of material for a rich discussion of the predictors of senior executive performance. This discussion will be presented in the next chapter. In the meantime, let us summarise the present chapter before moving on.

8.8 Conclusion

In summary, then, this chapter has analysed a data-set of 189 senior executives who underwent various predictor, mediator and performance outcome measures. Predictor
measures were provided using self-report assessments; mediator measures were collected using others’ ratings of the executive’s drive, relationship-building and expertise; and the performance outcome measures were: achievement of objectives (rated by superiors), and subordinate outcomes (measures of job satisfaction, organisational commitment and intention to stay, taken from the executives’ subordinates). The aim was to test the model in Figure 5.1, which comprised a number of hypotheses.

The data were analysed using structural equation modelling (SEM), and using AMOS as the software package. A confirmatory factor analysis of the mediator measures confirmed that the measurement structure for the competencies (mediators) was sound. Then, two further models were presented. The first showed how the competencies (mediators) predicted the performance outcomes, and the second showed the full relationships between predictors, mediators, and performance outcomes. Finally, additional models were tested to explore curvilinear relationships, interactions, and additional mediating factors.

In terms of the competencies, the results suggest that an executive’s relationship-building skills are important. Not only does relationship-building predict subordinate outcomes, but this in turn predicts whether an executive will achieve their objectives. The results also show that an executive’s functional and technical expertise (as rated by subordinates) predict subordinate outcomes, and in turn achievement of objectives.

As for what actually predicts executive performance, it seems that the best predictors of executive performance do not lie in psychometric tests. In fact the executive’s amount of work experience, and the level of perceived reward at work were the strongest predictors. Certainly the central constructs of this thesis, the BAS and BIS dimensions, were not predictive of performance. However, when the Hogan traits of adjustment and ambition were substituted for the BIS and BAS dimensions respectively, it was found that adjustment did
predict an executive’s relationship-building capability, and ambition did predict the achievement of objectives.

Overall, the psychometric measures were not always the best performance predictors, and the selected socioanalytic traits were clearly more predictive than the more neurobiological dimensions of BIS and BAS. This raises several questions – methodological questions, theoretical questions, and questions about the implications for human resource management practices. The results are nuanced and provide a wealth of material for discussion; not least because parts of these results are surprising if one considers the various arguments and pieces of literature that formed the basis of this thesis’s literature review. Equally, other parts of the results confirm some fundamental and intuitive links around job performance that to date have not been presented quantitatively at the executive level. On this note, let us now turn to a much fuller discussion of the issues, answers, and possibilities relating to these results.
Chapter 9
Discussion

Throughout the preceding chapters the thesis has presented various sides to the question of whether Jeffrey Gray’s reinforcement sensitivity theory (Gray, 1972a, 1972b, 1982; Gray & McNaughton, 2000) can predict senior executive performance. This thesis involved conducting a correlational study of 189 senior executives. The data-set was analysed using a series of structural equation models, which in turn produced a set of findings in chapter 8 that offered a nuanced picture of senior executive performance prediction. The aim of this chapter is now to present a formal discussion of those results.

To focus the discussion, this chapter will first summarise the key findings of interest, before discussing those findings in the context of methodological issues, theoretical implications, and practitioner applications. Throughout the discussion, the chapter will highlight some specific areas for further research, and these areas will be pulled together into a final summary of the study’s general methodological issues and broad directions for further research.

This discussion tells some diverse stories, which are organised into three main theoretical areas. The first area is that of the neurobiological approach to personality, specifically reinforcement sensitivity theory (RST; discussed in chapter 3), but also, more broadly, the concepts of approach and avoidance motivation as they apply to the workplace. Ultimately, discussion of this area will address the bridge between neuroscience and management theory.

The second area is the field of personality theory; specifically, personality as a predictor of workplace outcomes (discussed in chapter 4), but this aspect of the discussion
will be extended to incorporate cognitive ability as a predictor, since this is an important individual-difference variable. This section will also include consideration of whether other factors are more important than personality in predicting executive performance.

The final area is that of senior executive performance. This section of the chapter will discuss how senior executive performance should be operationalised by quantitative researchers (discussed in chapter 2), and whether specific executive behaviours predict certain performance outcomes. To present a comprehensive view of the research question, the chapter will be structured around these three areas, giving due consideration to methodological, theoretical, and practitioner issues.

9.1 A Summary of the Study’s Key Findings

It is useful to organise the results from the previous chapter into a set of key findings, so that the discussion can be based around some salient points. Therefore, the reader is reminded of the following findings from the previous chapter.

1. Approach and avoidance motivation, as measured by Carver and White’s (1994) ‘BIS/BAS Scales’, did not predict any aspects of senior executive performance. However, when the BAS and BIS dimensions were replaced by the ambition and adjustment scales from the ‘Hogan Personality Inventory’ (HPI; R. Hogan & Hogan, 1997), it was clear that ambition predicted achievement of objectives (0.24, p=0.05) and adjustment predicted subordinate outcomes (the job satisfaction, organisational commitment and intention to stay of the executive’s subordinates). This latter relationship was wholly mediated by relationship-building behaviours, with beta coefficients of 0.25 (p= 0.02) and 0.28 (p=0.04), for the two paths (see Figure 8.2).
2. Beyond personality, the strongest predictors of executive performance were in fact the executive’s level of perceived reward in the workplace (which predicted achievement of objectives; 0.31, p=0.01), and the executive’s years of professional work experience (which predicted subordinate outcomes). This latter relationship was wholly mediated by subordinates’ ratings of the executive’s level of expertise, with beta coefficients of 0.35 (p=0.01) and 0.83 (p=0.00) for the two paths.

3. Cognitive ability, as measured by the ‘Hogan Business Reasoning Inventory’ (HBRI; R. Hogan, Barrett, & Hogan, 2007), did not predict any performance outcomes, but there were some possible explanations for this, which will be discussed later in the chapter.

4. Executives’ relationship-building skills and levels of expertise predicted subordinate outcomes (0.28, p=0.04; 0.83, p=0.00, respectively). Subordinate outcomes in turn predicted the achievement of the executive’s objectives (0.28, p=0.07).

There were additional findings, and these will be addressed throughout the chapter where appropriate. However, the above points provide focus for the discussion.

9.2 Approach and Avoidance Motivation in the Workplace: Bridging Neuroscience and Management Theory

The research question here was whether approach motivation and avoidance motivation predict aspects of executive performance. To address this question, Carver and White’s (1994) ‘BIS/BAS Scales’ were used to measure approach motivation and avoidance motivation. Using this tool, no predictive relationships were found between the BIS or BAS
dimensions and performance criteria. Moreover, chapter 8 showed that these weak relationships were not caused by curvilinearity or by the BIS and BAS dimensions interacting with other factors (at least, not with factors that had been identified here), or even with each other.

These findings were somewhat surprising, given the rationale that approach motivation and avoidance motivation (and the ‘BIS/BAS Scales’) are ways of viewing a person’s innate levels of general motivation (Elliot & Thrash, 2002), and motivation is considered to be a prime factor in predicting performance (Blumberg & Pringle, 1982).

**9.2.1 Methodological issues relating to approach and avoidance motivation.**

Given that the above findings are surprising, let us discuss whether methodological limitations are influential here. Firstly, one should consider whether homogeneity of scores in either the performance domain or the BIS and BAS dimension scores were responsible for the weak correlations. This was checked prior to analysis, and histograms showed normal distributions for achievement of objectives and for BAS and BIS, with no apparent kurtosis. Therefore, distribution issues do not appear to be influencing this particular finding.

**9.2.1.1 The predictive power of Carver and White’s (1994) ‘BIS/BAS Scales’**.

What could be problematic, however, is the choice of Carver and White’s (1994) ‘BIS/BAS Scales’ to measure RST’s specific dimensions. It is clear from chapter 3 that more theoretically appropriate measures of RST have recently been released (Jackson, 2009), addressing Gray and McNaughton’s (2000) modification of the theory. While Carver and White’s scales were the best choice for this project at the time (see chapter 7), and are the most popular way of measuring approach and avoidance motivation (chapter 7), the fact remains that those scales do not address certain features of RST’s dimensions; in particular,
differences between fear and anxiety, the different functions of the behavioural inhibition (BIS) and fight-flight-freeze system (FFFS), and also the specific workings of the BAS (see chapter 3 for relevant details). Looking at the experiments on which Carver and White’s scales were built, it is clear that their scales are measuring broad sensitivities to reward and punishment, rather than the specific and separate manifestations of BIS, BAS, and FFFS.

We should ask whether it is better to measure approach and avoidance motivation in general terms, rather than using a specific measure of RST’s dimensions. In essence, Carver and White’s scales measure the former (although they aimed to measure the latter), but is their tool really the most valid way of measuring these dimensions, given that RST researchers have accumulated extensive and specific knowledge of the finer workings of approach motivation and avoidance motivation?

Further work is being conducted to produce revised measures of approach and avoidance motivation that align with the revised RST (Jackson, 2009; Smillie, Pickering, & Jackson, 2006). With these alternative tools, the opportunity is now available to test whether revised RST measures can disprove this thesis’ findings, and indeed predict aspects of senior executive performance. In the meantime, it is concluded that Carver and White’s ‘BIS/BAS Scales’ are not the optimal way of measuring RST’s dimensions.

It may even be worth developing a specific tool to measure RST in the workplace, or even a measure of approach and avoidance motivation within the senior executive context. This would be a stimulus-specific measure, as opposed to Carver and White’s approach of measuring reward and punishment sensitivity devoid of any contextual circumstances. Carver and White’s ‘BIS/BAS Scales’ were chosen here because of their lack of stimulus specificity (see chapter 7), but perhaps this was not the right choice. Perhaps Carver and White’s scales
were too far removed from the context of the workplace, or from the very specific context of the senior executive setting.

**9.2.1.2 Are biological tendencies enough?**

There is also the argument that biological tendencies are simply not enough to predict workplace outcomes. Cloninger, Svaric, and Przybeck (1993) raised the idea that biological tendencies provide a starting point for one’s underlying drivers, but then the behaviours that result from these tendencies are shaped by socio-cognitive phenomena such as self-efficacy, or goal orientation. These dispositional, cognitive factors dictate how the biological drives will translate into behaviours. This intuitively valid point renders the Carver and White (1994) ‘BIS/BAS Scales’ far too simplistic, and if one views behaviour in the light of biology and socio-cognitive factors combined, it is perhaps no surprise that Carver and White’s tool is not sufficiently predictive of executive behaviours.

Recent work by Jackson, Hobman, Jimmieson, and Martin (2009) has in fact evaluated the different predictive capabilities of various approach- and avoidance-oriented personality measures and concluded that Carver and White’s (1994) ‘BIS/BAS Scales’ are not the most predictive measures when compared to other available tools, particularly those tools that combine socio-cognitive and biological tendencies. These authors argue that the most predictive tool of functional work outcomes, overall, was a tool known as the ‘Learning Styles Profiler’ (LSP; Jackson, 2005, cited in Jackson et al., 2009), which measures approach and avoidance constructs, but also combines these measures with measures of socio-cognitive tendencies. This tool appears to be far more comprehensive than Carver and White’s simplistic measure, raising the question of whether a simple context-free measure of reward and punishment sensitivity, or in fact a simple measure that addresses biologically-based
tendencies alone, can even begin to address the complex phenomenon of executive performance.

9.2.1.3 The measurement of performance.

We should also consider whether alternative measures of job performance might result in a better prediction by RST. For example, some researchers (e.g., J. Hogan, Hogan, & Murtha, 1992; Van Yperen, 2003) use a global measure of overall job performance (OJP) to measure performance. This thesis deliberately did not do this because the literature review in chapter 2 suggested that executive performance should be measured in terms of specific behaviours and outcomes, taking a multi-faceted view. That said, further research should explore whether the lack of prediction holds true when OJP is the dependent variable. Similarly, other areas of executive behaviour may be predicted by the BIS and BAS dimensions. For example, risk-taking behaviour could quite feasibly be predicted by either or both dimensions and, therefore, might hold important implications for innovation processes and outcomes at the executive level, in organisational contexts where this is deemed important. This was beyond the scope of this thesis, but would merit further empirical exploration.

9.2.2 Approach motivation.

What is evident here is that ambition, as measured using the ‘Hogan Personality Inventory’, does predict senior executive performance, and this could be indicative of the predictive power of approach motivation. It is clear that agreement has not yet been reached on how to measure the BAS dimension (chapter 3). On the one hand, the BAS dimension could be seen as comprising elements of impulsivity, psychoticism, anti-social tendencies and sensation-seeking (Pickering & Gray, 2001). On the other, the BAS dimension could be viewed as equivalent to extraversion (Depue & Collins, 1999). Both of these arguments have a theoretical basis, as discussed by Pickering and Smillie (2008). This thesis followed the
former school of thought in using Carver and White’s scales to measure approach motivation. However, by following this approach, the predictive validity of approach motivation was not supported. If following, instead, the latter school of thought, and considering the trait of ambition\textsuperscript{22} to be a measure of ‘approach motivation’, this thesis then supports the hypothesis that approach motivation predicts performance.

Of course, there is still the question of which extraversion measure of the many out there is most aligned with the approach motivation concept. For example, one could argue that Eysenckian measures of extraversion are more appropriate than the HPI, given that Eysenck’s (1967) work formed the basis for Gray’s assertions (Gray, 1976) and has a neurobiological basis. This is a valid argument, but it is also proposed here that Hogan’s trait of ambition, when only the facets of ‘competitive’ and ‘leadership’ are used, is conceptually aligned with the concepts of approach motivation (see section 8.5.1.2). Those facets reflect a general drive for the rewards of status and achievement, and the results showed a particularly strong predictive relationship when only those drive-related facets were used.

Intuitively, it stands to reason that approach motivation is influential at the senior-executive level. From an evolutionary psychology perspective, and viewing human behaviour within organisations as similar to the survival-oriented behaviours in primordial society (Nicholson, 2000), it stands to reason that the most driven executives – driven to attain status and its associated symbols, driven to attain respect, driven to attain money – will be the ones who exceed their objectives. In a way, executives have to survive (i.e., not derail), and at this level the survival instinct would presumably motivate executives to achieve.

\textsuperscript{22} R. Hogan and Hogan’s (1997) measure extraversion using two scales: ambition and sociability.
That said, no amount of drive/approach motivation can compensate for a lack of ability. So in a way, approach motivation alone is simply not going to be enough. Blumberg and Pringle (1982) argue that performance is only possible if there is sufficient motivation, ability, and opportunity. Executives will only achieve their objectives if they have the knowledge (‘expertise’) and skills (including ‘relationship-building’) to do so. They must also have adequate opportunity. That means that factors outside of their control must facilitate rather than constrain their performance. All of this suggests, again, that a simple measure of approach motivation is probably not sufficient to explain and predict performance, given that there are several other influential determinants that were beyond the scope of this thesis.

9.2.3 Avoidance motivation.

Let us consider avoidance motivation in a similar way. With avoidance motivation, this thesis’s original intention was to measure that concept using an RST-specific measure, (i.e., Carver & White’s, 1994, ‘BIS/BAS Scales’). It is now suggested that this was not the ideal approach to take given that those scales do not accurately differentiate between the BIS and FFFS. Nevertheless, even when the fear items were removed from those scales (as described in chapter 7), the result was still the same: that is, the BIS dimension did not predict performance. Further research with revised scales, such as Jackson’s (2009) Jackson-5 and the LSP mentioned by Jackson et al. (2009), will eventually contribute more decisively to the question of whether avoidance motivation predicts workplace outcomes. For now, the results of this thesis suggest that general punishment sensitivity does not predict senior executive performance; nor does punishment sensitivity appear to moderate any relationship between reward sensitivity (approach motivation) and performance (see hypotheses 10(a) and 10(b) in chapter 8).
What was discovered, instead, was that adjustment (i.e., emotional stability) was a good predictor of executive performance. Therefore, it is important to consider whether adjustment is equivalent to, or at least similar to, avoidance motivation.

In answer to that question, adjustment is similar to avoidance motivation, in that both incorporate elements of a person’s affectivity. However, there is a difference. While adjustment reflects a person’s general level of affectivity towards events, including attitudes such as empathy, anxiety, guilt, calmness, even-temperedness, lack of somatic complaints, trust in others, and relations with authority, RST postulates that avoidance motivation is characterised by behavioural inhibition, which is underpinned by fear and anxiety. One could say that adjustment measures a range of emotions and attitudes – internalised and externalised – whereas avoidance motivation measures behavioural inhibition and its drivers of fear and anxiety. Therefore, it can be concluded here that the mainstream (or, in fact, socioanalytic) trait of adjustment (i.e., emotional stability, in ‘big-five’ terms) is predictive of senior executive performance, but avoidance motivation, as a separate and different construct, is not.

For the above argument, one can also draw on Gray’s (1970, 1976) work, which showed that emotional stability and avoidance motivation are not entirely the same thing. Avoidance motivation (labelled by Gray as ‘BIS’) reflects the combined strength of introversion and emotional stability but is not exactly the same as either.

Intuitively, it stands to reason that ‘high-BIS’ executives will be more inhibited behaviourally than those with a healthy level of BIS. After all, it is argued that the BIS and FFFS are survival mechanisms, and survival in an organisation could be likened to survival in life (Nicholson, 2000). A high-BIS executive will presumably be on the look-out for threats,

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23 This is R. Hogan and Hogan’s (1997) conceptualisation of emotional stability in the ‘Hogan Personality Inventory’. Other researchers may view that conceptualisation as slightly different.
highly sensitive to threats to their position, and perhaps will do all that it takes to defend their status and position. Similarly, though, it could lead to the avoidance of risk-taking that would otherwise allow the organisation to compete and innovate, particularly if risk-taking is considered a valued behaviour by the organisation’s chief executive or board. This highlights that the story of punishment sensitivity could be more nuanced than has been captured in this thesis. Alternatively, though, behavioural inhibition may simply not be as big a factor in predicting executive performance as one might think, and perhaps it does not affect an executive’s achievement of objectives in any significant way.

Overall, though, intuitive thoughts aside, it is concluded that a measurement issue is obscuring the answer to the research question, and that consensus needs to be reached on how to measure the BIS and BAS dimensions before these dimensions can be thoroughly explored in the senior executive context. In the meantime, this study suggests that avoidance motivation does not predict senior executive performance, but approach motivation might, depending on how it is measured.

9.2.2 The value of reinforcement sensitivity theory in the workplace, and the bridge between neuroscience and management.

Methodological issues aside, do the findings hold implications for theory development around RST? Theoretically, the broad concept of approach motivation could predict performance outcomes, as evidenced by the predictive validity of the ambition trait. This argument is strengthened by the fact that the trait was predictive when only specific drive-type facets were used in the structural equation model (see Figure 8.2 in chapter 8). The findings also show that adjustment (i.e., emotional stability) predicts performance. Because adjustment and avoidance motivation are similar in their emotional-orientation it remains
possible that other measures of avoidance motivation, such as Jackson’s (2009) scale, will predict performance.

What is unclear, though, is whether ambition and adjustment are measuring neurobiological-based dimensions, or whether they are simply measuring behavioural tendencies that are not necessarily biologically based. One can only satisfactorily conclude the latter: that the behavioural tendencies (i.e., traits) of ambition and adjustment predict performance. Whether these traits have a biological basis is unclear, and whether these traits reflect underlying motives or levels of innate motivation is also unclear. After all, the experimental research behind RST shows that reward-seeking behaviour and behavioural inhibition both have biological bases, but these are different to the psychometric items for ambition and adjustment in the ‘Hogan Personality Inventory’ (R. Hogan & Hogan, 1997). Indeed, one could argue instead that these traits are just as likely to be influenced by a person’s social experiences such as their upbringing rather than distinct biological factors in their brain.

This leads to the broader question of how to assess whether neurobiology influences performance. Can it ever be concluded from the predictive validity of a psychometric assessment that there is a neurobiological influence on workplace outcomes? Arguably, it cannot. To test whether neurobiology influences workplace outcomes, techniques such as electroencephalography (EEG) would have to be employed, to record activity in certain areas of the brain, at best. Other methods of testing for neurobiological differences, such as administering drugs or brain lesions, would simply not be acceptable in human research for ethical reasons, and certainly not in a workplace setting.

However, if one can first uncover whether an RST-specific psychometric measure predicts job performance, this would at least suggest that it is worth pursuing an EEG-based
study in the workplace. In the case of this thesis, if Carver and White’s (1994) ‘BIS/BAS Scales’ had predicted executive performance, this would have supported the idea that neurobiology is influential. The next step would have been to wire executives up to EEG electrodes, to discover if high performers and lower performers have differences in their brains; a challenging, but groundbreaking study. Instead, though, what this thesis has shown is that only ‘Hogan Personality Inventory’ (HPI) traits are predictive. The HPI was not built on a neurobiological premise, and therefore the only conclusion to be drawn is that this thesis has not provided support to strengthen the bridge between neurobiological models of personality and management. At this point, therefore, EEG does not appear to be a useful next step.

What can be surmised is that motivation-oriented personality traits predict performance. The HPI trait of ambition (particularly with the facets of leadership and competitiveness) was developed on the evolutionary idea of people differing in their levels of motivation to ‘get ahead’ (R. Hogan, 2007). Similarly, adjustment was developed on the premise of people differing in their levels of emotionality, and emotionality was considered by Gray (1994) to be a driver of motivation. Therefore, ambition and adjustment appear to be motivation-oriented in nature, and could be a means of testing the source of employee motivation from an individual-differences perspective.

To test the role of motivation in executive performance, further research should address whether various other individual-difference motivation constructs, for example core self-evaluations (Judge, 2009; Judge, Erez, Bono & Thoresen, 2003) and goal-orientation (Dweck & Elliot, 1983; Elliot & Thrash, 2002; Van Yperen & Janssen, 2002), are relevant at the senior-executive level. These traits might predict attainment of an executive position, as well as job performance. These motivation-type traits are not necessarily biologically based, but at least it would show whether the concept of drive at the executive level is as valid as
qualitative researchers have argued (e.g., Kaplan, 1991; Kotter, 1982), and whether that drive has an individual-difference basis.

**9.2.3 Practitioner implications.**

What do these findings mean for practitioners? First, it can be concluded that it would not be useful for practitioners to use the Carver and White (1994) ‘BIS/BAS Scales’ to support selection or promotion decisions. However, this study suggests that the HPI would enhance such decisions. That said, other selection techniques such as structured interviews remain more valid predictors of performance than the Hogan traits of ambition and adjustment, based on predictive validities (Campion, Palmer, & Campion, 1997). Still, the use of multiple valid selection methods enhances the validity of a selection or promotion process, and this study has shed light on the psychometric predictors of executive performance, which will undoubtedly be useful for human resource practitioners.

In wider terms, if motivation is innate (i.e., biologically based), one would assume that, regardless of how executives are managed, some will simply be more driven than others. This is not in line with the literature on pay and performance that has shown that job performance can be increased using motivational management practices such as incentive schemes (e.g., Guthrie, 2007; O’Neill, 1995), and in fact the present study has clearly shown that (a) rewards predict performance, and (b) individual differences in motivation (measured using the BAS dimension) do not affect the impact of rewards on performance. Therefore, the extent to which motivation is innate, as opposed to malleable by management initiatives, is debatable.

We also know that certain aspects of the workplace or an employee’s role can serve to increase or decrease engagement, which is emerging as a key measurable motivation concept (Rich, LePine, & Crawford, 2010). Admittedly, none of these studies focus exclusively on
senior executives as a unique group. Nevertheless, the extensive literature on motivational management practices suggests that motivation is not entirely innate or individual-difference based. In other words, motivation can be enhanced using management policies and practices. For an additional example of this, consider Locke and Latham’s (2002) research on goal setting, and the impact of goal-setting on performance (Seijts & Latham, 2001). Different goals (proximal versus distal; learning versus performance) have different effects on performance, and therefore rather than worrying about whether an executive is biologically disposed to be motivated, it would be a better use of boards’, chief executives’, or human resource practitioners’ efforts to actually utilise motivational strategies that will change senior executives’ behaviours.

It is clear from wider motivation-based literature that employees can be motivated by the practices that managers choose to employ, and this would probably hold true at the senior-executive level. Despite this, however, the possibility remains that motivation is to some extent personality-based, and perhaps some people do respond better than others to motivational practices. This is yet again an area for further research.

So, a question for practitioners is: to what extent is senior executive motivation influenced by the organisation, and to what extent is it influenced by personality? This thesis has shown that Carver and White’s (1994) ‘BIS/BAS Scales’ do not predict performance, but that the HPI’s ambition trait does. Therefore, it appears that an organisation would do well to select or promote ambitious executives (or at least those high in leadership and competitive facets), because those executives are more likely to achieve their objectives. It is not yet known whether other motivation-type personality measures (such as Jackson’s, 2009, ‘Jackson-5’) will be more successful predictors of executive achievement of objectives. These ideas will be put on hold for now, but the discussion of practitioner implications will be continued after the next section.
9.3 Personality and Cognitive Ability as Predictors of Senior Executive Performance

Let us now turn from reinforcement sensitivity theory (RST) to the broader theme of personality and workplace outcomes. This is relevant to the research question because it allows us to explore whether the socioanalytic personality theory is a superior predictor of workplace outcomes than RST.

In line with mainstream personality research, I expected to find that personality would predict executive performance, and I did. This is in keeping with the numerous meta-analyses that have supported personality’s predictive power in the workplace (including Barrick & Mount, 1991; J. Hogan & Holland, 2003; Hurtz & Donovan, 2000; Salgado, 1997; Tett, Jackson, & Rothstein, 1991). On the other hand, section 9.2.1 showed that Carver and White’s (1994) dimensions were not predictive. In the light of this, socioanalytic personality traits do appear to be the superior predictors.

9.3.1 Methodological features that contribute to the personality literature.

Before drawing such a firm conclusion, it is important to evaluate whether this thesis’s methods are robust enough to render the findings credible. In response to this it is argued that the study had methodological strengths that contributed considerably to the personality issues being addressed. Specifically, this thesis addressed senior executives as a distinct group, while also aligning its research design with the agenda called for by Barrick (2005), R. Hogan (2005), and Hough and Oswald (2005). For that agenda, see chapter 4.

Translating the above-mentioned agenda for this thesis’s purposes, the study improved on previous personality research by (a) considering curvilinear relationships (hypotheses 6 and 7; see chapter 6), (b) testing theoretically-based combinations of facets for the ambition and adjustment traits (see section 8.5.1), (c) testing the interactions between personality and reward/punishment (hypotheses 9(b) and 10(b); see chapter 6), and (d)
developing all hypotheses based on theory in order to take a confirmatory hypothesis-testing approach rather than an exploratory approach.

This research had additional strengths that contributed to the personality literature. Most notably, distinct facets of performance (task and contextual behaviours and outcomes) were explored, measured using 360-degree ratings to gain a nuanced picture of the personality-performance linkage. The thesis also looked at how personality influenced performance through mediating competencies, thus addressing Mount, Barrick, and Stewart’s (1998) exhortations for researchers to explore how personality influences performance, not just whether it does. Finally, the study collected data from numerous organisations, allowing for the results to be generalised to senior executives as a wider group. This kind of data is difficult to collect, particularly at the senior-executive level, and a data-set of this sort does not appear to have yet been published in personality-performance literature. Considering all of these factors, it can be said that this study’s methods have led to a unique contribution to the personality literature.

9.3.2 Contributions to the personality literature.

The above section lends credence to this thesis’s personality findings. Given this, it is now possible to have a useful discussion about what the results mean for personality theory.

In general terms, the thesis confirms that traits do indeed predict performance at the senior-executive level, as asserted by Kirkpatrick and Locke (1991), and R. Hogan and colleagues (R. Hogan, 1994; R. Hogan, Curphy & Hogan, 1994). More specifically, this thesis has shown that two traits, ambition and adjustment, predict senior executive performance, but they do so in different ways. Adjustment predicts whether an executive’s subordinates are likely to be satisfied and committed to the organisation, and this relationship
is wholly mediated by the executive’s relationship-building behaviours. Ambition, on the other hand, predicts the extent to which an executive achieves their objectives.

To add to the complexity, the findings showed that each trait – ambition and adjustment – provides a better prediction when only specific facets are used rather than the whole trait. This is in line with discussions presented by Hough and Oswald (2005), who argued that researchers should give due consideration to using the right ‘taxons’ (i.e., combinations of facets) as predictors in correlational research, and that the big-five personality traits are not necessarily the most effective way of building personality predictors. This thesis’s findings about the importance of specific facets at the executive level is an original contribution to the personality literature.

**9.3.3 Ambition and adjustment as predictors of executive performance.**

The traits of ambition and adjustment can be discussed further. Firstly, adjustment is the HPI’s conceptualisation of the five-factor model (FFM) trait of emotional stability (the converse of neuroticism). Findings showed that adjustment only predicted performance when certain facets were used. The facets that were predictive were those that reflect emotional expression (calmness, even-tempered, anxiety), that is, the kinds of emotions that subordinates would see. In this case, visible emotionality seems to predict an executive’s level of relationship-building skill in the workplace. This finding supports the ideas of Schaubroeck, Walumbwa, Ganster, and Kepes (2007) and Lim and Ployhart (2003), who argued that leaders who displayed greater levels of negative emotion at work were likely to have less satisfied subordinates.

As for ambition, the findings relating to this trait shed further light on how the FFM trait of extraversion should be used by personality researchers. In the HPI, extraversion is split into two separate traits: ambition and sociability. This thesis showed that only the
ambition component of extraversion is predictive for executives (sociability is not)\textsuperscript{24}. This validates J. Hogan and Holland’s (2003) suggestion that within the broad trait of extraversion, the ambition and sociability sub-traits have different predictive implications for different workplace outcomes (and different roles). To delve further, this thesis showed that the facets of leadership and competitiveness combined provided a significant predictive validity, whereas using ambition as a whole did not. Therefore, Hough and Oswald’s (2005) call for more facet-based research appears to be a useful strategy.

Continuing with the theme of extraversion, the thesis helps to clarify why previous meta-analyses have produced mixed results for extraversion. For example, Salgado (1997) only found an estimated true validity of 0.05 between extraversion and managerial job performance, whereas other meta-analyses (Barrick & Mount, 1991; Barrick, Mount, & Judge, 2001; Hurtz & Donovan, 2000) found that extraversion predicted managerial performance, with estimated true validity coefficients ranging from 0.12 to 0.25. This thesis lends support to the idea that the mixed results could be due to researchers combining sociability and ambition to measure extraversion. This would be especially problematic for roles where ambition is more important than sociability, such as an executive role. It is argued here that researchers should separate ambition from sociability in predictive validity studies.

\textbf{9.3.4 Does conscientiousness predict executive performance?}

Chapter 4 speculated on whether conscientiousness is likely to predict performance at the senior-executive level. After all, conscientiousness is the strongest personality predictor of managerial performance (Barrick & Mount, 1991; J. Hogan & Holland, 2003; Hurtz &

\textsuperscript{24} R. Hogan and Hogan (1997) divide extraversion into two separate traits: ambition and sociability. This has a theoretical basis and is reflected in the ‘Hogan Personality Inventory’. 

Donovan, 2000; Salgado, 1997; Tett, Jackson, & Rothstein, 1991). However, it is questionable whether the same would be true of senior executive roles.

Indeed, chapter 4 argued that the composition of the HPI conscientiousness measure (‘prudence’) did not have elements that would be related to drive or relationship-building at the executive level, instead comprising facets such as ‘orderly’ and ‘dependability’. The chapter speculated that conscientiousness would not predict executive performance. This was in fact confirmed in the results chapter: conscientiousness did not predict senior executive performance (see section 8.5.2).

This finding should be viewed with caution, because it appears that conscientiousness has different conceptualisations amongst different psychometric tools. Most importantly, in the HPI, conscientiousness does not include achievement-orientation, whereas in the ‘Revised NEO Personality Inventory’ (NEO-PI-R; Costa & McCrae, 1991), it does. Some researchers believe that conscientiousness is a motivation-type trait (e.g., Dudley, Orvis, Lebiecki, & Cortina, 2006), reflecting the ‘will’ to perform, whereas other researchers (such as R. Hogan & Hogan, 1997) present conscientiousness as more about being orderly, rigid and dutiful than driven. Whether the HPI’s ‘prudence’ trait is representative of the FFM trait of conscientiousness is not clear. Further research needs to be done to clarify what ‘conscientiousness’ is and whether – or how – it plays a role at the senior-executive level.

Intuitively, conscientiousness could be a ‘two-edged sword’ at the senior-executive level. The time-management and fastidiousness required to manage a large team’s issues, and ensure that work is completed on time requires a reasonable level of conscientiousness. On the other hand, the creative, strategic-thinking, and the change-embracing flexibility that intuitively is required at the senior-executive level could be constrained by high levels of conscientiousness. Ultimately, though, conscientiousness simply did not feature in the
qualitative management studies by Kaplan (1991) and Kotter (1982). Considering that Kaplan’s study in particular involved developing a grounded theory of executive performance (i.e., using observed data to build a theory from scratch), it seems likely that conscientiousness is not a key differentiator that predicts whether an executive is likely to be a top performer.

9.3.5 Cognitive ability as a predictor of executive performance.

This thesis has shown no relationship between cognitive ability, as measured by the HBRI, and performance. This was surprising, given Schmidt and Hunter’s (1998) finding that cognitive ability produces increasingly strong predictive validities as roles become more complex, not to mention Bentz’s (1985) findings that cognitive ability is the best single predictor of senior executive performance, and R. Hogan, Barrett, and Hogan’s (2007) validation research that supports the predictive validity of their tool, the ‘Hogan Business Reasoning Inventory’ (HBRI). Indeed, Chapter 5 of this thesis argued that cognitive ability would be important; not only because it contributes to the acquisition of functional and technical expertise, but also because it contributes to competence-based respect (R. Hogan, 2007). Therefore, how should this mismatch between expectation and reality be interpreted?

The conclusion here is that there is a measurement issue, though this may not be avoidable. There was a clear homogeneity of scores, and strong skew amongst the executives’ cognitive ability scores, with most executives displaying extremely high cognitive ability scores (see chapter 7). This is not surprising, given that individuals with higher cognitive ability seek more complex work (Boxall & Purcell, 2008), and those who reach executive positions are therefore particularly likely to have high cognitive ability.

Beyond that, the cognitive ability test was not administered under test conditions, and so there was no way of controlling whether executives were using calculators or taking the
test seriously. In addition, the HBRI is a newer tool than other standard cognitive ability tests such as the ‘Watson-Glaser Cognitive Ability Test’ (Watson & Glaser, 2002). Its validity has not been widely supported by research, although initial validity research has been conducted by R. Hogan, Barrett, and Hogan (2007), and the predictive validities reported are lower than Schmidt and Hunter’s (1998). All that can be concluded here is that the results surrounding cognitive ability should be interpreted with caution.

Consider the following, though, as an alternative. If cognitive ability is inevitably high amongst senior executives, it may not be relevant whether it predicts performance. Perhaps cognitive ability simply is not the differentiating factor at the senior-executive level, and perhaps personality is. This is certainly in line with the derailment literature, which argues that executive failure tends to be caused by personality issues rather than a lack of cognitive ability (McCall & Lombardo, 1983; Van Velsor & Leslie, 1995). It would be worth undertaking further research, using more well-established measures of cognitive ability, to confirm whether cognitive ability predicts executive performance. However, perhaps homogeneity of scores is an inevitable fact at this level.

Further research could explore whether there is a threshold level of cognitive ability required. Beyond a set threshold, perhaps there is no linear correlation between cognitive ability and performance. As a next step, it would therefore be worth dividing the executive sample into those with low cognitive ability (perhaps those scoring below the 25\textsuperscript{th} percentile on the HBRI), and those with high cognitive ability (those scoring above the 25\textsuperscript{th} percentile), and conducting a t-test of achievement of objectives to explore whether the two groups differ in their performance. Perhaps, then, practitioners would know to watch out for a threshold level of cognitive ability, and be wary of hiring any executives who display extremely low cognitive ability scores.
9.3.6 Reward and experience as predictors of executive performance.

Although the above findings about cognitive ability and personality are revealing, this study showed that two non-personality factors were in fact stronger predictors of executive performance. These were (a) the executive’s years of experience, and (b) the executive’s level of perceived reward.

9.3.6.1 Years of experience.

Years of experience predicted subordinate outcomes (i.e., executives’ subordinates’ job satisfaction, organisational commitment, and intentions to remain with the organisation). This was wholly mediated by subordinates’ perceptions of the executive’s level of expertise. Broadly, it can be concluded, from this, that an executive’s level of work experience is a stronger predictor than their personality.

This finding actually contradicts Schmidt and Hunter’s (1998) findings that work experience is not the biggest predictor of performance, with a predictive validity of only 0.18, which is lower than the predictive validity of the key personality predictors. However, what Schmidt and Hunter did not do was explore the processes through which work experience affect performance, and furthermore they did not explore different facets of performance. In this case, the lack of detail in their meta-analysis covered up some of the nuances around performance processes. The present study has in fact shown that years of experience predict performance via the variables of subordinate-rated expertise, and in turn subordinate outcomes (satisfaction, commitment, lack of turnover intentions). Perhaps years of experience simply means that an executive will gain greater competence-based respect, which in turn will mean more committed and satisfied employees, and ultimately greater achievement of objectives. Some poetic license is being indulged in here, though, because of
course causality cannot be attributed to these correlations. The overall point is really that the study has uncovered nuances that Schmidt and Hunter’s (1998) study did not.

**9.3.6.1 Reward.**

In addition to years of experience, an executive’s level of perceived reward, in terms of their perceived remuneration and status, was a strong predictor of achievement of objectives. This supports the notion of reward practices serving as a powerful motivator. However, it is not possible to conclude that the reward is causing higher performance. It could equally be that the high performance (achievement of objectives) causes executives to receive greater rewards. Similarly, high-performing executives may simply be more positive and likely to hold more positive perceptions of their organisation’s reward practices. Only longitudinal research can reveal the causal nature of this relationship, but at least this thesis has shown that a correlation exists.

**9.3.7 Practitioner implications.**

To translate this into practitioner implications, what can be concluded is that the HPI traits of ambition and adjustment predict executive performance. This suggests that practitioners would be advised to look for high levels of competitiveness and leadership if they want to select or promote executives who are likely to achieve their objectives. Additionally, practitioners would be well-advised to assess an executive’s levels of adjustment during the selection process, particularly when seeking to select executives who are likely to display strong relationship-building skills and likely to foster a greater level of subordinate satisfaction and commitment, and ultimately retain subordinates.

Of course, these applications make premature causal assumptions, which is inappropriate given that these ideas have not been validated by other quantitative researchers.
and the causal directions are still not known. The point here is purely to illustrate how these findings could translate into practice.

It is somewhat more reasonable, however, to conclude that years of experience predict performance. Therefore, practitioners who select and promote senior executives should perhaps pay particular attention to years of experience, as more experienced executives appear to have more satisfied and committed staff. It could be that over the years, executives learn how to lead better and therefore foster positive attitudes and emotions amongst subordinates, and therefore years of experience means better leaders. Another explanation, though, is that subordinates perceive more experienced executives has having greater levels of expertise, and this is a factor that contributes to those subordinates’ job satisfaction and commitment. The model in Figure 8.2 supports the latter idea, because it shows that expertise mediates the link between years of experience and subordinate outcomes. In any case, the point here is that level of experience appears to be a useful selection criterion.

Most significantly, however, the findings raise the suggestion that reward is a more powerful predictor of performance than personality, and the results certainly hint at the idea of reward being a critical motivational tool for chief executives and/or boards who seek to enhance their executive team’s performance. This calls for further longitudinal research to explore the exact impact of different reward practices on executive performance. For now, all that can be said, from a practitioner point of view, is that investment in effective and impactful rewards for top-level executives (in terms of money and status) appears to be a worthwhile pursuit. Again, though, the causal direction of the reward-performance linkage is simply not known, and therefore at this point it would be unwise to draw firm practitioner-oriented conclusions.
9.4 What is Senior Executive Performance?

We now turn to a different aspect of the discussion – that of how to operationalise executive performance. A wide body of literature addresses performance measurement and executive behaviour, but this literature has not previously been pulled together into a comprehensive view of the executive performance domain. The thesis had to address the performance part of the research question and its results inevitably shed light on the executive performance measurement problem. This is why this section forms an important part of the discussion.

The thesis started out by arguing that Motowidlo, Borman, and Schmit’s (1997) task and contextual performance concepts should underpin the measurement of executive performance. The results supported this, with structural equation models showing that task and contextual performance were two distinct performance outcomes that could be applied to the senior executive context. Task performance in this case was operationalised as how well the executive achieved their objectives, while contextual performance was operationalised as the executive’s subordinates’ job satisfaction, commitment, and intentions to remain with the organisation. This study ultimately showed that task and contextual performance were predicted by different personality traits: ambition predicting task performance, and adjustment predicting contextual performance.

This use of the task and contextual dichotomy in personality-performance research has also been proposed by Oh and Berry (2009) who found that personality had differential relationships with the two types of performance amongst middle managers. This thesis validates Oh and Berry’s findings, but goes one step further in demonstrating that the same is true at the senior-executive level, as well as middle management level. It can now be concluded that the task-contextual distinction is a useful dichotomy for senior executives, and indeed should be used by future quantitative researchers of executive performance.
That said, further research must be done to clarify exactly what behaviours reflect contextual and task performance at the senior-executive level. This wasn’t the explicit aim here, but the thesis did show that relationship-building behaviours predict contextual performance and are a critical aspect of senior executive behaviour. Next, it would be worth conducting further job analysis research to clarify, in addition, how task performance manifests itself in specific senior executive behaviours, and whether those behaviours lead to task performance outcomes, that is, the achievement of objectives.

9.4.1 Relationship-building behaviours.

A key theme that emerged from this thesis was that relationship-building behaviours are critical to executive effectiveness. To frame this within the above section’s context, relationship-building behaviours can be viewed as a manifestation of contextual performance at the senior-executive level. Contextual performance reflects how well an employee contributes to the organisation’s social climate, thus enabling the organisation to produce its goods and services as effectively as possible. At the executive level, this would be manifested in terms of the quality of the relationships that executives build with their peers and subordinates. Indeed, Kaplan (1991) and Kotter (1982) argued, based on rigorous qualitative research, that an executive’s relationship-building skills are a critical aspect of their performance, and that without these skills an executive simply will not achieve their objectives to an optimal level because their subordinates will not be happy and motivated.

What this thesis added was quantitative support for that assertion, showing that relationship-building behaviours did predict subordinate outcomes, which in turn predicted the achievement of objectives.

Until now, research has not provided quantitative evidence to support Kaplan (1991) and Kotter’s (1982) qualitative findings specifically. Admittedly, Lombardo, Ruderman, and
McCauley (1988) conducted a study that showed that relationship-building predicted ‘overall job performance’, but in that study both relationship-building and overall job performance were rated by the same rater, and therefore subject to common-method bias. This thesis improved on this by controlling for such bias using separate raters to measure different variables. Where this was not possible, the thesis used Podsakoff, Mackenzie, Lee, and Podsakoff’s (2003) techniques to control for common-method variance. With these tighter controls in place, the study still found that relationship-building skills predicted an executive’s achievement of objectives. The thesis has gone one step further, though, and has also shown that the link between relationship-building behaviours and achievement of objectives is wholly mediated by subordinate outcomes. In other words, relationship-building behaviours do not predict achievement of objectives directly – instead, they predict performance via the job satisfaction and commitment of the executive’s subordinates.

One interpretation here is that if an executive has strong relationship-building skills, they are more likely to have a satisfied team, which in turn will lead to the greater achievement of objectives. Unfortunately, however, one can’t draw causal conclusions from a concurrent validity study like this. For example, it could be that achievement of objectives results in happier staff. Equally, it is possible that happier staff may perceive everything in a positive light, and therefore may be more inclined to rate their executive’s relationship-building skills positively. To understand the causal nature of this relationship, one would need to conduct a longitudinal study to understand which factors precede each other. However, previous studies (Kaplan, 1991; Kotter, 1982) certainly suggest a causal relationship, that is, that relationship-building results in satisfied subordinates.
9.4.2 Further analysis of subordinate outcomes.

What is of particular interest here is that subordinate outcomes predicted the achievement of objectives, despite the fact that these measures came from different sources (i.e., subordinates provided subordinate outcomes, whereas superiors rated the achievement of the executives’ objectives). The removal of common-method variance discussed in section 9.4.1 above was a strong feature of the present study, lending additional credence to these findings.

One could speculate that the subordinate outcomes here are similar to the concept of subordinate engagement, which is defined as the extent to which a subordinate invests his/her complete self into a role, in terms of physical energy, emotional energy and cognitive attitudes (Rich, LePine, & Crawford, 2010). If so, these findings support the idea that team engagement could be an important factor in an executive’s achievement of objectives. That said, only two subordinates were used to provide subordinate outcomes, and therefore one cannot truly label these outcomes ‘team engagement’ (Ostroff, 1993). In truth, this relationship needs further exploration before causal inferences can be drawn, and the best way to do this would be to use longitudinal research combined with qualitative methods to gain a thorough understanding of the link between subordinate engagement and achievement of objectives.

This study also showed that the executive’s level of expertise, as rated by one of their subordinates, predicted the satisfaction, commitment and intention to remain with the organisation on the part of other subordinates within the team. This lends support to R. Hogan’s (2007) idea that competence-based respect predicts a leader’s effectiveness. The suggestion here is that this occurs by competence-based respect influencing subordinates’ satisfaction and commitment, which in turn influence achievement of objectives. Consider, though, the causal alternative: that satisfied employees are likely to rate everything more
positively, including their superior’s levels of expertise. Again, further research is needed to clarify the causal direction. What this thesis has done has simply uncovered a relationship that now needs to be explored in more depth.

9.4.3 Wider views of performance.

Stepping back now, and thinking about job performance in wider terms, there are two areas that could have been added to the performance domain. Firstly, this thesis could have benefited from addressing the notion of adaptive performance proposed by Pulakos, Arad, Donovan, and Plamondon (2000). Pulakos et al. suggested that certain aspects of job performance are not covered by the task and contextual categories, noting that several research efforts have called for an expansion of the performance domain to incorporate task, contextual and adaptive performance. The omission of adaptive performance from this thesis is a limitation of the study.

Broadly, adaptive performance reflects the extent to which an employee adapts to new and varied situations at work. Pulakos et al. (2000) found that in some roles adaptive performance accounts for up to 25% of job performance that is not covered by task or contextual performance. This depends on the type of job, with higher level professional or managerial jobs tending to have higher adaptive requirements than other jobs.

Adaptability is undoubtedly a feature of the executive function. Today’s organisations must operate in a rapidly changing external environment, characterised by globalisation and changes in technology. This very environment poses enormous challenges for executives, firstly because they have to tackle the adaptive challenges that organisations face at a wider level, clarifying vision and making the right decisions about how to set an organisation’s course for change (Drucker, 1966, 2004); but, secondly, because they also have to mobilise people throughout the organisation to do adaptive work and adapt to the
organisation’s changing course (Heifetz & Laurie, 2001). Kotter (2001) supported this important aspect of executive work, arguing that organisational leadership is characterised by the requirement to cope with change, and stating that the business world has become more competitive, requiring organisations to have flexibility and agility not only to survive but also to compete. The adaptive aspect of executive work makes sense. It does not appear to be as prevalent in the literature as the task-contextual dichotomy, but it is nonetheless an important element of executive performance.

A direction for further research would be to clarify what adaptive performance looks like at the senior-executive level, both in terms of behaviours and performance outcomes, and then to replicate this study exploring the personality predictors of adaptive performance. The concept of adaptive performance does not necessarily link with approach motivation and avoidance motivation, but could be of interest in wider personality terms. It could even be possible that low conscientiousness, with its characteristics of creativity and change embracesness, could predict adaptive performance.

Secondly, it is worth saying that toxic or destructive leadership behaviours should ideally have been measured more directly here, although this is a difficult area. In this thesis, destructive leadership behaviour was operationalised as being equal to low contextual performance behaviours (i.e., low relationship-building skills), and low subordinate outcomes (i.e., lack of job satisfaction, low organisational commitment, and high intention to leave on the part of executives’ direct reports). This was sufficient for this thesis’s purposes. However, a more valid measure of destructive leadership would have involved asking subordinates directly whether the executive displays specific toxic leadership behaviours.

The decision was made not to ask such questions for ethics reasons, and because it may have deterred executives from participating in the study. However, it is possible that
those kinds of questions could be tied into a more long-term, longitudinal exploration of the career paths of graduate employees, much like the long-term study from AT&T that was conducted by Bray, Campbell, and Grant (1974), and the long-term study of Sears that was conducted by Bentz (1985). Unfortunately, those studies were conducted prior to the publication of literature on toxic and destructive leadership, but the point here is that a long-term longitudinal study could feasibly incorporate those kinds of measures without being perceived as too intrusive.

Some researchers (e.g., Diefendorff & Mehta, 2007; Jackson et al., 2009) have treated dysfunctional or counterproductive behaviours and outcomes as separate to functional outcomes, and some have gone as far as to argue that destructive or deviant behaviour is very much a separate construct to task and contextual performance (Rotundo & Sackett, 2002). It would certainly be useful, therefore, to conduct a more direct investigation of the predictors of counterproductive senior executive behaviours specifically, and an exploration of what those behaviours look like at the senior-executive level as opposed to lower levels of the organisation.

To summarise this section, it can be concluded that task and contextual performance should be differentiated in the executive context. In addition, relationship-building behaviours are an important element of executive performance, and do predict subordinate outcomes, and in turn achievement of objectives. Added to this is the finding that ‘task’ performance outcomes (achievement of objectives) and ‘contextual’ performance outcomes (subordinate satisfaction, commitment and lack of turnover intention) are related to one another while remaining separate constructs. The conclusion here is that task and contextual performance are applicable to the executive level just like any other level. Further research, however, can be done to explore the predictors of adaptive performance and destructive leadership.
9.4.4 Practitioner implications.

An academic conceptualisation of senior executive performance can be translated into performance management practices for top-level executives, and specifically could be used to design measures of executive performance. Organisations use measurement practices for the purposes of distributing rewards, appraising performance, giving performance feedback, communicating expectations, and identifying areas for executive development. With these functions in mind, let us consider what this section’s results can tell us in terms of practitioner implications.

We know now that contextual performance and task performance are both important facets of executive performance. Therefore, any executive performance appraisal process would ideally incorporate both task and contextual measures. Furthermore, it is worth measuring senior executive behaviour as well as performance outcomes, in line with the advice of Campbell, McCloy, Oppler, and Sager (1993), who pointed out that an employee is never fully in control of results, but can control behaviour. That said, senior executive results are of prime interest to an organisation, and it is these results that really and truly epitomise the executive’s performance (Merchant, 2006). Therefore, a combination of behaviours and performance outcomes would be a sensible way of measuring and assessing executive performance in an organisational setting (i.e., for reward purposes, appraisal purposes, or leadership development purposes). Ideally, a set of executive measures would include relationship-building behaviours, since these behaviours have been shown to predict the job satisfaction and organisational commitment of the executive’s subordinates.

In addition to measurement, the results hold implications for leadership development. For example, it is not uncommon for executives to use 360-degree feedback to identify areas of personal development and, in light of this study’s findings, it would be valuable for executives to monitor the satisfaction and commitment of their team, and their own
relationship-building behaviours, as part of this feedback process. This feedback would be collected in the knowledge that contextual performance factors (i.e., subordinate outcomes) are an important predictor of whether that executive will achieve their objectives.

However, this thesis also shows that personality is a predictor of both task and contextual performance. Therefore, development practices could be viewed as having limited utility – after all, it could be difficult to change a person’s level of ambition or adjustment since personality is such a stable feature of a person’s psychological make-up (Matthews, Deary, & Whiteman, 2003). Ultimately, the fact that personality predicts both task and contextual performance suggests that it would be useful for boards or chief executives to focus on recruiting and selecting executives who have high levels of ambition (specifically, competitiveness and leadership), and reasonably high levels of adjustment, so that they do not have to face the challenge of attempting to develop these rather ingrained personality-based behaviours.

The very facts that ambition and adjustment predict performance suggest that these characteristics might underpin skills that are not malleable at the executive level, that is relationship-building, or ‘people skills’, and also the intense drive for results that Kaplan (1991) argues is so necessary at this level. How easy is it to acquire these skills through training and development? On the other hand, the fact that years of experience are the strongest predictor hints at the idea that executive performance is very much acquired – that learning opportunities gathered over a lifetime career provide an executive with the skills they need to lead a team towards the achievement of objectives.

This thesis has not provided answers about the relative malleability of certain executive skills, but overall a key message for practitioners is that they would benefit from hiring on the basis of adjustment, ambition, and experience. They would also be well-
advised to collect structured reference checks of relationship-building behaviours, and if promoting from within it would be useful to collect measures of subordinate outcomes prior to making promotion decisions. After all, these are the factors that predict the ultimate goal of interest – achievement of objectives.

9.5 General Limitations of the Study and Areas for Further Research

With the various theoretical stories, methodological issues, and practitioner implications covered, this chapter will now draw to a close by discussing some general limitations of the study and areas for further research.

The previous sections have touched on various limitations of the study, but there are some general comments to be made in this regard. On a positive note, the research design was robust, given that common-method bias was eliminated, all raters had worked with the executive for one year or more, and answers were as honest as possible because raters knew that the executives would not see their ratings. In addition, the study was designed to improve on previous personality research in a number of different ways, as discussed earlier in the chapter (section 9.3).

Despite this, there were some factors that were difficult to address. The first was the voluntary nature of participation. For the most part, participants for this study came from organisations where the chief executive had endorsed the project. Nevertheless, only approximately 50% of executives from those organisations chose to take part. Anecdotal feedback from the chief executives suggested that the better executives chose to take part, and that the ‘problem’ executives did not. It is quite possible that, on the whole, ‘underperformers’ tended to avoid the project.

For those executives who were contacted by mail-out, resulting in a participation rate of about 18%, the same would presumably be true. This study involved asking executives to
be rated on their performance, and presumably only those who were confident of their performance, self-aware enough, or altruistic enough to allow that rating to occur would choose to take part. In other words, there may be a participation bias here, and it is possible that the study includes more effective executives than ineffective executives.

However, the distributions for the achievement of objectives and competency variables were normally distributed, with no apparent kurtosis, suggesting that the sample contained an adequate mix of performers. Nonetheless, it is still possible that this study distinguishes between top performers and average performers, rather than distinguishing between underperformers and star performers.

Secondly, the study would have benefited from a longitudinal rather than concurrent validity approach. This is evidenced by this chapter’s repeated call for further longitudinal research to confirm the various causal assumptions that underpin the thesis’s hypotheses. What this thesis has served to do is highlight significant correlations, confirm the existence of mediating relationships, and refute the existence of moderating relationships. This is undoubtedly a useful contribution. However, longitudinal research using the same variables and sample characteristics is now a critical next step. In addition, further qualitative research could be used to support the quantitative findings that this thesis has highlighted. This kind of longitudinal or qualitative research would need to be conducted over a period of several years, particularly given that the performance horizon against which executives operate can span several years (Merchant, 2006). A longitudinal study was beyond the scope of this thesis, but in reality this is what was needed to answer the research question as fully as possible. This is an obvious next step for executive leadership research.

Thirdly, missing data were an inevitable part of this study, and it is worth noting that multiple imputation could have been applied to this data-set as part of the analysis, in order to
address the missing data (Schafer, 1999, Schafer & Olsen, 1998). Ultimately, this issue was adequately resolved in chapter 7, by use of AMOS’ FIML, and multiple imputation was considered beyond the scope of the thesis. However, it would have been a worthwhile step to have included.

Fourthly, the performance domain could be expanded to include other executive behaviours of interest. This thesis explored a set of core performance variables that were deemed most appropriate in the executive performance literature, when generalising to all executive roles (see chapter 2). However, further work can, and should, be done to explore the BIS and BAS dimensions in relation to other executive behaviours and outcomes, such as risk-taking behaviours.

Finally, all structural equation models should be validated using an additional sample (Schumacker & Lomax, 2004), and that is indeed a key area for further research. Given the number of senior executives required for this study, it was simply not possible to re-run the study within the time-frame of a doctoral thesis, or to split the sample for the purposes of validation. Therefore, this is noted as an important next step for further research.

9.6 Conclusion

In summary, the best way to close this chapter is to revisit the three areas of theory in light of the full and final discussion. With this in mind, let us consider first and foremost whether approach and avoidance motivation, and more specifically Jeffrey Gray’s reinforcement sensitivity theory, predict senior executive performance (Gray, 1972a, 1972b, 1982; Gray & McNaughton, 2000). The conclusion here can only be that the answer is still unclear. Carver and White’s (1994) ‘BIS/BAS Scales’ did not predict senior executive performance, but it remains possible that recently developed measures of RST’s dimensions may
eventually prove to predict such performance. Further research needs to be done using a variety of approach and avoidance measures, including the most recently developed tools.

Secondly, the thesis discussed the role of personality at the senior-executive level. This is where the biggest contribution lay, ultimately, because the research design provided a novel view of personality and work outcomes at the senior-executive level specifically. From this study, it was clear that two personality traits do predict senior executive performance, these being ambition and adjustment (emotional stability). In reality, though, these traits were only predictive when certain facets were used. In addition, each trait predicted specific aspects of senior executive performance – adjustment predicted contextual performance, while ambition predicted task performance. In answer to the question of whether mainstream personality traits are superior predictors to RST’s dimensions, the answer here would have to be ‘yes’ – until further research proves otherwise.

In terms of personality theory, this thesis provided strong support for the socioanalytic theory of personality. That theory is not inconsistent in principle with RST’s ideas, as it has an evolutionary basis and was built on the concepts of human motives and drives. Nevertheless, it is ultimately different to RST because it does not have a neurobiological basis.

The final area considered what senior executive performance is, and how it should be measured. The thesis provided an original contribution to that topic in that it demonstrated that quantitative researchers should distinguish between task and contextual performance outcomes when designing top-level executive research. In addition, when measuring executive performance, it would be wise to incorporate relationship-building behaviours as an important aspect of performance, because these behaviours appear to predict performance outcomes.
To conclude the chapter, let us revisit the research question of whether reinforcement sensitivity theory predicts senior executive performance. Put simply, I am not sure, but I know that personality in wider terms does. If chief executives, human resource practitioners, or boards want to predict early on whether someone will be a top-performing executive, they would be well-advised to use psychometric measures during selection, and monitor that person’s relationship-building behaviours and subordinate engagement prior to promotion, or use structured reference checks to collect these data. This is as much as can be concluded from this particular study. There is plenty more to do in this area, and the topic of personality and senior executive performance is ripe for further research in many different ways.
Chapter 10

Conclusion

Overall, this thesis has addressed the question of what predicts senior executive performance. To answer that question, the predictive role of personality was explored, with a particular focus on the reinforcement sensitivity theory of personality (Gray, 1972a, 1972b, 1982; Gray & McNaughton, 2000).

The thesis used various strands of literature to develop hypotheses around the research question. This included an exploration of management and psychologist definitions of job performance (chapter 2), a discussion of personality theory and its implications for workplace outcomes (chapter 4), an overview of the experimental research on reinforcement sensitivity theory, wider neurobiological approaches to personality, and their place in the field of industrial/organisational psychology (chapter 3) and, finally, a review of the management literature on what makes an effective executive. Elements of the literature were woven together to form a proposed model of senior executive performance in Figure 5.1 of chapter 5.

With the model in place, a study of 189 senior executives from Australia and New Zealand was conducted. These were top-level executives: chief executives, heads of marketing, heads of human resources, chief financial officers and others of a similar level. The executives took a battery of psychometric measures, which included Hogan personality and cognitive ability measures (R. Hogan, Barrett, & Hogan, 2007; R. Hogan & Hogan, 1997), and Carver and White’s (1994) ‘BIS/BAS Scales’. The executives then underwent a set of performance measures, collected using multi-source ratings. The performance domain was carefully constructed to include task and contextual performance elements, in line with Motowidlo, Borman, and Schmit’s (1997) work, and to address performance in terms of
behaviours and outcomes, thus combining Campbell, McCloy, Oppler, and Sager’s (1993) and Merchant’s (2006) respective views of job performance. Various hypothesised relationships between predictors, behaviours, and outcomes were then tested using structural equation modelling.

The contributions of this research were two-fold. Firstly, the thesis focused purely on top-level executives, thus filling a gap in the literature on personality and performance at a senior level. Not many personality researchers have tackled senior executives as a distinct group, and the studies that do exist either conducted their research prior to contemporary advances in personality theory (e.g., Bentz, 1985), grouped executives and middle managers together (e.g., J. Hogan, Hogan, & Murtha, 1992; Judge, Ilies, Bono, & Gerhardt, 2002), or did not measure the performance domain as directly and comprehensively as they could have done (e.g., McClelland & Boyatzis, 1982; Nicholson, 1998).

Secondly, the thesis addressed the question of how reinforcement sensitivity theory (RST) operates in the workplace, which is a newly emerging area (Furnham & Jackson, 2008). Only recently have researchers started to explore the relevance of RST, and its dimensions of approach motivation and avoidance motivation, to workplace issues (e.g., Diefendorff & Mehta, 2007; Furnham & Jackson, 2008; Van der Linden, Taris, Beckers, & Kindt, 2007). Despite these efforts, it seems that published research is not available at the executive level, and this thesis therefore provides a unique contribution by exploring RST at the most senior level of the workforce. In wider terms, it was also anticipated that this would help bridge the areas of neuroscience and management, which in itself is an interesting and emerging area of inquiry (Shane, 2010).

The study had some limitations, in that participation was voluntary and therefore some response bias was inevitable. Furthermore, the study would certainly have benefited
from a longitudinal research design rather than the concurrent validity design that was necessary in the given time frame. In addition, further work on this data-set can, and will, be done to validate the models using multiple imputation to address the fact that the sample did have missing data. Nevertheless, despite these limitations, a range of performance scores was evident, and the study certainly produced findings that were of interest and value. The key points from the study are now summarised below.

10.1 What Predicts Senior Executive Performance?

To conclude this thesis, let us revisit the question of whether RST does predict and explain senior executive performance. The discussion in chapter 9 aimed to give a full and considered answer to that question, but for the purposes of this conclusion it can be said that the thesis provides preliminary support that RST’s dimensions do not predict senior executive performance, at least when measured using Carver and White’s (1994) scales. This in turn weakens the speculations around the impact of neurobiological personality traits on performance outcomes, which had previously seemed a promising line of inquiry (Elliot & Thrash, 2002; Furnham & Jackson, 2008; Hutchison, Burch, & Boxall, 2008).

It was possible that these relationships were non-existent or weak because of the presence of curvilinearity, or that interactions between approach or avoidance motivation and other factors weakened an otherwise strong link between RST’s dimensions and performance. However, the thesis addressed this by incorporating these possibilities into the structural equation models (see chapter 8). These models showed that there were no curvilinear relationships between approach and avoidance motivation and performance, nor were any of the hypothesised interactions predictive of performance. Therefore, one can be reasonably confident that approach and avoidance motivation, as measured using Carver and White’s (1994) scales, do not predict performance.
Before dismissing RST altogether though, one should consider the finding that ambitious executives (as measured by R. Hogan and Hogan’s, 1997, ‘Hogan Personality Inventory’) were statistically more likely to achieve their objectives, if ambition is measured using the leadership and competitiveness facets of the trait. Chapter 9 argued that these facets are aligned conceptually with the approach motivation construct, and could be viewed as indicative of approach motivation if one takes the view that approach motivation is synonymous with extraversion (Pickering & Smillie, 2008). That said, there is still lack of consensus about the composition of extraversion (J. Hogan & Holland, 2003) and it could be argued that Eysenckian measures of extraversion are more suitable ways of measuring approach motivation than R. Hogan and Hogan’s (1997) approach, given that RST has its roots in Eysenckian ideas (Corr, 2004). In any case, despite the controversy, it is possible that approach motivation does predict performance if measured using socioanalytic extraversion measures, and it is argued that the HPI’s leadership and competitiveness facets provide a relevant way of measuring drive. Not all researchers would necessarily agree with this view, though, and chapter 9 states that further work needs to be done to test whether other psychometric tools find a predictive relationship between approach motivation and performance.

As for avoidance motivation, this trait was found not to predict performance, and so instead the thesis explored whether the personality trait emotional stability (or, reflected, neuroticism) would predict aspects of performance. Emotional stability is a different concept to avoidance motivation, but there were theoretical reasons why it would be predictive, as outlined in chapters 5 and 9, and these reasons centered around the impacts of negative emotions on subordinates and peers. The results were affirmative, showing that less stable executives were likely to display worse relationship-building behaviours. This in turn predicted lower satisfaction and commitment of their subordinates; and ultimately predicted a
lower achievement of objectives. In other words, neurotic executives have lower job performance in various ways, and the results support the idea that neuroticism sets off a chain of influences; although, of course, one cannot be sure of the causal direction due to the concurrent validity design of this study. The theme here is that emotionality (as a trait, but perhaps also a state) matters at the executive level, but avoidance motivation seems not to.

Overall, the results showed that personality does predict executive performance, to an extent. Beyond this, though, the thesis did not confirm whether neurobiological perspectives of personality are useful at the executive level. A key question here was whether executive drive has a biological basis, (i.e., whether it is ‘hardwired’), and this study has not provided support for that possibility. While the ambition trait suggests that certain executives are naturally more driven than others, and this translates into performance variance, it remains unclear where that drive comes from. The antecedents and determinants of motivation are a complex minefield (Locke & Latham, 2004), and although it is known that executives are more driven than others (Kaplan, 1991), it is not clear why. It remains unclear whether motivation is more a product of the employer’s actions, the employee’s personality, or a complex mix of these and other factors, although the latter seems intuitively the most likely.

10.2 This Thesis’s Contribution to the Field of Management

Despite the lack of clarity around the neurobiological basis of drive, this thesis has contributed to the management literature in other ways. The senior executive team is important to an organisation (Hambrick, 2007), and it would be useful for any chief executive or board of directors to be able to predict during the selection or promotion process whether a person will be effective if placed in an executive role. However, others may argue that a ‘cookie-cutter’ answer to this question is simply not possible, and in reality the prediction of executive performance is unattainable.
Certainly, the picture of executive performance is nuanced. This is clear from chapters 8 and 9. However, a moderate amount of predictive power did emerge from this thesis, and certain personality traits were of proven importance, along with other factors such as the executives’ levels of perceived reward, and years of professional experience. Using these results, practitioners can be confident that it is worth using psychometric assessments at the executive level, as long as they do so in an informed way. For example, practitioners can be confident that if a candidate is high in ambition they are likely to achieve better results. However, equally, candidates need a good dose of emotional stability so that they will build constructive relationships within and outside of the organisation. This is entirely in line with the qualitative management research (Kaplan, 1991; Kotter, 1982), but what this thesis has done is translate those ideas from qualitative themes into psychometric findings. One should still bear in mind, however, that the psychometric predictors only explain a small amount of the overall variance of executive performance, so psychometric tools do need to be viewed in perspective.

Beyond psychometrics, the thesis suggests that an executive’s level of professional experience matters more than personality does, which is contrary to Schmidt and Hunter’s (1998) findings. The reason for this difference is that this thesis used more specific measures of the performance domain. What this study has shown is that the executive’s degree of experience matters because it predicts subordinates’ perceptions of executive competence, which in turn predict subordinate satisfaction and commitment. In this way, the thesis has contributed to the management literature by uncovering further nuances around executive performance – at least to the extent possible in a quantitative, concurrent-validity study. It now remains for these nuances and ideas to be explored further using longitudinal research and qualitative research to confirm causal directions.
While selection and promotion can be aided by psychometric predictors, one should not ignore the fact that the strongest performance predictor was in fact the executive’s perceived level of reward, raising the question of whether an organisation’s reward practices matter more than one might have realised at the executive level, and suggesting that it is equally important to invest in effective reward practices, rather than simply selecting and promoting the ‘right’ people into senior roles. Research certainly suggests that reward practices can motivate, if managed well (Guthrie, 2007; Lazear, 1999) and this study adds to that research, suggesting that reward is a key factor at the executive level. It must be noted that further research needs to be done to explore the causal direction between reward and performance in the executive context, but these initial findings encourage us to delve further into the workings of executive remuneration.

Finally, drawing this extensive piece of work to an end, one way to conclude is to state that this thesis has provided certain answers about senior executive performance prediction, but has raised more questions. Equally, though, it has provided a comprehensive, foundational study of the topic of reinforcement sensitivity theory at the senior-executive level, and this foundation can now be built upon. Alongside this, the thesis has provided an updated, contemporary view of personality and senior management performance, something that was much needed at this point to keep up with wider advances in personality theory. As such, the project made a significant contribution to more than one body of knowledge.

For now, it can be said that senior executive performance is an intriguing, nuanced, and complex phenomenon that requires a wide and deep exploration of different elements of literature, different research methods, and different approaches. While the focus here has been on neurobiology and quantitative techniques, this is simply one way of approaching the topic. Much more can be done to explore senior management performance prediction, and at this level of the organisation, research will always be an area of interest and value to the
business world. It is hoped that this study will be used as a foundation for further research on
the topic, and that the areas identified here will be explored in a variety of ways by future
researchers, to help provide further answers to the question of what predicts executive
performance.
Appendix A
Letter and Consent Form for Senior Executive Participants

Dear [Executive Name]

Personality and Senior Executive Performance

Participant Information Sheet

My name is Ann Hutchison. I am a PhD student at the University of Auckland Business School, researching the link between personality and senior executive performance.

You are invited to participate in my research, and I would very much appreciate any assistance you can offer. I need a large sample of senior executives to participate, and am approaching individuals from organisations across New Zealand and Australia. Participation is entirely voluntary.

What is involved?

1. You would be asked to complete questionnaire measures of personality, cognitive ability and motivation.

This survey will take about 90 minutes and will include three psychometric tools: The *Hogan Personality Inventory*, *Hogan Development Survey* and *Hogan Business Reasoning Inventory*.

These tools are used for leadership development, and the results can be useful for your own personal development. At the end of the survey, you will be able to download your results from each tool.
2. **You would be asked to nominate up to three direct reports, three peers and your boss (if appropriate); all of whom would be approached in confidence, and asked to rate several aspects of your performance.**

**What will happen to the information collected?**

All information collected will be treated as strictly confidential, and will not be shared with any other person or organisation including your own. I will also need to guarantee confidentiality to the raters (i.e., your boss, peers and direct reports), and will therefore be unable to share the information they provide with you.

The data will be stored anonymously on my computer database. To preserve anonymity, you would be given a participant number to use in completing the survey. A list of names and participant numbers will be stored separately from the personality and performance data, and will be locked in the University of Auckland’s Business School. Data will be stored securely for no longer than 6 years, at which point it will be completely deleted. Scores from the psychometric tests will also be stored anonymously by Hogan, but they will only have your login number, not your name. This is standard practice for anyone taking their assessments.

There are no foreseeable risks associated with any aspects of this research. You will have the right to withdraw from the research at any time.

I will ultimately provide you with a report of the conclusions of my research, based on data across participating organisations. It is also possible that I may publish my
conclusions in academic publications. In all cases, scores and statistics from the total sample of participants will be aggregated and described, done in a way that will not identify you as a source of data.

**How to Participate**

If you agree to participate, please complete the attached consent form and return it in the postage-paid envelope. You will then be sent a link to the survey.

Thank you very much for your help. If you have any queries or wish to know more, please telephone me on the number below. You are also welcome to call my supervisor or Head of Department.

**Principal Investigator:**

Ann Hutchison, Department of Management & International Business, The University of Auckland Business School. Tel: 09-522-0332 (home), Mobile: 021 209 6793  Email: a.hutchison@auckland.ac.nz

**Supervisor:**

Dr Giles Burch, Department of Management and International Business, The University of Auckland. Tel: 09-373-7599  Ext. 86792
Head of Department:
Professor Hugh Whittaker, Department of Management and International Business, The University of Auckland. Tel: 09-373-7599 Ext. 89826

This project is being funded by a Postgraduate Research Grant from the University of Auckland.

If you have any concerns of an ethical nature you can contact the Chair of the University of Auckland Human Participants Ethics Committee at 373-7599  Ext. 87830

Yours sincerely

Ann Hutchison

Doctoral Student

Department of Management and International Business

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE FOR THREE YEARS FROM FEBRUARY 2008: REF 2007/405
Participant Consent Form for Senior Executives

Researcher: Ann Hutchison

Title: Personality and Senior Executive Performance in Organisations

Please note: This consent form will be held for a period of six years.

I agree to take part in this research. I have been given and have understood an explanation of this research project, I have had an opportunity to ask questions and have them answered.

I understand that participation is entirely voluntary, and will involve me taking a 90-minute online survey of personality, motivation and ability, and nominating a number of individuals to confidentially rate my performance.

I understand that I will be guaranteed confidentiality in the information I provide; no information I provide will be shared with any other person or organisation, including my own.

I understand that the people who rate my performance will do so on an individual basis in complete confidence, and that their ratings will not be shared with anyone – including me or my employer.
I understand that all data will be stored anonymously on the researcher’s computer database, using a unique number for each participant. Participant names and unique numbers will be stored separately and securely.

I understand that I will be offered the opportunity to receive the results of my psychometric questionnaires.

I understand that I may withdraw any data at any time.

I understand that data may be used for future academic publication and will be held for a period of six years, after which point it will be destroyed. Any publication will describe statistics from the total sample of participants in aggregated format, and will not identify any individual or organisation as a source of data.

I have read the information given above, and agree to take part in the study.

Signed………………………………………………………
«First_name» «Surname»
Date…………………………………..

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE FOR THREE YEARS FROM FEBRUARY 2008 REF: 2007/405
Appendix B

Email Advertisement

I am looking for senior executives to participate in my doctoral research on whether personality predicts executive performance.

This involves:

**A 90-minute questionnaire**, consisting of various personality and reasoning assessments.

**Nominating several colleagues** to provide confidential 360-degree ratings of your performance (a 5-minute survey). Ideally, this will include your boss, a peer and a direct report. This data will be collected in strictest confidence and stored anonymously.

You will receive a **free personality and cognitive ability profile**, and you will go into a prize draw to **win an Air New Zealand Boutique Mystery Break** for two people (drawn on [Date])

*Your participation in this research will be confidential and the data will be handled and stored anonymously.*

**APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE FOR THREE YEARS FROM FEBRUARY 2008: REF 2007/405**

Funding for this project is from research expenses funding for doctoral students.

If you are interested, please contact Ann Hutchison

a.hutchison@auckland.ac.nz
Appendix C
Survey of Senior Executive Participants

Welcome to this survey and thank you for participating.

This survey consists of several questions relating to personality and motivation. You will then be forwarded to the Hogan Assessments website to take two separate measures of personality, and reasoning style.

Please hold on to your username and password as you will need these when you get to the Hogan site.

Question 1. Please enter your username

[ ]

Question 2. This first section asks several questions relating to motivation and temperament. Please indicate your agreement with the following statements, answering as honestly as you can:

[Participants were given a Likert scale with four options: ‘Strongly agree’, ‘Agree’, ‘Disagree’, or ‘Strongly disagree’.]

1. It would excite me to win a contest.
2. I have very few fears compared to my friends.
3. I worry about making mistakes.
4. If I think something unpleasant is going to happen I usually get pretty 'worked up'.
5. When I get something I want, I feel excited and energized.
6. When I want something, I usually go all-out to get it.
7. When I'm doing well at something, I love to keep at it.
8. When I see an opportunity for something I like, I get excited right away.
9. I go out of my way to get things I want.
10. Criticism or scolding hurts me quite a bit.
11. When good things happen to me, it affects me strongly.
12. If I see a chance to get something I want, I move on it right away.
13. I feel pretty worried or upset when I think or know somebody is angry at me.
14. When I go after something I use a 'no holds barred' approach.

**Question 3.** This section measures the way you feel about the rewards and recognition you receive at work. Please answer as honestly as you can, indicating your level of agreement with the following statements.

*Participants were given a Likert scale with four options: ‘Strongly agree’, ‘Agree’, ‘Disagree’, or ‘Strongly disagree’.*
Question 4. In this section, you are asked to indicate your agreement with three statements about your workplace. Remember, all information that you provide in this survey will not be shared with anyone, including your employer.

[Participants were given a Likert scale with four options: ‘Definitely agree’, ‘Inclined to agree’, ‘Inclined to disagree’, or ‘Definitely disagree’.]

1. There is a great deal of criticism in this organisation.
2. There is not enough reward and recognition given in this organisation for doing good work.
3. If you make a mistake in this organisation you will be punished.

Question 5. Please nominate several individuals whom the researcher can approach to collect confidential feedback on your performance. These colleagues will be contacted in a few weeks' time, and you will be notified first.

(Note: If you do not have three direct reports or three peers, leave spaces blank as necessary.)

Boss

Peer 1
Question 6. What is the highest level of education you have completed?

Question 7. In total, how many years of professional work experience do you have?

Question 8. What is your professional specialisation? For example, Marketing, Finance, Human Resources, Engineering
Psychometric Assessments

You will now be forwarded to the Hogan Assessments Systems website to complete two tools:

1. The Hogan Personality Inventory: A comprehensive measure of personality

2. The Hogan Business Reasoning Inventory: A measure of cognitive ability

This is the most interesting part of the survey, and you will be able to download your results immediately. You will also be able to pause and restart this survey at any time, by saving the Hogan Assessments link as an internet favourite.

Please click on the continue button to be forwarded to the Hogan Assessments website to complete these measures. Please have your login number and password to hand as you will need to enter these again.

Again, thank you for completing this survey.

[Note: The Hogan Assessments site collected data on gender and age from the participants]
Appendix D

Survey of Performance Raters

Welcome to this survey and thank you for participating.

In this survey, you will be asked to rate your colleague on various aspects of their performance. It is anticipated that this will take a few minutes.

Confidentiality and anonymity will be preserved throughout the survey procedure. Your name will not appear on your completed survey, and no information you provide will be shared with any other person or organisation.

Many thanks for your time and assistance. The results will provide some useful insights into executive performance.

**Question 1. Please enter YOUR COLLEAGUE’S UNIQUE CODE here:**

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<td><strong>Question 2. Have you worked with your colleague for one year or more?</strong></td>
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Yes

No
Question 3. In this question, you are asked to rate your colleague on a number of "competence" statements. Please indicate your agreement with each statement by clicking on the appropriate box.

[Participants were given a Likert scale, with five options: ‘Among the best I’ve seen’, ‘Better than most I’ve seen’, ‘Like most others I’ve seen’, ‘Worse than most I’ve seen’, ‘Among the worst I’ve seen’.

The statements came from the Lominger LEADERSHIP ARCHITECT® Competency Sort Cards, with the permission of Korn/Ferry International.

SUPERIORS ONLY:

Question 4. Now consider your colleague's performance against all of their objectives. How well did they meet the following categories of objectives, all things considered, for the most recent year end?

[Participants were given a Likert scale, with five options: ‘Greatly exceeded objectives’, ‘Objectives were exceeded’, ‘Objectives were met’, ‘Objectives were not met but results showed that substantial progress was made’, ‘Objectives were not met, results were well below target’.

1. Fiscal objectives
2. Non-fiscal objectives
3. Short-term objectives
4. Long-term objectives
SUBORDINATES ONLY:

This section measures different aspects of your workplace morale and motivation. These are considered an important aspect of your colleague's performance. Please answer as honestly as you can, remembering that all information you provide will be treated as strictly confidential.

Question 4. This question lists several statements about the organisation you work for. Please indicate the extent to which you agree with each statement.

[Participants were given a Likert scale, with seven options: ‘Strongly agree’, ‘Moderately agree’, ‘Slightly agree’, ‘Neither agree nor disagree’, ‘Slightly disagree’, ‘Moderately disagree’, ‘Strongly disagree’.

1. I am willing to put in a great deal of effort beyond that expected in order to help this organisation be successful.
2. I talk up this organisation to my friends as a great organisation to work for.
3. I feel very little loyalty to this organisation.
4. I would accept almost any type of job assignment in order to keep working for this organisation.
5. I find that my values and the organisation's values are very similar.
6. I am proud to tell others that I am part of this organisation.
7. I could just as well be working for a different organisation as long as the type of work was similar.
8. This organisation really inspires the very best in me in the way of job performance.

9. It would take very little change in my present circumstances to cause me to leave this organisation.

10. I am extremely glad I chose this organisation to work for over others I was considering at the time I joined.

11. There's not too much to be gained by sticking with this organisation indefinitely.

12. Often, I find it difficult to agree with this organisation's policies on important matters relating to its employees.

13. I really care about the fate of this organisation.

14. For me, this is the best of all possible organisations for which to work.

15. Deciding to work for this organisation was a definite mistake on my part.

**Question 5. Which of the following statements most clearly reflects your feelings about your future with your employer?**

*Participants were asked to tick one of the following options*

- Definitely will not leave
- Will probably not leave
- Unsure
- Will probably leave
- Definitely will leave
Question 6. Do you expect to leave your job in the near future?

[Participants were asked to tick one of the following options]

Will definitely leave in the near future

Will probably leave in the near future

Undecided

Will probably not leave in the near future

Will definitely not leave in the near future

Question 7. In general, how satisfied are you with your current job?

[Participants were asked to tick one of the following options]

Not at all

Not very much

A little

Quite a lot

A great deal
Question 8. How do you feel about your job?

[Participants were asked to tick one of the following options]

I love it

I like it

I feel indifferent

I don’t like it

I hate it

Thank you for completing the survey.
Appendix E

Letter and Consent Form for Performance Raters

Dear [Executive Name]

Personality and Executive Performance in Organisations

Participant Information Sheet for Performance Raters

My name is Ann Hutchison. I am a PhD student at the University of Auckland’s Business School, undertaking research on the link between personality and senior executive performance.

To conduct my research, I have approached a number of senior managers and have invited them to be measured on aspects of their personality and performance. Your colleague has kindly participated.

One aspect of the research involves obtaining confidential ratings of the executive’s performance from their. [Executive name] nominated you as an appropriate person to complete ratings of his/her performance.

I am therefore writing to invite you to assist me with my research. Participation is entirely voluntary, and would take about 5 minutes. I would be extremely grateful for any assistance you can give me.

What would participation involve?

You would be asked to complete a brief survey, indicating your ratings of your colleague’s performance on several areas.
What will happen to the information collected?

All information collected will be treated as strictly confidential, and will not be shared with any other person or organisation including.  Also understands that any information you provide will not be shared with him/her.

The data will be stored anonymously on my computer database.  To preserve anonymity, you would be given a unique participant number to use in completing the survey.  A list of names and unique numbers will be stored separately from the data collected in the survey, and will be locked in the University of Auckland’s Business School.  Data in electronic form will be stored securely for no longer than 6 years, at which point it will be completely deleted.  There are no foreseeable risks associated with any aspects of this research.  You will have the right to withdraw from the research at any time, or request that your data be removed from my database any time.

I hope to ultimately publish my findings, in which case scores and statistics from the total sample of participants will be aggregated and described, done in a way that will not identify you or your organisation as a source of data.

How to participate

If you agree to participate, please complete the enclosed survey and consent form, and return them in the prepaid envelope.
Thank you very much for your help in taking part in this research. If you have any queries or wish to know more, please telephone me on the number below. You are also welcome to call my supervisor or Head of Department.

**Principal Investigator:**
Ann Hutchison, Department of Management & International Business, The University of Auckland Business School. Tel: 09-522-0332 (home), Mobile: 021 209 6793 Email: a.hutchison@auckland.ac.nz

**Supervisor:**
Dr Giles Burch, Department of Management and International Business, The University of Auckland. Tel: 09-373-7599 Ext. 86792

**Head of Department:**
Professor Hugh Whittaker, Department of Management and International Business, The University of Auckland. Tel: 09-373-7599 Ext. 89826

If you have any concerns of an ethical nature you can contact the Chair of the University of Auckland Human Participants Ethics Committee at 373-7599 Ext. 87830

Yours sincerely

Ann Hutchison

Doctoral Student
APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE FOR THREE YEARS FROM FEBRUARY 2008: REF 2007/405
Participant Consent Form for Individuals Rating Executive Performance

Researcher:  Ann Hutchison

Title:  Personality and Senior Executive Performance in Organisations

Please note: This consent form will be held for a period of six years.

I agree to take part in this research. I have been given and have understood an explanation of this research project, I have had an opportunity to ask questions and have them answered.

I understand that participation is entirely voluntary, and will involve me taking a 5-minute survey to rate various aspects of my colleague’s performance.

I understand that I will be guaranteed confidentiality in the information I provide; no information I provide will be shared with any other person or organisation, including my colleague or their employer.

I understand that all data will be stored anonymously on the researcher’s computer database, using a unique number for each participant. Participant names and unique numbers will be stored separately and securely.

I understand that I may withdraw any data at any time. At this point, it will no longer be possible to withdraw the information collected.
I understand that data may be used for future academic publication and will be held for a period of six years, after which point it will be destroyed. Any publication will describe statistics from the total sample of participants in aggregated format, and will not identify any individual or organisation as a source of data.

I have read the information given above, and agree to take part in the study.

Signed………………………………………………………………

«First_name» «Surname»

Date……………………………………………………………………

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE FOR THREE YEARS FROM FEBRUARY 2008: REF 2007/405
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