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An exploratory study regarding the impact narcissistic CEOs have on the strategic dynamism of JSE listed companies

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An exploratory study regarding the impact narcissistic CEOs have on the strategic dynamism of JSE listed companies.

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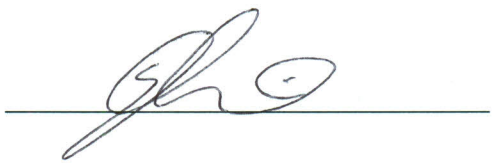
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Declaration

I, Stephanie Elizabeth Oechslin, declare that this research report is my own unaided work. It is submitted in partial fulfilment of the requirements for the degree of Master of Commerce in the field of Accountancy at the University of the Witwatersrand, Johannesburg. All sources that I have used or referenced to have been indicated and acknowledged as such by means of complete references. This work has not been submitted before for any other degree or examination at any other institution.

Stephanie Elizabeth Oechslin: 

Date: 03/03/2015

Abstract

Many studies considering the effects CEOs' characteristics have on the companies they run have been carried out in America. This study considers if organisational outcomes and strategic choices are partially predicted by managerial background characteristics as put forward by Hambrick and Mason (1984). It attempts to determine if the personality traits of CEOs of JSE listed companies (which result in them being classified as a narcissist) have an impact on the financial performance on the company for which they work.

As identified by Chatterjee and Hambrick (2007), prior research has explored how executive's characteristics are manifested in organisational outcomes, however very little research addresses the narcissistic aspect of CEOs personalities.

This study explored whether a relationship exists between CEO narcissism and strategic dynamism in a nonprobability, convenience sample.. A 5-item narcissism index was used as a proxy for narcissism and financial leverage, overhead efficiency and plant and equipment newness, were used to measure strategic dynamism. Multiple regression was used to analyse the data by applying CEO narcissism as the independent variable, strategic dynamism as the dependents variable whilst including control variables, including the CEO tenure, the age of the CEO, the age of the company, and indicator variable for the presence of a COO, the phase of the economy during which the CEO served his tenure and an indicator variable for which industry the company is operating in. The results of this study revealed that there is a

correlation between the level of narcissism, captured using unobtrusive measures, of a JSE listed company's CEO and the level of strategic dynamism of that company.

The results of the regression models suggest that whilst there is no observable relationship between narcissism and strategic dynamism, there is a relationship between narcissism and two of the components of strategic dynamism, financial leverage and plant and equipment newness.

This research contributes further to the study of the effect of narcissistic CEO's on the companies for which they work and suggests that the personality traits of CEOs should be considered by company boards and shareholders when deciding to elect a person as CEO as well as by investors when deciding which companies to invest in.

Key Words

CEO Personality; Narcissism; Strategic Dynamism; Unobtrusive Factors

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Chapter 1

1. Introduction

An article published in The Huffington Post entitled "The Dark Side of Executive Narcissism: How CEOs Destroy Companies' Reputation and Employee Morale" discusses how people often think of CEOs as the new rock stars. The author**,** Tomas Chamorro-Premuzic (2014) is a Professor of business psychology at University College London and says this way of thinking is understandable. "There is no shortage of examples for the megalomaniac habits of corporate bosses. For instance, John Thain spent $1.2 million redesigning his Merrill Lynch office during the 2008 financial meltdown. Richard Fuld was living in a 6,000-square-foot Park Avenue apartment while driving Lehman Brothers into bankruptcy. And Lloyd Blankfein is still the best-paid banker in the world despite Goldman's public admission of deliberately selling sub-standard bonds to its clients."

Chamorro-Premuzic (2014) went on to state that if we think that these "shameless extravaganzas" are exclusive to Wall Street, they should think again. "Silicon Valley and the technology industry, once famous for promoting frugality, altruism and modesty, are putting greedy bankers to shame. Google's Eric Schmidt splashed $72 million on a 195-feet yacht. Amazon's Jeff Bezos "invested" $42 million in a perpetual clock. Oracle's Larry Ellison spent $200 million, twice his annual salary, on beach houses alone. Moreover, Apple, Facebook, and Google may be the dominant players of the digital revolution, but they are still under investigation for tax evasion. If

bankers are the new rocks stars, Silicon Valley entrepreneurs are the new gangster rappers.” (Chamorro-Premuzic, 2014)

The article concludes with a quote from Peter Druker, an American management consultant, educator, and author, whose writings contributed to the philosophical and practical foundations of the modern business corporation. “The leaders who work most effectively, it seems to me, never say 'I'. And that's not because they have trained themselves not to say 'I'. They don't think 'I'. They think 'we'; they think 'team'. They understand their job to be to make the team function. They accept responsibility and don't sidestep it, but 'we' gets the credit.”

As CEOs personalities’ appear to have significant effect on the performance of the companies they lead, this study was conducted to investigate and help quantify whether the existence of one aspect of personality, narcissism, affects company performance.

This report will first discuss the significance of this study and place it in context by way of the introduction section. Following on from the introduction the literature review will discuss narcissism and how its appearance in CEOs ultimately has been found to affect the performance of companies and their strategic dynamism. The methodology section will then detail how this study was performed and the results are presented in Chapter 4. Chapter 5 provides a

discussion of the results as well as the limitations of this study and recommendations for future research. Whilst literature related to the themes addressed in this report may appear to argue narcissism is “good” or “bad”, the aim of this report is not conclude on something as subjective as whether narcissism in CEOs is “good” or “bad”; it is merely to establish whether narcissism in CEOs can be seen to have a particular effect on the company they work for. Upon establishing such a relationship, discussion then takes place surrounding possible implications of the findings as well as areas for further research.

1.1 Purpose of the Study

The purpose of this research report was to determine the effect narcissistic CEOs have on the strategic dynamism of companies listed on the Johannesburg Stock Exchange (JSE). The study seeks to add to the body of research in behavioural finance. Whilst the concept of narcissism is adopted from a psychological point and briefly discussed the aim is not to venture into psychology rather, the adoption is to make a link between behaviour and the world of finance and business strategy.

1.2 Context of the Study

Theorists in various fields have discussed characteristics of top managers and this paper attempts to determine if there is a relationship between CEO narcissism and the strategic dynamism of the company for which they work.

This study considers if organisational outcomes and strategic choices are partially predicted by managerial behavioural traits as put forward by Hambrick and Mason (1984). It therefore attempts to determine if the personality traits of a CEO (specifically narcissism) have an impact on the strategic dynamism on the company for which they work.

As identified by Chatterjee and Hambrick (2007), prior research has explored how executives' characteristics are manifested in organisational outcomes, however very little research addresses the narcissistic aspect of CEOs personalities. Three reasons were suggested by Chatterjee and Hambrick as to why researchers of top executives have not undertaken research on narcissism.

Firstly it must be addressed that some researchers may not consider narcissism to be a scientifically documented concept. Whilst the concept originates from Greek mythology, an abundance of literature investigates both the concept and measurement of narcissism (Chatterjee & Hambrick, 2007).

Sigmund Freud (1953) published a paper titled "On Narcissism: An Introduction", where Freud suggested that narcissism is actually a normal part of the human psyche. During the 1960s psychoanalysts Otto Kernberg and Heinz Kohut furthered research on narcissism. Kernberg (1967) introduced the term "narcissistic personality structure" and developed a theory of narcissism that suggested three major types. Following this, Kohut (1968) introduced the term "narcissistic personality disorder" and went on to

take some of Freud's (1953) earlier ideas about narcissism and expand upon them. Kohut's (1968) theory of self-psychology suggests that narcissism allows people to suppress feelings of low self-esteem and develop a sense of self.

Kernberg (1976, 1980) shows narcissism developing as a consequence of parental rejection or abandonment. This parental- devaluation hypothesis states that because of cold and rejecting parents, the child defensively withdraws and comes to believe that it is only himself or herself that can be trusted and relied on and therefore loved. Kohut's (1976) theory however is actually a developmental theory of the self, where pathological narcissism can result from failure to idealize the parents because of rejection or indifference. A third theory has been presented by Millon (1981) and is referred to as a social learning theory of narcissism. This view proposes that narcissism develops not as a response to parental devaluation but rather as a consequence of parental overvaluation. The child is treated as a special person, provided with a lot of attention, and led by parents to believe he or she is lovable and perfect. Whilst it is important to understand the grounding of narcissism, it has been shown throughout the paper that non-pathological narcissism was referred to in this research which is explained in Chapter 2 – Literature Review.

More recently, Emmons (1987) published an article entitled "Narcissism: Theory and Management" in which the different characteristics associated with narcissism are discussed as well as the primary method of measurement. In the 25 years following this publication, numerous research papers have been published regarding different techniques for measuring narcissism in a person (Raskin & Shaw,1988; Raskin &

Terry, 1988; Gosling, Ko, Mannarelli, & Morris, 2002; Chatterjee & Hambrick, 2007).

The aspect of measurement leads to the second reason postulated by Chatterjee and Hambrick (2007) as to why narcissism is not well researched in behavioural finance. Researchers may be discouraged from researching narcissism in CEOs due to the difficulties relating to data collection and/or measuring narcissism (Chatterjee & Hambrick, 2007). Methods of measuring narcissism and personality traits include the Narcissistic Personality Inventory 40 (NPI 40) (Raskin & Hall, 1979), the usage of words (Pennebaker, Mehl, & Niederhoffer, 2003), the study of offices and bedrooms (Gosling, Ko, Mannarelli, & Morris, 2002), the examination of personal websites (Vazire & Gosling, 2004) and the study of consumption patterns (Aaker, Benet-Martinez, & Garolera, 2001). Whilst a survey methodology is unlikely to succeed with a topic as sensitive as narcissism (Cycyota & Harrison, 2006), it has been shown by Webb, Campbell, Schwartz and Sechrest (1966) and Webb and Weick (1983), that it is possible to obtain multiple indicators from archival sources that directly represent the elements of the narcissistic personality and collectively capture this robust characteristic of CEOs.

The final reason for lack of research stems from the perception that executive narcissism is not of much theoretical or practical significance (Chatterjee & Hambrick, 2007). However, it has been found that narcissism in CEOs can be expected to have effects on substantive organisational outcomes, potentially including strategic grandiosity and submissive top management teams (Chatterjee & Hambrick,

2007). Narcissism can affect a CEO's choices in areas such as strategy, structure, staffing, restructuring and resource allocation Hambrick & Finkelstein (1987). It therefore follows that many studies have found that executive's characteristics help to explain organisational outcomes (Carpenter, Geletkanycz, & Sanders, 2004).

There is no accessible literature pertaining to studies in this field that have been carried out in the South African context and thus this research paper makes reference to international studies. Prior studies, suggest that overconfident managers use low discount rates when valuing future cash flows and invest in projects with lower internal rates of return. It must be noted that overconfidence is measured as a subset of narcissism but as a standalone concept, does not amount to narcissism. The ultimate manifestation of such behaviours had resulted in the CEO being classified as a narcissist and thus the effect of narcissism on company performance is measured (Ben-David, Graham, & Harvey, 2007). It was also found that the level of CEO narcissism affected the strategic dynamism of companies, the number and size of acquisitions and is positively associated with extreme performance (Chatterjee & Hambrick, 2007).

Research shows that the measurement of strategic dynamism includes the use of ratios such as advertising intensity (advertising expense/sales), plant and equipment newness (net plant and equipment/gross plant and equipment), research and development intensity (R&D expense/sales), overhead efficiency (selling, general, and administrative expense/sales), and financial leverage (total debt/equity) (Westphal, Seidel, & Stewart, 2001).

This research report examined the effect of CEO narcissism on dynamism of the strategy of companies listed on the JSE by using a 5-item index, to measure narcissism, as used in a study by Chatterjee and Hambrick (2007). Ratios representing plant and equipment newness, financial leverage and overhead efficiencies were used to measure strategic dynamism, as used in a study by Westphal, Seidel and Stewart (2001). Control variables for the CEO age, firm age, CEO tenure, presence of a COO, phase of the economy, industry the company is operating in and resource availability also formed part of the models tested in line with research conducted by Chatterjee and Hambrick (2007) and Ham, Seybert and Wang (2013).

1.3 Problem Statement

This study investigated whether narcissism has a significant influence on a company's strategic dynamism.

1.4 Significance of the Study

The manner in which CEO personality traits affect company policies has recently emerged as a topic of interest in academic research (Ham, et al., 2013). This particular study is in the area of behavioural finance and is found to be significant for a number of reasons.

None of the prior studies addressing this area of research have been performed in the South African context. By investigating the existence of a relationship between the level of narcissism of a JSE listed company's CEO and the strategic dynamism of that company it can be determined if the relationships found to exist in other countries hold in a South African context.

Further, should the results indicate these relationships exist, it could be considered if corporate governance structures applied in South Africa are effective in achieving a balance of power.

The results of this study will also be important for investors. Should the personality traits of a company's CEO have an effect on the long term performance of that company, investors should also be performing an analysis of the CEOs character before deciding to invest in that company.

Other studies have found that CEOs are known to have considerable influence in the setting of their own pay, and they have nearly total control over the pay of other executives (Tosi & Gomez-Mejia, 1989). In South Africa, JSE listed companies have to adopt the King III Code ("The code") (Institute of Directors, 2009) on an apply or explain basis. The code (Institute of Directors, 2009) states that companies should remunerate directors and executives fairly and responsibly and that a remuneration committee should be appointed to oversee the process. Should a link be established between the level of narcissism of a JSE listed CEO and the strategic dynamism of that company that is less significant than that established by studies conducted in other countries, it would present an area for further research into the effectiveness of corporate governance structures in South Africa with specific reference to the effect it may have on diluting the influence CEO personality traits have on the company.

The results of this study should also be of interest to the general public, as well as researchers interested in executive personality traits as studies have found that a better understanding of narcissism could lead to better explanations of the involvement of CEOs in episodes of misleading and unethical financial reporting that have been implicated in corporate collapses (Amernic & Craig, 2010).

1.5 Definition of Terms

Endogeneity: The possibility that narcissistic CEOs are drawn to certain situations and/or that some conditions particularly allow demonstration of narcissistic tendencies.

JSE: The JSE refers to the Johannesburg Stock Exchange.

Narcissism: is defined as an important complex of personality traits and processes that involve a grandiose yet fragile sense of self and entitlement as well as a preoccupation with success and demands for admiration (Ames, Rose, & Anderson, 2006).

Overconfidence: This is a subset of narcissism and is not used interchangeably with the term “narcissism”.

Projective Instrument: A projective test is a type of personality test which attempts to bring aspects of relevant behaviour, associations, perceptions, organisations and effective and interpersonal components to a conscious level so they can be studied (Freedheim & Weiner, 2003).

Strategic dynamism: The degree of change in an organisation’s strategy (Chatterjee & Hambrick, 2007).

1.6 Limitations of the Study

Firstly, because of data and cost limitations, the population from which the sample is obtained is restricted to those firms listed on the JSE. While it is believed that companies listed on the JSE are significant in their own right, it is unclear whether narcissism would have the same effects on organisations that are structured differently, for example, partnerships or owner managed enterprises.

Secondly, the 5-item narcissism index developed by Chatterjee and Hambrick (2007) relies on unobtrusive indicators that are only partial and indirect proxies for narcissistic tendencies. Even though the five indicators have face validity, statistically cohere, and yield an index that predicts logically expected outcomes, it is not as reliable as more intrusive methods of collecting the relevant data, for example having the relevant CEOs complete a NPI40 questionnaire. Given the difficulty of obtaining reliable data on executives' personalities it appears that unobtrusive methods, as applied in this study, and other studies conducted by Aaker, Benet-Martinez and Garolera (2001), Gosling, Jin Ko and Mannarelli (2002), Pennebaker, Mehl and Niederhoffer (2003), Vazire and Gosling (2004) and Chatterjee and Hambrick (2007), are the most appropriate methods to be applied currently.

1.7 Assumptions

It is assumed that the BFA McGregor database is a reputable one and thus all data obtained from it is accurate and can be relied upon.

Following the premise that one's degree of narcissism is relatively enduring and stable established in psychological literature (Cramer, 1998; Campbell, Foster & Finkel, 2002; Campbell, Bush, Brunell, & Shelton, 2005; Engelen, Neumann, & Schmidt, 2013 and O'Reilly, Doerr, Caldwell, & Chatman, 2013), this study assumes the level of narcissism to be constant and is thus measured at one point in time.

It was stated by Chatterjee and Hambrick (2007) that discussions with several corporate communications executives indicated that CEOs are very attentive to the content and design of annual reports, and they particularly have strong opinions and control over how they themselves are portrayed. To verify the level of CEO involvement regarding the layout of the financial statements and the content of the press releases the CEOs or the investor relations centres of companies whose CEO were included in the sample were contacted and asked to verify whether the CEO did have significant influence on the layout and design of the financial statements as well as the content of the press releases. Out of the 26 CEOs included in the sample, 7 CEOs were confirmed to have significant influence regarding the layout and design of the financial statements as well as the content of the press releases whilst the remaining 19 did not respond. The professional opinion of a psychologist was also obtained and supported the use of the non-obtrusive measures of narcissism used in this study based on the argument that this was a well established practice in the field of behavioural finance.

As a result of this evidence as well as prior research supporting the use of the non-obtrusive narcissism measures used in this study, it was assumed that all the CEOs

included in the sample did have significant influence regarding the layout and design of the financial statements as well as the content of the press releases.

Chapter 2

2. Literature Review

2.1 Introduction

In order to determine the effect a narcissistic CEO has on strategic dynamism of a JSE listed company it is necessary to understand the necessary aspects of narcissism as well as strategic dynamism. In this section narcissism is defined and the methods of measurement are explored. Following this discussion the term strategic dynamism is defined and measurement methods are explored. The effects of narcissistic CEOs on companies are discussed and finally the findings from the literature review are then concluded upon.

2.2 Narcissism

2.2.1 Definition

The term "narcissism" is defined as an important complex of personality traits and processes that involve a grandiose yet fragile sense of self and entitlement as well as a preoccupation with success and demands for admiration (Ames, Rose, & Anderson, 2006). It has been shown that narcissistic individuals must repeatedly undertake actions which reinforce their self-image and as a personality characteristic, narcissism has been found to contain both cognitive and motivational elements. On the cognitive side, narcissism encompasses a belief in one's superior qualities while on the motivational side, narcissism carries an intense need to have one's superiority reaffirmed (Chatterjee & Hambrick, 2007).

According to Morf and Rhodewalt (2001), narcissism is a dynamic, socially defined construct with two key elements: a positive, inflated, and agentic view of the self; and a self-regulatory strategy to maintain and enhance this positive self-view. Narcissists' positive self-views have been demonstrated empirically in several ways. Narcissists differentially think that they are special and unique (Emmons R. A., 1984), that they are entitled to more positive outcomes in life than are others (Campbell, Bonacci, Selton, Exline, & Bushman, 2004), that they are more intelligent and physically attractive than they actually are (Gabriel, Critelli, & Ee, 1994), and that they are better than others on agentic traits such as dominance and power, but not on communal traits such as caring and expressiveness (Campbell, Rudich, & Sedikides, 2002).

Research has shown that narcissism can be considered and measured as a personality dimension rather than a psychological disorder, and that individuals can be assigned scores along that dimension using tools such as the Narcissistic Personality Inventory 40 (Raskin and Terry, 1988). This research paper is focussed on the personality variable of narcissism (sometimes referred to as ‘‘normal narcissism’’) rather than the far less common clinical disorder of narcissistic personality disorder (NPD) (Campbell, Goodie, & Foster, Narcissism, Confidence, and Risk Attitude, 2004) and it must therefore be clarified that narcissism in the context of this study refers to a personality trait and not a psychological disorder.

It is important to distinguish CEO narcissism from related constructs that also deal with positive self-regard, most notably self-esteem, overconfidence, core self-evaluation and hubris.

Self-esteem is a hypothetical construct being the overall effective evaluation of one's own worth, value or importance (Blascovich & Tomaka, 1991). As such, self-esteem aligns with that aspect of narcissism dealing with self-admiration; accordingly, the two variables have been found to be significantly correlated, with a spearman's correlation (r) of 56% (Emmons R. A., 1984). Although narcissists have high self-esteem, they dwell on protecting, managing, and enhancing their self-view (Raskin, Novacek, & Hogan, 1991). Narcissists are therefore highly sensitive to interpersonal feedback and require continuous reinforcement of their inflated self-portrayals (Kernis & Sun, 1994). Self-esteem thus differs from narcissism in its absence of certain features such as arrogance, sense of entitlement and the continuous need for affirmation (Chatterjee & Hambrick, 2007).

Core self-evaluation is a broad, latent trait indicated by self-esteem, generalised self-efficacy being an evaluation of how well one can perform across a variety of situations, emotional stability measured by the degree to which an individual is free of anxiety and locus of control, or beliefs about the causes of events in one's life (Judge, Erez, Bono, & Thoresen, 2003). As such, core self-evaluation aligns with that aspect of narcissism that deals with positive self-regard and self-potency and like self-esteem; core self-evaluation does not encompass the continuous need for applause and adulation that characterises narcissism (Chatterjee & Hambrick, 2007).

2.2.2 Narcissism: Measurement

As it has been established that narcissism is a complex personality trait, therefore it appears that the measurement of such would pose complications. As a result, the lack

of a suitable measuring device hindered the empirical study of narcissism until Raskin and Hall (1979) developed the Narcissistic Personality Inventory (NPI).

Many attempts have been made to create a measure of narcissism, resulting in projective instruments (Freedheim & Weiner, 2003), such as the Thematic Apperception Test (TAT) (Harder, 1979) and the Rorschach (Exner, 1969; Harder, 1979 & Urist, 1977). Ashby, Lee, and Duke (1979) reported the development of the Minnesota Multiphasic personality Inventory (MMPI) Narcissistic Personality Disorder (NPD) Scale, consisting of 19 items from the MMPI and Solomon (1982) found that the NPD distinguished between individuals with healthy and pathological self-esteem.

The Millon Clinical Multiaxial Inventory (MCMI) (Millon, 1982) contains a narcissistic personality subscale whilst Phares and Erskine (1984) have developed a 28-item scale designed to measure the construct of selfism within a social- learning framework. Individuals differ in selfism in the extent to which they construe situations that present problems in need satisfaction in either egotistical or nonegotistical terms. Phares and Erskine (1984) prefer the term selfism over narcissism because they consider selfism to be an attitudinal rather than a motivational construct.

Raskin and Hall (1979) constructed the Narcissistic Personality Inventory (NPI). The construction of the inventory was based on the Diagnostic and Statistical Manual (DSM-III) (American Psychiatric Association, 1980) criteria for the narcissistic personality disorder. These criteria include a grandiose sense of self-importance and uniqueness, preoccupation with fantasies of unlimited success, power, beauty, or ideal

love, exhibitionistic tendencies for constant attention and admiration, a sense of entitlement and an expectation of special favours without reciprocation and interpersonal exploitiveness (American Psychiatric Association, 1980). Although the inventory is based on the DSM-III criteria, it is has been found that only extreme manifestations of those behaviours constitute pathological narcissism, and the assumption is that when exhibited in less extreme forms these behaviours are reflective of narcissism as a personality trait. In support of this assumption social critics such as Lasch (1979) have argued that narcissistic personality characteristics are prevalent in the general population. Fischer (1984) refers to this form of narcissism as subclinical narcissism. The creation of the NPI has created the opportunity for the empirical investigation of narcissism.

This narcissistic personality inventory (NPI)) consists of a 40-item, forced-choice questionnaire designed to measure individual differences in narcissism as a personality trait. Many studies have now been conducted with the NPI including studies conducted by Raskin and Hall (1979), Raskin and Hall (1981), Emmons (1984), Raskin and Terry (1988), Nunnally and Bernstein (1994), Campbell, Goodie, and Foster (2004), Ames, Rose, and Anderson (2006), Chatterjee and Hambrick (2007) and Engelen, Neumann, and Schmidt (2013), among others, which found the index to be valid and accurate.

Emmons (1987) performed a factor analysis over the NPI and identified four factors, which he labelled (1) *Exploitativeness/Entitlement* (I insist upon getting the respect that is due to me); (2) *Leadership/Authority* (I like to be the centre of attention); (3) *Superiority/Arrogance* (I am better than others); and (4) *Self-absorption/Self-*

*admiration (*I am preoccupied with how extraordinary and special I am). After completing the factor analysis Emmons (1987) reiterated that they cohere as a unitary personality construct and other studies (Raskin and Terry, 1988; Watson and Biderman, 1993) also indicate that narcissism is a coherent, but multi-faceted personality dimension, which can be defined as the degree to which an individual has an inflated sense of self that is reflected in feelings of superiority, entitlement, and a constant need for attention and admiration (Bogart, Benotsch& Pavlovic, 2004).

In a study conducted by Raskin and Terry (1988), and more recently Ames, Rose and Anderson (2006), the internal and external validity of the NPI was verified the use of longer inventories.

Whilst the NPI is currently the most prevalent method for measuring narcissism its feasibility must be questioned with regard to capturing the narcissism of a CEO. A paper published on organisational research methods revealed that CEOs are reluctant to participate in survey research, and that a survey regarding sensitive information about their personality traits such as the NPI 40 would most likely yield exceptionally low response rates (Cycyota & Harrison, 2006).

In a study addressing narcissistic CEOs and their effects on company strategy and performance it was determined that unobtrusive indicators of narcissistic tendencies in CEOs would be more appropriate (Chatterjee & Hambrick, 2007).

Unobtrusive methods considered were ones such as observation and the written and spoken words of subjects as ways to learn about their preferences, perceptions and

personalities. As noted by Chatterjee and Hambrick (2007), such a method would eliminate problems of reactivity, demand characteristics and researchers' expectations. The use of such a method would however not appear feasible when attempting to study the characteristics of a CEO as it is unlikely they would be willing to participate in such research as with the completion of the NPI 40.

Other unobtrusive measures of personality have recently been used by researchers. The usage of words has been used to detect individual differences by Pennebaker, Mehl and Niederhoffer (2003), offices and bedrooms have been studied as physical manifestations of personalities by Gosling, Jin Ko and Mannarelli (2002), personal websites have been examined as indicators of identity claims by Vazire and Gosling (2004) and consumption patterns have been used as carriers of personality constructs by Aaker, Benet-Martinez and Garolera (2001).

In a study conducted by Chatterjee and Hambrick (2007) a 5-item unobtrusive narcissism index was developed, validated and used. The selection for the indicators was based on two main criteria. Firstly, each indicator needed to qualify as a manifestation of the CEOs personality thus the indicator needed to be greatly under the control of the CEO and not driven primarily by institutional or other external forces (Chatterjee & Hambrick, 2007). Secondly, each indicator needed to reflect one or more aspects of the narcissistic personality.

The development of the index was guided by the facets of narcissism, as discussed earlier, identified by Emmons (1987). By definition, narcissism is a superordinate construct that has multiple elements (Edwards, 2001) and as a result Chatterjee and

Hambrick (2007) did not attempt to identify indicators that would fit cleanly into the categories established by Emmons (1987), instead most of the indicators can reasonably be seen to align with more than one of Emmons's (1987) facets.

The five indicators used by Chatterjee and Hambrick (2007) are as follows: the prominence of the CEO's photograph in the company's annual report, the CEO's prominence in the company's press releases, the CEO's use of first person singular pronouns in interviews, the CEO's cash compensation divided by that of the second-highest paid executive in the firm, and the CEO's non-cash compensation divided by that of the second highest paid executive in the firm. These indicators co-varied greatly in the sample used to validate the index, allowing their combination into a 5-item narcissism index.

2.2.2.1 Prominence of the CEO's photograph

Chatterjee and Hambrick (2007) argue that the company's annual report not only provides an opportunity for the CEO to report on the company's progress and prospects, but also to showcase them as the company's leader. It was acknowledged that whilst CEO photographs are standard features of annual reports they are however not universal or of uniform prominence. It was stated by Chatterjee and Hambrick (2007) that discussions with several corporate communications executives indicated that CEOs are very attentive to the content and design of annual reports, and they particularly have strong opinions and control over how they themselves are portrayed. They argue that it is therefore expected that the narcissistic CEO will seek a great deal of visibility in the annual report, both as an exercise of vanity and as a strong declaration that he/she is more important than all others in the firm; aligning with the

personality facets identified by Emmons (1987). The indicator was rated as follows in the study conducted by Chatterjee and Hambrick (2007): four points if the CEO's photo was of him/her alone and occupied more than half a page, three points if the photo was of the CEO alone and occupied less than half a page, two points if the CEO was photographed with one or more fellow executives and one point if there was no photograph of the CEO. This measure of narcissism was also used in a study conducted by Olsen (2011).

2.2.2.2 CEO prominence in company press releases

The content of these press releases issued by companies appears to be under the CEO's control completely as it was found that each CEO has very stringent guidelines for external announcements and personally reviews all but the most routine issuances (Chatterjee & Hambrick, 2007). Following the identification of narcissistic personality traits (Ames & Rose, 2006; Bogart, Benotsch & Pavlovic, 2004; Emmons, 1987 & Chatterjee & Hambrick, 2007) deduced that narcissistic CEO will insist on being mentioned in as many press releases as possible, both as an exercise of vanity, or the desire to be showcased, as well as an assertion of authority. To develop this measure, they calculated the number of times the CEO was mentioned by name in the company's press releases and divided it by the total number of press releases.

2.2.2.3 CEO's use of first person singular pronouns

Speech has been identified as a form of expressive behaviour, reflecting the most dominant and consistent personality traits of an individual (Ramsay, 1968) while personal pronoun usage is an indicator of narcissism, indicating self-absorption in particular (Raskin & Shaw, 1988). Chatterjee and Hambrick (2007) used digital

transcripts of interviews of CEOs conducted by journalists or financial analysts, isolating only those portions that represented the CEO's words. They then counted the number of first person singular pronouns (I, me, mine, my, myself) used by the CEO, divided by the sum of those pronouns plus all first person plural pronouns (we, us, our, ours, ourselves) thus providing a percentage of all first person pronouns that were singular.

2.2.2.4 Two measures of relative pay

CEOs are known to have considerable influence in the setting of their own pay, and they have nearly total control over the pay of other executives (Tosi & Gomez-Mejia, 1989). The narcissistic CEO believes that he/she is far more valuable than anyone else in the firm, and this then becomes reflected in the CEO's compensation relative to others. Following Hayward and Hambrick's (1997) measure of self-importance, Chatterjee and Hambrick (2007) used two measures of the CEO's relative pay. Relative cash pay was the CEO's cash compensation (salary and bonus) divided by that of the second highest-paid executive in the company. Relative non-cash pay was the CEO's non-cash compensation (deferred income, stock grants, and stock options (using Black-Scholes valuation)) divided by that of the second highest paid executive. The results generated by Chatterjee and Hambrick (2007) did not change if they used the pay of the top four executives, excluding the CEO, in the denominators of their measures.

[Insert Appendix B] Appendix B illustrates how Chatterjee and Hambrick's (2007) five indicators align with the facets of narcissism identified by Emmons (1987) as

well as providing illustrative items from the NPI that loaded onto Emmons' four facets of narcissism.

2.3 Strategic Dynamism

2.3.1 Definition

Strategic dynamism refers to the degree of change in an organisation's strategy (Chatterjee & Hambrick, 2007). As noted by Chaterjee and Hambrick (2007), this degree of change is a central construct in the study of strategic management.

It has been found that industry conditions (Birkinshaw, Morrison & Hulland, 1995), organisational size (Chen and Hambrick, 1995), slack (Singh, 1986), and other contextual factors affect the degree of dynamism observed in companies' strategies. It has also been found that, after controlling for contextual conditions, executives' characteristics are associated with the amount of resulting change in the strategies of the companies. Miller (1991) found that CEO tenure and Finkelstein and Hambrick (1990) found that top management team tenure is negatively related to strategic dynamism. Wiersema and Bantel (1992) determined that the average amount of formal education of top management team members, as well as the heterogeneity of their educational specialisations, is positively related to strategic change. Evidence therefore exists that some executives are more inclined to change their company strategies than are others. It appears that narcissistic CEOs can be expected to favour strategic dynamism as is through adopting new strategic initiatives that narcissistic CEOs can engage in the exhibitionism that will create a captive audience. Continuing with or refining and elaborating on an existing strategy, appears to be the preferred course of action for a CEO who is less narcissistic. Such an executive may be willing

to pursue what Miles and Snow (1978) called a defender strategy or what Levinthal and March (1993) called an exploitation strategy. It has been found that narcissists need an attentive audience, which in turn means they need drama and therefore narcissistic CEOs will favour strategic dynamism, to deliver a drama that will gain attention in a way that strategic stability cannot (Chatterjee & Hambrick, 2007).

2.3.2 Strategic Dynamism: Measurement

Prior studies by Finkelstein and Hambrick (1990), Thomas, Litschert and Ramaswamy (1991) and Geletkanycz and Hambrick (1997) measured business strategy according to key resource allocations across the primary functional areas of the firm. Examples of such strategic dimension included advertising intensity (advertising expense/sales), plant and equipment newness (net plant and equipment/gross plant and equipment), research and development intensity (R&D expense/sales), overhead efficiency (selling, general, and administrative expense/sales), and financial leverage (total debt/equity). The first three dimensions capture marketing, technology, and capacity expansion activities, while overhead efficiency reflects the cost structure of the firm, and the firm's capital management is indicated by financial leverage (Westphal, Seidel, & Stewart, 2001). This set measurement approach based on Mintzberg's (1978) conception of strategy as a pattern of actions and was found to effectively capture the competitive profile of the firm (Geletkanycz & Hambrick, 1997). A viable alternative approach to measuring business strategy classifies firms into discrete configurations of resource deployments (Porter, 1998). Although this approach has found to have some face validity, the continuous measure captures gradations in strategic change that range along a continuum from relatively modest adjustments in

spending levels to relatively large changes in resource allocation (Westphal, Seidel, & Stewart, 2001).

2.4 The Effect of Narcissistic CEOs on Companies

Studies have shown that narcissists overestimate their abilities and when measured, do not outperform people not classified as narcissists. As a result narcissists have been found to make riskier decisions (Campbell, Goodie, & Foster, Narcissism, Confidence, and Risk Attitude, 2004).

Malmendier and Tate (2005) found that there is a strong positive relation between the sensitivity of investment to cash flow and executive overconfidence and that overconfidence matters more in firms that are equity dependent, whilst Ben-David, Graham and Harvey (2007) found that companies with overconfident CFOs use lower discount rates to value cash flows, and that they invest more, use more debt, are less likely to pay dividends, are more likely to repurchase shares, and they use proportionally more long-term, as opposed to short-term, debt. Further research shows that overconfident CEOs undertake riskier projects, invest more heavily in innovation, achieve a greater total quantity of innovation as measured by patent applications and patent citations, and are more effective innovators (Hirshleifer, Low, & Teoh, 2010).

A study conducted by Hribar and Yang (2013) provided evidence that managerial overconfidence manifests itself as excessive optimism about future earnings thus leading to CEOs making exaggerated earnings forecasts. As a result, overconfident CEOs have found to be more likely to issue and subsequently fall short of their own forecasts. The same study also found that it was unclear as to whether overconfidence

increases performance. It was however found that there is no sign whatsoever that it reduces performance; consistent with the idea that there are advantages as well as disadvantages to CEO overconfidence.

In a study conducted by Chatterjee and Hambrick (2007), the effects of narcissistic CEOs on company strategy and performance were measured by formulating four hypotheses, the first of which bears the most relevance to this study. The hypothesis stated that "The greater the narcissistic tendencies of a CEO, the greater the dynamism of the company's strategy." Narcissists have been shown to be exhibitionists (Raskin & Terry, 1988) and thus to gain the attention and admiration of others must execute bold moves. This hypothesis was therefore tested using indicators that are controllable by the CEO and are important strategic choices (Chatterjee & Hambrick, 2007). Control variables and a correction for endogeneity were included in the model which yielded results supporting the hypothesis. For each dependent variable a model with control variables and then a model with the narcissism score were used, showing a positive and significant effect of narcissism on changes in resource deployment to represent strategic dynamism (Chatterjee & Hambrick, 2007).

Consistent with Anderson and Tirrell (2004), it is suggested by Brown (1997) that many narcissistic CEOs make accounting policy choices and earnings management decisions to maintain a positive sense of self, defend their egos and preserve self-esteem. The features of financial accounting that potentially enable such ego-defending behaviour by certain narcissistic CEOs was explained by Schwartz (1991) whose investigation was prompted by arguments that the existence of extreme narcissism explain corporate decay. Further, because narcissism has been found to lie

at the heart of leadership by Kets de Vries (2004), it appears that a better understanding of narcissism, could lead to better explanations of the involvement of CEOs in episodes of misleading and unethical financial reporting that have been implicated in corporate collapses (Amernic & Craig, 2010).

Mergers and acquisitions literature is another area in which the significance of the psychological characteristics of the CEO with respect to explaining acquisitiveness and value effects is considered (Malmerndier & Tate, 2008). The first suggestion that the psychological characteristics of the CEO bare significance in the M&A context was made by (Roll, 1986). It was found that losses to acquiring shareholder on the announcement of a deal may be caused by hubristic CEOs who overbid for a target as they overestimate both synergies and their ability to realise them. Further empirical research was performed in the fields of strategic management and finance regarding the implications of this hubris hypothesis. The findings of this further research reveal that more hubristic CEOs tend to offer higher bid premiums (Hayward & Hambrick, 1997), and that the markets react less favourably to acquisitions carried out by overconfident CEOs (Malmerndier & Tate, 2008).

A detailed analysis was provided by a separate stream of research focussing on the private takeover process. These results revealed many new features of takeover transactions (Boone & Mulherin, 2007; Aktas, De Bodt, & Roll, 2010). Findings from a further study showed that higher levels of target CEO narcissism are associated with higher bid premiums and lower announcement returns to acquiring firm shareholders. Considered together, these results make a strong case for considering the effect of the

psychological characteristics of CEOs on all aspects of the takeover process (Aktas, De Bodt, Bollaert, & Roll, 2012).

It has also been noted that narcissistic CEOs may be more prevalent in some industries than others. Such CEOs may be drawn to dynamic and high discretion industries such as information technology and fashion and may not be found in more low-key industries such as insurance or basic metals (Chatterjee & Hambrick, 2007).

As this research indicates that narcissistic CEOs make costly decisions as a result of this personality trait, it further develops agency theory. This theory refers to an agent (company management) acting on behalf of the principal (company shareholders) resulting in possible conflicts of interest as the agent may act in their best interest and not in the best interest of the principal (Eisenhardt, 1989). The research discussed above therefore indicates that; as it has been found that a narcissistic CEO can result in costly decisions being made, it should be considered if narcissism has an impact on transaction costs.

2.5 Conclusion

It is therefore apparent from the literature that narcissism is a clearly defined personality construct (Morf & Rhodewalt, 2001). Many methods of measuring narcissism, both direct (Raskin & Hall (1979); Emmons (1981); Raskin & Terry (1988); Ames, Rose & Anderson (2006)) and unobtrusive (Chatterjee and Hambrick (2007);Olsen (2011)), have been explored and the personality traits of CEOs have

been found to have an effect on the companied which they run (Campbell, Goodie & Foster (2004); Malmendier & Tate (2005); Ben-David, Graham & Harvey (2007); Hribar & Yang (2013)). Westphal, Seideland and Stewart (2001) found that strategic dynamism has been measured using advertising intensity (advertising expense/sales), plant and equipment newness (net plant and equipment/gross plant and equipment), research and development intensity (R&D expense/sales), overhead efficiency (selling, general, and administrative expense/sales), and financial leverage (total debt/equity),and it can be concluded that the overall finding of the literature indicates that unobtrusive measures are currently the optimal way in which to measure narcissism and that the level of narcissism has been found to have an effect on the companies for which the studied CEOs work (Chatterjee & Hambrick, 2007).

Chapter 3

3. Research Methodology

3.1 Introduction

The hypothesis, CEO narcissism has a significant impact on the strategic dynamism of JSE listed companies, was tested using a CEOs scores on the 5-item narcissism index as developed and validated by Chatterjee and Hambrick (2007) and used in a study conducted by Olsen (2011). Firstly data was obtained in order to populate the narcissism index for each CEO in the sample and then the relationship between narcissism and strategic dynamism was explored controlling for various factors.

This study made use of unobtrusive measures of narcissism in order to compile the 5-item narcissism index. To verify the level of CEO involvement regarding the layout of the financial statements and the content of the press releases the CEOs/Investor Relations Centres were contacted and asked to verify whether the CEO had significant influence regarding the layout and design of the financial statements as well as the content of the press releases. Out of the 26 CEOs included in the sample, 7 confirmed that the CEO did have significant influence regarding the layout and design of the financial statements as well as the content of the press releases whilst the remaining 19 did not respond, representing a 27% response rate. The professional opinion of a psychologist was also obtained and supported the use of the non-obtrusive measures of narcissism used in this study. These responses together with the use of non-obtrusive measures in studies such as those conducted by Chatterjee and Hambrick(2007), Olsen (2011) and Aktas, de Bodt, Bollaert and Roll (2012) reveal

that reliance can be placed upon the use of these non-obtrusive factors used to indicate the level of narcissism of a CEO. This is discussed in detail in sections 3.2.2 Instrument and 3.3 Sampling and Data Collection.

In order to address the hypothesis formulated in this study the appropriate statistical measure needed to be selected. Multiple regression was selected as the most appropriate statistic tool to test whether such a relationship exists, which is discussed further in section 3.4 Data Analysis.

3.2 Study Design and Methodology

3.2.1 Hypotheses

H_1: There is a significant relationship between CEO narcissism and the company's strategic dynamism, controlling for CEO age, CEO tenure, firm age, resource availability, the presence of a COO, the phase of the economy during which the CEO served his tenure and the industry in which the company operates.

H_2: There is a significant relationship between CEO narcissism and the company's financial leverage applied by the company, controlling for CEO age, CEO tenure, firm age, resource availability, the presence of a COO, the phase of the economy during which the CEO served his tenure and the industry in which the company operates.

H_3: There is a significant relationship between CEO narcissism and the company's overhead efficiency, controlling for CEO age, CEO tenure, firm age, resource

availability, the presence of a COO, the phase of the economy during which the CEO served his tenure and the industry in which the company operates.

H_4: There is a significant relationship between CEO narcissism and the company's plant and equipment newness, controlling for CEO age, CEO tenure, firm age, resource availability, the presence of a COO, the phase of the economy during which the CEO served his tenure and the industry in which the company operates.

3.2.2 Instrument

3.2.2.1 Narcissism Index

Chatterjee and Hambrick (2007) used descriptive statistics and correlations of the five indicators of CEO narcissistic tendencies over 111 CEOs. They found that the correlations among the indicators were all positive and significant at the 5% level. Further testing of the coherence among the indicators was conducted including a factor analysis, for which all indices were at or above the recommended standards, and calculation of the Cronbach alpha. To develop their narcissism index Chatterjee and Hambrick (2007) calculated the simple mean of the five measures, after standardisation, for each CEO. The Cronbach alpha coefficient was 0.75 above the level acceptable for forming a new index as stated by Nunnally and Bernstein (1994). Chatterjee and Hambrick (2007) found that their results remained unchanged when they calculated the narcissism index using the factor scores of the individual items.

To verify that the 5-item index reflects the characteristics of the individual and not the firm, Chatterjee and Hambrick (2007) conducted a two-step analysis. Firstly companies within their sample that had two CEOs over the period were identified,

resulting in six companies that could be used for this test. The narcissism scores per the 5-item index for the CEOs of these companies were examined and narcissism scores for the successive CEOs for that company exhibited considerable inconsistency, ultimately producing an average Spearman correlation of -.46 which indicates that the narcissism scores are not due to persistent company techniques. Secondly, CEOs included in the sample that served as CEOs of other public companies were identified. Their narcissism scores were measured in their post relative to the sample as well as in their two successive posts. A Spearman correlation of 0.9 suggests consistency in the level of narcissism exhibited by the individual as per the 5-item index across successive positions. The pattern of with-person consistency combined with the pattern of with-firm inconsistency suggests that the narcissism scores per the 5-item index reflect more about the CEOs as individuals than about their firms (Chatterjee & Hambrick, 2007).

A validation test was also conducted by Chatterjee and Hambrick (2007) to further test the construct validity of their narcissism measure. Five security analysts specialising in the industry the sample of companies was selected from were asked to rate the degree of narcissism of the CEOs of the 40 largest CEOs in the company. As found by Fogarty and Rogers (2005), security analysts have many interactions with CEOs and pride themselves in asking them unscripted questions as to gather fresh insights regarding the companies on which they are reporting. It therefore appears that analysts are in a position to observe CEO's personalities firsthand and tend to supplement their technical analyses of firms by focussing on the personal qualities of CEOs (Khurana, 2002). 35 of the CEOs has multiple ratings resulting in a single-item Intra Class Coefficient of 0.75 ($p<.01$) suggesting a high level of agreement between

analysts regarding their rating of the CEOs (Chatterjee & Hambrick, 2007). The correlation between the average analyst's rating and Chatterjee and Hambrick's (2007) unobtrusive 5-item narcissism index was 0.82 ($p<.01$) indicating a substantial correlation between the analysts' perceptions and Chatterjee and Hambrick's (2007) 5-item index. Corroborative evidence was thus found that the unobtrusive 5-item narcissism index measure taps the narcissistic tendencies of CEOs (Chatterjee & Hambrick, 2007).

3.3 Sampling and Data Collection

3.3.1 Introduction

A sample of JSE listed companies' CEOs was selected for this study. Prior studies have examined the computer software and hardware industries (Chatterjee and Hambrick 2007; Schrand and Zechman 2011) however this study was expanded to examination of CEO narcissism by considering all companies listed on the JSE. It was found reasonable by Olsen (2011) that the executive characteristics would vary across these firms drawn from numerous different industries and settings and thus the population is deemed appropriate for this study.

After the identification of the initial set of companies several filters were applied to ensure the sample fit the overall design and methodology. Chatterjee and Hambrick's (2007) approach to studying the effects of narcissistic CEOs on the strategic dynamism of the company were adopted as discussed in section 2.3.2.

An initial sample of 60 companies was selected. These were weighted based on the percentage that industry represents on the JSE to represent the industry dispersion of all JSE listed companies. One of the companies is currently delisted; however it was listed for the duration of the CEO tenure relating to the CEO included in the sample.

Selected CEOs were screened and only included if they had four or more years of tenure with the company included in the sample, along with the requirement that the CEO began his/her tenure after 2001. The tenure length requirement is a critical design choice because it allows the measurement of narcissistic tendencies in years two and three of the CEO's tenure, with the first year being omitted due to anomalies that arise with CEO turnover and succession. Tenure years four and beyond were then used to test the effects of narcissism. This lagged design reflects the view of narcissism as a stable personality disposition as adopted by Chatterjee and Hambrick (2007) which is a construct that is supported by Cramer (1998); Campbell, Foster & Finkel (2002); Campbell, Bush, Brunell, & Shelton (2005); Engelen, Neumann, & Schmidt (2013) and O'Reilly, Doerr, Caldwell, & Chatman (2013). This design removes any circular or recursive relationship between the narcissism measure and the dependent variables (Olsen, 2011).

The requirement that the CEO started his/her tenure after 2001 was applied as that was the earliest that some of the data included in this analysis was available in digital form. The 2012 financial year was applied as the cut-off date due to the availability of published audited financial statements. Each CEO to be included was then screened for available data as the measure of CEO narcissism requires that the company's annual report for years two and three of each CEO's tenure be available in digital

form and that press releases, interviews and detail regarding executive remuneration is also available for the second and third years of that CEO's tenure.

The final sample after applying the relevant filters yielded a sample of 26 CEOs with a total number of 110 observations representing 136 firm years to be included in the study. The 110 observations represent 136 firm years as the results from year one were not included and the results from years two and three were averaged. The final number of observations included in the data analysis after performing the tests set out in section 3.3.4 amounted to 85.

3.3.2 Delimitations

Only companies listed on the JSE were included in this research due to restrictions regarding data collection.

CEOs with a tenure of 4 or more years during the time period across which this study is conducted were included following the research conducted by Chatterjee and Hambrick (2007).

3.3.3 Five-Item Narcissism Index (Independent Variable)

Data relating to all 5 items on the narcissism index was obtained. As in the study conducted by Chatterjee and Hambrick (2007) the premise has been adopted that one's degree of narcissism is relatively enduring and stable (Cramer, 1998; Campbell, Foster & Finkel, 2002; Campbell, Bush, Brunell, & Shelton, 2005; Engelen, Neumann, & Schmidt, 2013 and O'Reilly, Doerr, Caldwell, & Chatman, 2013). For this reason CEO narcissism was measured at one point in time (the average of the

CEO's second and third years of tenure) as applied by Chatterjee and Hambrick (2007).

3.3.3.1 Prominence of the CEO's photograph

The photograph of each CEO was obtained from the CEO's report in the relevant company's annual financial statements. The photo was then rated as follows: four points if the CEO's photo was of him/her alone and occupied more than half a page; three points if the photo was of the CEO alone and occupied less than half a page; two points if the CEO was photographed with one or more fellow executives; and one point if there was no photograph of the CEO. This photo was obtained from the published, audited financial statements which were downloaded from the relevant company's website. This follows the method applied by Chatterjee and Hambrick (2007) and Engelen, Neumann and Schmidt (2013). The average photograph scores and standard deviation of the photograph scores across all the CEOs were calculated. For each CEO, their photograph scores were standardised by taking the difference between their photograph score and the average photograph score, divided by the standard deviation of photograph scores.

3.3.3.2 CEO's prominence in company press releases

Firstly verification of the level of involvement of the CEO in the press release, being either Stock Exchange News Service announcements or press releases that were archived on the company's website, was established. Discussions conducted by Chatterjee and Hambrick (2007) with communications specialists revealed that each CEO had very stringent guidelines for external announcements and personally

reviewed all but the most routine issues. This report's verification procedures as discussed at the beginning of section 3, together with the findings from the Chatterjee and Hambrick (2007) study resulted in the assumption that all press releases included in this sample were reviewed by and under the control of the CEO.

Criteria for the selection of the press releases to be obtained for use in this study were then put in place. It was found that narcissistic CEOs would aim to be visible in positive press releases but invisible in releases of negative news (Chatterjee & Hambrick, 2007; Engelen, Neumann & Schidt, 2013). Speech has been found to be a form of expressive behaviour (Ramsay, 1968) and thus may be negatively influenced by the discussion of negative events. Press releases that related to neutral or positive events were thus selected, in line with the study conducted by Chatterjee and Hambrick (2007).

The press releases used were either Stock Exchange News Service announcements or press releases that were archived on the company's website. The Stock Exchange News Service (SENS) was established by the Issuer Services Division of the JSE and publishes company announcements and price sensitive company releases to the public. The sources of such press releases are thus deemed appropriate for this study.

One press release from both the second and third year of the CEO's tenure was then selected according to the prescribed criteria, per the method applied by Chatterjee and Hambrick (2007) and Engelen, Neumann, and Schmidt (2013). For this measure, the number of times the CEO was mentioned by name in the company's press releases was counted. This total was then divided by the total number of words in all the

company press releases. Chatterjee and Hambrick (2007) found that the results were similar when they applied the total number of press releases as the denominator.

The average press release scores and standard deviation of the press release scores across all the CEOs were calculated. For each CEO, their press release scores were standardised by taking the difference between their press release score and the average press release score, divided by the standard deviation of scores.

3.3.3.3 CEO's use of first-person singular pronouns

Transcripts of interviews of CEOs (conducted by journalists or financial analysts), isolating only those portions that represented the CEO's words were obtained from Moneyweb, a reputable online financial news service. Again, only interviews regarding positive or neutral events were used as speech is a form of expressive behaviour (Ramsay, 1968) and thus may be negatively influenced by the discussion of negative events. One interview from both the second and third year of the CEO's tenure was selected in accordance with the stipulated criteria. The number of first person singular pronouns (I, me, mine, my, myself) used by the CEO, divided by the sum of those pronouns plus all first person plural pronouns (we, us, our, ours, ourselves) was then counted. The measure is thus the percentage of all first person pronouns that were singular and was averaged for the second and third years of tenure to form this component of the index. This follows the method applied by Chatterjee and Hambrick (2007) and Engle, Neumann and Schmidt (2013).

The average interview scores and standard deviation of the interview scores across all the CEOs were calculated. For each CEO, their interview scores were standardised by

taking the difference between their interview score and the average score, divided by the standard deviation of interview scores.

3.3.3.4 Measures of Relative Pay

Following Hayward and Hambrick's (1997) measure of self-importance two measures of relative pay were used: Relative cash pay and relative non cash pay. Relative cash pay is the CEO's cash compensation (salary and bonus) divided by that of the second highest-paid executive in the firm.

Relative non-cash pay is the CEO's non-cash compensation (deferred income and share options) divided by that of the second highest paid executive. Where a numerical total value of the share options was not provided and instead the details surrounding the share options was disclosed, the share options were valued using the Black-Scholes valuation technique. Chatterjee and Hambrick (2007) noted that their results did not change if they used the pay of the top four executives, excluding the CEO, in the denominators of their measures.

Information regarding the remuneration of the CEO and directors was obtained from the remuneration report/notes to the financial statements from the relevant company's set of annual financial statements downloaded from their website. These measures were calculated for the second and third year of CEO tenure and averaged to calculate a relative measure.

In the case of two CEOs included in the sample, only the CEO was awarded non-cash compensation and no non-cash compensation was awarded to the second highest paid

executive. As this skewed the data considerably the non-cash compensation for the highest paid executives from another company in the same industry were used as proxies for the second highest paid executives in the two companies included in the sample.

To develop a score on the index the total of the final scores captured for each of the five measures, was used to develop a narcissism score for each CEO. The final score for narcissism was calculated by taking each of the standardised scores noted above and dividing by the number of factors in the composite score. This narcissism score averaged and applied to all company years that CEO serves, was applied as the independent variable in this study.

The average relative pay scores and standard deviation of the relative pay scores across all the CEOs were calculated. For each CEO, their relative pay scores were standardised by taking the difference between their relative pay score and the average relative pay score, divided by the standard deviation of relative pay scores.

3.3.4 Strategic Dynamism

Advertising intensity (advertising expense/sales), plant and equipment newness (net plant and equipment/gross plant and equipment), research and development intensity (R&D expense/sales), overhead efficiency (selling, general, and administrative expense/sales), and financial leverage (total debt/equity) have been used as strategic dynamism indicators in prior research (Westphal, Seidel & Stewart (2001); Chatterjee

& Hambrick (2007)). Due to data availability relating to mergers and acquisitions as well as regarding disclosable items in the financial statements, plant and equipment newness, financial leverage and overhead efficiency were used to measure strategic dynamism. The first indicator used was plant and equipment newness, being the ratio of net plant and equipment to gross plant and equipment, which measures the company's capacity expansion activities. The second indicator was financial leverage, being the ratio of debt to equity, which measure the company's capital management. The final measure applied was that of overhead efficiency being the ratio of selling, general and administrative expenses to sales, which represents the cost structure of the company.

Where the ratios were available they were obtained from the McGregor BFA data base. Where the ratios were not available they were calculated using the line items from the published annual financial statements downloaded from the relevant company's website.

In a study conducted by Chatterjee and Hambrick (2007) the change in indicators was calculated for each company between the prior year (t+n-1) and the focal year (t+n). Each indicator was then standardised over all observations (mean=0, s.d.=1) and finally the standardised indicators were summed to form a composite measure of strategic dynamism. This method was applied to the data in this study.

This Strategic Dynamism variable serves as the dependent variable in this study.

3.3.5 Control Variables

Data relating to control variables was also collected. Factors at three levels, namely CEO controls, company controls and industry controls were included and are detailed below.

In a study conducted by Ham, Seybert and Wang (2013), it was examined if signature size, being a proxy for narcissism, exhibited a relationship with corporate investment, the number of patents and citations, abnormal investments and future sales, current firm performance as well as compensation. Chatterjee and Hambrick (2007) conducted a study to determine the effects that narcissistic CEOs have on company strategy and performance.

The control variables in this study follow the approach adopted by Ham, Seybert and Wang (2013) and Chatterjee and Hambrick (2007). The variables are split into three categories, as presented in the Chatterjee and Hambrick (2007) study, namely CEO controls, firm controls and industry controls. Control variables were selected based on the availability of data and adapted for the South African context.

3.3.5.1 CEO Controls

CEO age and CEO tenure were controlled for. As narcissistic CEO's age and/or their tenure increases they tend to engage in grandiose or dynamic strategies (Chatterjee & Hambrick, 2007).

The CEO's age in years, the number of years the CEO has been in their position and gender were also included as control variables. Ham, Seybert and Wang (2013) included these latter three CEO characteristics to control for other sources of variation in CEO behaviour, and to capture other potential variation in CEO signatures. It was stated by the researchers that controlling for CEO age, tenure, and gender should aid them in assuming that any remaining differences in signature size are randomly distributed across CEOs.

Chatterjee and Hambrick (2007) stated that the tendency to engage in grandiose or dynamic strategies may vary with age or tenure, and thus controlled for CEO age and CEO tenure. To control for the CEO's structural power (Finkelstein, 1992), Chatterjee and Hambrick (2007) coded whether the CEO was also board chairman. They also included a binary indicator of whether the firm had a COO or president other than the CEO, to capture whether the CEO delegated operational matters. These control variables were referred to as CEO controls in their study.

In the original study by Chatterjee and Hambrick (2007) an indicator variable was used if the CEO was also chairman. As the code (Institute of Directors, 2009) does not permit the CEO to chair the board of directors and only JSE listed companies will be included in this study, this indicator variable has become redundant and thus was not included in this study.

CEOs may be inclined to make certain strategic decisions dependent on state of economy and thus the economic phase of the South African economy was controlled for. The tenure periods were split between the different economic phases as shown via

analysis of the JSE and then controlled for by using indicator variables [Insert Appendix C]. The economic phases are defined as follows: 2000 and 2004 as constant (zero- low growth), 2005 and 2007 as a boom (exponential growth), 2008 as a recession (decline) and 2009 and 2012 as a recovery phase.

An indicator variable for the presence of the Chief Operating Officer (COO) was included in the analysis to capture whether the CEO delegated operational matters.

3.3.5.2 Company Controls

To control for immediate resource availability, or slack, Chatterjee and Hambrick (2007) included the ratio of current assets to current liabilities. The researchers also stated that because large and old firms may face bureaucratic momentum, they controlled for firm size age. These control variables were referred to as firm controls.

Immediate resource availability, was controlled for by including the ratio of current assets to current liabilities at t+n-1 as included in the study conducted by Chatterjee and Hambrick (2007).

3.3.5.3 Industry Controls

Chatterjee and Hambrick (2007) controlled for the industry's central tendencies for each of their dependent variables by including the industry average (for all firms in the sample, always excluding the focal firm) in each year, for each dependent variable.

The researchers included these controls, respectively, for each firm level dependent variable examined. They also included a dummy variable for our two industry sectors

(coded one for the computer sector).These control variables were referred to as industry controls in their study.

CEOs across all JSE industries and not just the information technology sectors were included in the population for this study and thus all the JSE industries were assigned dummy variables, following the method used by Chatterjee and Hambrick (2007). The industries that were represented in the final sample were identified to be as follows: Consumer Goods, Consumer Services, Financials, Industrials, Technology, Telecommunications and Basic Materials. An indicator variable was used in the analysis to control for the existence of a company in a specific industry thus attempting to control for industry's central tendencies.

3.4 Data Analysis

The aim of this research was to determine if CEO narcissism has a significant influence on strategic dynamism, and the individual component of strategic dynamism, controlling for CEO age, CEO tenure, firm age, resource availability, the presence of a COO, the phase of the economy during which the CEO served his tenure and the industry in which the company operates.

A study was conducted by Ham, Seybert and Wang (2013) to determine if the signature size of a CEO is an indicator of narcissism. This study used multiple regression models to test the effect of CEO narcissism on the firm's investment policies, the level of investment in the presence of financial slack and the effect of CEO narcissism on the firm's innovative output via patent and citation counts. The

study by Ham, Seybert and Wang (2013) also tested whether narcissism affects the relation between current abnormal investment and future firm performance as measured by sales growth and sales levels in subsequent years following the abnormal investments, whether narcissism affects the relation between current abnormal investment and future firm performance as measured by sales growth and sales levels in subsequent years following the abnormal investments and lastly, tests whether more narcissistic CEOs are compensated differently.

The study conducted by Ham, Seybert and Wang (20130), tested a relationship between the independent and dependent variables to address the relevant hypothesis, whilst taking into account numerous control variables.

In order to address the hypothesis formulated in this study the appropriate statistical measure needed to be selected. Multiple regression was selected as the most appropriate statistic tool to test whether such a relationship exists. This follows prior research produced by (Biddle et al. 2009, Cheng, Dhaliwal, and Zhang 2013 and Ham et al. 2013). Regression tests and diagnostics run were guided by the manual produced by Chen, Ender, Michell and Wells (2003). The models for each of tests are presented in the sections below.

3.4.1 Analysis of Variables

Both the dependant and independent variables are measured at the continuous level. Control variables are also measured at the continuos level apart from the indicator variables applied, which are categorical.

A plot of residuals to independent variables was observed and a linear relationship was identified. Histograms of all the variables were also generated in order to identify

any outliers. One observation was removed as result of this analysis. After the normality of the data used in this study was tested, and the regression models run, the normality of residuals was tested.

Descriptive statistics were generated and analysed for the data set. This analysis revealed that some of the variables were not normally distributed and thus had to be transformed. A table and a detailed discussion of the descriptive statistics is presented in Chapter 4. Table 3.4.1.1 lists all the variables and their related labels in STATA and Table 2.4.1.2 reflects the methods used to transform the variables, which was executed using the ladder of powers method, to identify the most suitable method of transformation, in STATA (Tukey, 1977; Gould, 1992). The narcissism score exhibited a strong positive skew and thus could not be transformed; however this is addressed via the testing of the normality of the residuals.

A Shapiro-Wilk W test was performed in order to establish the normality of the transformed data [Insert Table 4.2.2] and the correlation between variables were analysed for any significant relationships [Insert Table 4.2.3].

The multiple regression models set out in section 3.4.2 were run in STATA in order to test whether or not a relationship between the variables exits. The significance and variance explained (R-squared) of each model was considered in order to establish the existence of relationships.

The variance inflation factor for each model was calculated to determine whether the variables exhibited multicollinearity. A Breusch-Pagan / Cook-Weisberg Test for heteroscedasticity was also performed for each of the models. To determine which observations had the most significant influence over the results, a Cook's Distance test was performed followed by a Ramsey Regression Equation Specification Error Test

(RESET) test (Ramsey, 1969), which reflects whether or not any variables have been omitted. For each model a link test was performed to ensure that the regression equations were properly specified and that no additional independent variables are significant above chance. Lastly, a SWilk W test was carried out for each regression model to ensure the normality of residuals. The results of these tests are discussed below in section 3.4.2 Regression Models.

The control variables presence of a COO, phase of the economy and industry in which the company operates are all categorical. As a result dummy variables were used in the regression to represent these indicator variables. The coding applied is presented along with the list of variables in table 3.4.1.1. This methodology is supported by the methodology presented by UCLA: Statistical Consulting Group (n.d.).

3.4.2 Regression Models

The regression analysis was split into four models. The first model explores the relationship between narcissism and strategic dynamism whilst the three models that follow explore the relationship between narcissism and each of the three components of strategic dynamism separately. The advantage of using multiple regression over correlation is that it not only allows one to establish if there is a relationship and what form it takes, it also allows one to examine the strength of the predictors inserted into the model. A list of variables and their associated STATA labels is presented in Table 3.4.1.1.

3.4.2.1 The Relationship between Narcissism and Strategic Dynamism

The regression model below was used to determine whether or not a statistically significant relationship exists between the narcissism score and strategic dynamism.

$$StrDy = \beta_0 + \beta_1 narcissism\sim e + \beta_2 ceoage + \beta_3 ceoTenureln + \beta_4 firmAgeln + \beta_5 currentrat\sim n + \beta_6 C + \beta_7 E + \beta_8 I + \varepsilon$$

A full list of variables is presented in table 3.4.1.1 on page 98.

The variance inflation factor (VIF) was calculated for this model to test for multicollinearity. The results in table 4.3.1.2 show that the VIF for all the variables was less than 10 and therefore no significant multicollinearity was exhibited in this model. It should also be noted that the control variables account for the highest VIF value, and the independent variable exhibits a relatively low score of 1.94. The mean VIF is 4.4 which further supports the statement that no significant multicollinearity exists (Allison, 2012).

A Breusch-Pagan/Cook-Weisberg test was performed to test for heteroscedasticity within the model. The prob>Chi^2 value amounted to 0.7706. As this value is greater than 0.1 it suggests that there is no heteroscedasticity within the model. These results are presented in 4.3.1.3.

Identification of observations that had a significant influence over the results was facilitated by performing a Cook's Distance test. The results displayed in table 4.3.1.4 reveal that observations from company 4 and company 3 had a significant influence over the results and were thus adjusted via the removal of outliers.

The results of the Ramsey RESET test presented in table 4.3.1.5 showed that the model did not omit any variables. The hatsq value reflected in the results from performing the link test, which are presented in table 4.3.1.6, is 0.968. This value is greater than 0.1 and thus no additional independent variables should be significant above chance. The results from the Ramsey RESET test and the link test indicate that the model is well specified.

Lastly, a Shapiro-Wilk W test was performed over the residuals to establish their normality. The residuals exhibit a p-value of 0.37642. This value is non-significant providing evidence of normality.

3.4.2.2 The Relationship between Narcissism and Financial Leverage

The regression model below was used to determine whether or not a statistically significant relationship exists between the narcissism score and once component of strategic dynamism; financial leverage.

$$debtequity\sim n = \beta_0 + \beta_1 narcissism\sim e + \beta_2 ceoage + \beta_3 ceoTenureln + \beta_4 firmAgeln + \beta_5 currentrat\sim n + \beta_6 C + \beta_7 E + \beta_8 I + \varepsilon$$

A full list of variables is presented in table 3.4.1.1 which can be found on page 98.

The variance inflation factor (VIF) was calculated for this model to test for multicollinearity. The results in table 4.3.2.2 show that the VIF for all the variables was less than 10 and therefore no significant multicollinearity was exhibited in this model. It should also be noted that the control variables account for the highest VIF values, and the independent variable exhibits a relatively low score of 1.83. The mean

VIF is 4.59 which further supports the statement that no significant multicollinearity exists (Allison, 2012).

A Breusch-Pagan/Cook-Weisberg test was performed to test for heteroscedasticity within the model. The prob>Chi^2 value amounted to 0.9742. As this value is greater than 0.1 it suggests that there is no heteroscedasticity within the model. These results are presented in 4.3.2.3.

Identification of variables that had a significant influence over the results was facilitated by performing a Cook's Distance test. The results displayed in table 4.3.2.4 reveal that observations from companies 1, 2 and 4 had a significant influence over the results and were thus adjusted via the removal of outliers.

The results of the Ramsey RESET test presented in table 4.3.2.5 showed that the model did not omit any variables. The hatsq value reflected in the results from performing the link test, which are presented in table 4.3.1.6, is 0.108. This value is greater than 0.1 and thus no additional independent variables should be significant above chance. The results from the Ramsey RESET test and the link test indicate that the model is well specified.

Lastly, a Shapiro-Wilk W test was performed over the residuals to establish their normality. The residuals exhibit a p-value of 0.87848. This value is non-significant providing evidence of normality

3.4.2.3 The Relationship between Narcissism and Overhead Efficiency

The regression model below was used to determine whether or not a statistically significant relationship exists between the narcissism score and once component of strategic dynamism; overhead efficiency.

$$sgasale_sqrt = \beta_0 + \beta_1 narcissism{\sim}e + \beta_2 ceoage + \beta_3 ceoTenureln + \beta_4 firmAgeln + \beta_5 currentrat{\sim}n + \beta_6 C + \beta_7 E + \beta_8 I + \varepsilon$$

A full list of variables is presented in table 3.4.1.1 which is presented on page 98.

The variance inflation factor (VIF) was calculated for this model to test for multicollinearity. The results in table 4.3.3.2 show that the VIF for all the variables was less than 10 and therefore no significant multicollinearity was exhibited in this model. It should also be noted that the control variables account for the highest VIF values, and the independent variable exhibits a relatively low score of 1.84. The mean VIF is 4.56 which further supports the statement that no significant multicollinearity exists (Allison, 2012).

A Breusch-Pagan/Cook-Weisberg test was performed to test for heteroscedasticity within the model. The prob>Chi^2 value amounted to 0.5190. As this value is greater than 0.1 it suggests that there is no heteroscedasticity within the model. These results are presented in 4.3.3.3.

Identification of variables that had a significant influence over the results was facilitated by performing a Cook's Distance test. The results displayed in table 4.3.3.4 reveal that observations from companies 1, 2 and 9 had a significant influence over the results and were thus adjusted via the removal of outliers.

The results of the Ramsey RESET test presented in table 4.3.3.5 showed that the model did not omit any variables. The hatsq value reflected in the results from performing the link test, which are presented in table 4.3.3.6, is 0.371. This value is greater than 0.1 and thus no additional independent variables should be significant above chance. The results from the Ramsey RESET test and the link test indicate that the model is well specified.

Lastly, a Shapiro-Wilk W test was performed over the residuals to establish their normality. The residuals exhibit a p-value of 0.2668. This value is non-significant providing evidence of normalitythus reveals clear evidence of normality.

3.4.2.4 The Relationship between Narcissism and Plant and Equipment Newness

The regression model below was used to determine whether or not a statistically significant relationship exists between the narcissism score and once component of strategic dynamism; plant and equipment newness.

$$FAAtTA = \beta_0 + \beta_1 narcissism{\sim}e + \beta_2 ceoage + \beta_3 ceoTenureln + \beta_4 firmAgeln + \beta_5 currentrat{\sim}n + \beta_6 C + \beta_7 E + \beta_8 I + \varepsilon$$

A full list of variables is presented in table 3.4.1.1 which is presented on page 98.

The variance inflation factor (VIF) was calculated for this model to test for multicollinearity. The results in table 4.3.4.2 show that the VIF for all the variables was less than 10 and therefore no significant multicollinearity was exhibited in this model. It should also be noted that the control variables account for the highest VIF values, and the independent variable exhibits a relatively low score of 1.83. The mean

VIF is 4.59 which further supports this statement that no significant multicollinearity exists (Allison, 2012).

A Breusch-Pagan/Cook-Weisberg test was performed to test for heteroscedasticity within the model. The prob>Chi^2 value amounted to 0.1448. As this value is greater than 0.1 it suggests that there is no heteroscedasticity within the model. These results are presented in 4.3.4.3.

Identification of variables that had a significant influence over the results was facilitated by performing a Cook's Distance test. The results displayed in table 4.3.4.4 reveal that observations from companies 4 and 5 had a significant influence over the results and were thus adjusted via the removal of outliers.

The results of the Ramsey RESET test presented in table 4.3.4.5 showed that the model did not omit any variables. The hatsq value reflected in the results from performing the link test, which are presented in table 4.3.4.6, is 0.0.139. This value is greater than 0.1 and thus no additional independent variables should be significant above chance. The results from the Ramsey RESET test and the link test indicate that the model is well specified.

Lastly, a Shapiro-Wilk W test was performed over the residuals to establish their normality. The residuals exhibit a p-value of 0.08394 which is close 0.1 and greater than 0.05. This value is non-significant providing evidence of normality.

3.5 Conclusion

This chapter has presented the methods used in this study. The hypothesis was presented first followed by an explanation of the instrument used to evaluate the level of narcissism in CEOs. The delimitations of the study were then mentioned as well as a description of how the data was collected for each item of the narcissism index, the components of the strategic dynamism measure and the control variables. This chapter established that multiple regression would be used in order to determine whether there was a statistically significant relationship between narcissism and strategic dynamism and each of the three individual components. All the statistical tests and processes applied to the data were also discussed in this chapter. In chapter 4 the results of the statistical tests outlined in this chapter will be presented and discussed.

Chapter 4

4. Research Results and Discussion

4.1 Introduction

This section displays all of the results obtained in this study. The descriptive statistics, test for normality and correlation coefficients generated by STATA are presented and discussed first. The results of each regression model presented in section 4.3 Exploration of Model Relationships and are then discussed in section 4.4 Discussion of Model Relationship.

4.2 Descriptive Statistics and Diagnostic Tests

Sections 4.2.1, 4.2.3 and 4.3.3 present and discuss the descriptive statistics and further diagnostic tests run on the data used in this study.

4.2.1 Analysis of Descriptive Statistics

Table 4.2.1 below displays the descriptive statistics for the independent variable, dependent variables and control variables, which are not indicator variables, applied in this study. It can be seen that 85 observations were included for testing. The data was transformed using the ladder of powers method to identify the optimal transformation method, as discussed in section 3.4.1.

Table 4.2.1

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
strategicd~m	85	0.04	2.23	-5.57	16.68
narcissism~e	85	-0.03	2.77	-2.52	11.34
debtequity~o	85	1.15	0.97	0.11	5.95
sgasales	83	37.39	26.27	2.49	97.25
fixedasste~s	85	0.00	0.00	0.00	0.00
ceoage	85	50.39	6.73	36.5	63
firmage	85	47.57	34.67	5.5	121
currentratio	85	1.69	0.76	0.59	4.07
ceotenure	85	4.91	2.07	1.5	11

4.2.2 Normality of Data

After the variables presented in table 3.4.1.2 on page 98 had been transformed using the most appropriated method identified by using the ladder of powers method in STATA, the Shapiro-Wilk W test was conducted to test the normality of the data. Table 4.2.2 below displays the results of this test. It is shown that narcissism~e and firmAge_ln reflect a p-value less than 0.01, however the Shapiro-WilkW tests run over the residuals of all of the regression models in this study exhibited normality [Insert tables 4.3.1.7, 4.3.2.7, 4.3.3.7 and 4.3.4.7].

Table 4.2.2

Shapiro-Wilk W Test for Normal Data

Variable	Obs	W	V	Z	Prob>z
StrDy_inv	83	0.97	2.045	1.57	0.06
narcissism~e	83	0.75	17.64	6.30	0.00
ceoage	83	0.98	1.64	1.09	0.14
firmAge_ln	83	0.95	3.52	2.76	0.00
ceoTenure_ln	83	0.98	1.22	0.44	0.33
debtequity~n	83	0.99	0.88	-0.28	0.61
sgasale_sqrt	81	0.96	2.78	2.24	0.01
FAAtTA	83	0.98	1.29	0.57	0.29
currentrat~n	83	0.99	0.89	-0.26	0.60

4.2.3 Correlation Coefficients

The correlation coefficients of the dependent and independent variables as well as the control variables which are not indicator variables are presented below in table 4.2.3. Upon examination of these results it can be seen that there is a significant (at a 10% level) moderate negative relationship between narcissism and CEO tenure; the same is observed for the relationship between narcissism and immediate resource availability. This indicates that the higher the narcissism score the lower the CEO tenure and the lower the resource availability. This could mean that narcissistic CEOs tend to serve for shorter periods of time and less resources immediately available which could indicate that they adopt a less prudent approach. This supports the research conducted by Hribar and Yang (2013).

Table 4.2.3

Correlation Coefficients

	narcis~e	ceoage	firmAg~n	ceoTen~n	curren~n
narcissism~e	1				
ceoage	0.21	1			
firmAge_ln	0.19	0.20	1		
ceoTenure_ln	-0.43*	0.15	0.18	1	
currentrat~n	-0.31*	-0.19	0.18	0.05	1

*Significant correlation exhibited

4.3 Exploration of Model Relationships

This section explores whether or not there is a statistically significant relationship between narcissism and strategic dynamism and each of the components of strategic dynamism separately. For each model the significance and results of the model are presented below. The information generated by the diagnostic tests run with respect to each of the models is discussed in section 3.4.2 Regression Models. A discussion of the model relationships is presented in section 4.4 Discussion of Model Relationships.

4.3.1 Strategic Dynamism

The results of the regression model testing whether there is a statistically significant relationship between narcissism and strategic dynamism are presented in table 4.3.1.1 below. The p-value of 0.2199 shows that the model is not significant at the 10% level. As a result each of the components of strategic dynamism were also tested to determine whether there is a relationship between narcissism and the individual

components of strategic dynamism. The r-squared of the model is 0.053 suggesting that 5.3% of variance in strategic dynamism is explained by the independent variables. This regression model has been tested for outliers. Where outliers were discovered they were removed thus resulting in 80 observations included in this model. Consumer goods exhibits a p-value of 0.120, consumer services exhibits a p-value of 0.140 and telecommunications exhibits a p-value of 0.167. Whilst these three variables reflected the smallest p-values, they do not provide evidence of a relationship with strategic dynamism.

Table 4.3.1.1

Results - Strategic Dynamism

StrDy_inv	Coef.	Std. Err.	T	P>t
narcissismscore	0.001	0.001	1.010	0.315
ceoage	0.000	0.000	0.710	0.482
firmAge_ln	-0.005	0.004	-1.240	0.221
ceoTenure_ln	0.008	0.009	0.900	0.373
currentratio_ln	-0.003	0.007	-0.450	0.653
coo	-0.004	0.014	-0.280	0.784
exponential20052007	-0.012	0.015	-0.840	0.406
recession2008	-0.016	0.016	-1.000	0.320
recovery20092014	0.004	0.015	0.290	0.775
consumergoods	0.024	0.015	1.580	0.120
consumerservices	0.024	0.016	1.500	0.140
industrials	0.022	0.016	1.400	0.167
telecommunications	0.007	0.023	0.290	0.776
basicmaterials	0.018	0.015	1.220	0.229
_cons	0.132	0.028	4.680	0.000
Number of obs	=	80		
Prob > F	=	0.2199		
R-squared	=	0.2215		
Adj R-squared	=	0.0538		

4.3.2 Financial Leverage

The results of the regression model testing whether there is a statistically significant relationship between narcissism and a component of strategic dynamism, financial leverage, are presented in table 4.3.2.1 below. The p-value value of 0.000 shows that the model is significant at the 1% level which suggests that the independent variables reliably predict the variance in the dependent variable. The r-squared of the model is 0.56 suggesting that 56% of variance in financial leverage is explained by the independent variables. This regression model has been tested for outliers. Where outliers were discovered they were removed thus resulting in 85 observations included in this model.

CEO age, CEO tenure, resource availability, and the industrial sector all reflected p-values of 0.000 providing very strong evidence that these variables influence financial leverage. The narcissism score exhibited a p-value of 0.0080 whilst CEO age exhibited a p-value of 0.0130 also providing very strong evidence that the narcissism score and CEO age significantly influence financial leverage.

The consumer goods sector reflected a p-value of 0.0480 and the telecommunications sector reflected a p-value of 0.0490 providing evidence that these sectors exhibit a significant relationship with financial leverage.

Table 4.3.2.1

Results - Financial Leverage

debtequity_ln	Coef.	Std. Err.	t	P>t
Narcissismscore	-0.081	0.030	-2.750	0.008
Ceoage	0.046	0.011	4.300	0.000
firmAge_ln	-0.073	0.102	-0.720	0.477
ceoTenure_ln	-1.118	0.213	-5.260	0.000
currentratio_ln	-0.835	0.160	-5.220	0.000
Coo	-0.131	0.344	-0.380	0.706
exponential20052007	0.369	0.356	1.040	0.304
recession2008	0.625	0.392	1.590	0.115
recovery20092014	0.911	0.359	2.540	0.013
Consumergoods	0.736	0.366	2.010	0.048
Consumerservices	0.448	0.388	1.160	0.252
Industrials	1.689	0.386	4.370	0.000
telecommunications	1.121	0.560	2.000	0.049
Basicmaterials	0.349	0.367	0.950	0.345
_cons	-1.731	0.686	-2.520	0.014
Number of obs	=	85		
Prob > F	=	0.000		
R-squared	=	0.635		
Adj R-squared	=	0.562		

4.3.3 Overhead Efficiencies

The results of the regression model testing whether there is a statistically significant relationship between narcissism and a component of strategic dynamism, overhead efficiency, are presented in table 4.3.3.1 below. The p-value reflects as 0.000 showing that the model is significant at the 1% level which suggests that the independent variables reliably predict the variance in the dependent variable. The r-squared of the model is 0.77 suggesting that 77% of variance in the overhead efficiencies is explained by the independent variables. This regression model has been tested for outliers. Where outliers were discovered they were removed thus resulting in 80 observations included in this model.

CEO tenure, resource availability, the consumer goods sector, the industrial sector and the basic materials sector all have a p-value of 0 providing very strong evidence that they exhibit a significant relationship with overhead efficiency. The telecommunications industry has a p-value of 0.001, the recovery phase of the economy has a p-value 0.003 and the presence of a COO has a p-value of 0.005, providing very strong evidence that these three variables also have a significant relationship with overhead efficiency.

CEO age reflects a p-value of 0.012 and firm age reflects a p-value of 0.039 providing evidence that there is a significant relationship present between these two variables and overhead efficiency.

Table 4.3.3.1

Results - Overhead Efficiency

sgasale_sqrt	Coef.	Std. Err.	t	P>t
Narcissismscore	-0.055	0.052	-1.060	0.291
Ceoage	0.049	0.019	2.570	0.012
firmAge_ln	0.380	0.180	2.110	0.039
ceoTenure_ln	-1.638	0.370	-4.430	0.000
currentratio_ln	-1.396	0.288	-4.840	0.000
Coo	2.086	0.717	2.910	0.005
exponential20052007	0.922	0.622	1.480	0.143
recession2008	1.208	0.680	1.780	0.080
recovery20092014	1.903	0.623	3.050	0.003
Consumergoods	-3.595	0.642	-5.600	0.000
Consumerservices	-0.854	0.674	-1.270	0.210
Industrials	-2.763	0.676	-4.090	0.000
telecommunications	-3.748	1.049	-3.570	0.001
Basicmaterials	-5.924	0.639	-9.270	0.000
_cons	6.622	1.195	5.540	0.000
Number of obs	=	80		
Prob > F	=	0.000		
R-squared	=	0.810		
Adj R-squared	=	0.770		

4.3.4 Plant and Equipment Newness

The results of the regression model testing whether there is a statistically significant relationship between narcissism and a component of strategic dynamism, plant and equipment newness, are presented in table 4.3.4.1 below. The p-value reflects as 0.001 showing that the model is significant at the 1% level which suggests that the independent variables reliably predict the variance in the dependent variable. The r-squared of the model is 0.31 suggesting that 31% of variance in the plant and equipment newness is explained by the independent variables. This regression model has been tested for outliers. Where outliers were discovered they were removed thus resulting in 80 observations included in this model.

CEO age reflects a p-value of 0.002 and the narcissism score reflects a p-value of 0.009, providing very strong evidence that these two variables exhibit a significant relationship with plant and equipment newness. Resource availability has a p-value of 0.014 providing strong evidence that it has a significant relationship with plant and equipment newness.

Table 4.3.4.1

Results - Plant and Equipment Newness

FAAtTA	Coef.	Std. Err.	t	P>t
Narcissismscore	-0.143	0.053	-2.680	0.009
Ceoage	-0.063	0.019	-3.270	0.002
firmAge_ln	-0.172	0.183	-0.940	0.352
ceoTenure_ln	-0.700	0.383	-1.830	0.072
currentratio_ln	-0.723	0.288	-2.510	0.014
Coo	0.463	0.620	0.750	0.458
exponential20052007	0.497	0.642	0.770	0.441
recession2008	1.201	0.706	1.700	0.093
recovery20092014	0.681	0.647	1.050	0.297
Consumergoods	-0.751	0.660	-1.140	0.259
Consumerservices	-0.486	0.699	-0.700	0.489
Industrials	-0.149	0.696	-0.210	0.831
telecommunications	-0.582	1.009	-0.580	0.566
Basicmaterials	-0.005	0.661	-0.010	0.994
_cons	-5.223	1.235	-4.230	0.000
Number of obs	=	85		
Prob > F	=	0.000		
R-squared	=	0.424		
Adj R-squared	=	0.308		

4.4 Discussion of Model Relationships

Researchers in a variety of academic fields including strategic management (Jensen & Zajac, 2004), organizational theory (Palmer & Barber, 2001), psychology (Peterson, Smith, Martorana, & Owens, 2003) and finance (Bertrand & Schoar, 2003) have shown considerable interest in understanding the effects of top executives on their organizations in recent years. Chatterjee and Hambrick (2007) noted that almost no scholarly attention has been paid to the personality trait they purport that most vividly comes to mind in describing some CEOs, which is narcissism.

This study has drawn upon contemporary psychological theory and research to argue that narcissism in CEOs is a personality dimension, rather than only a pathological disorder (Kets de Vries, 2004). This study has also focussed on the effects that narcissistic CEOs have on the companies they run, through their concrete decisions, generate different company strategies and performance profiles than do their less narcissistic counterparts.

The results of this study show that there is no significant relationship between narcissism and strategic dynamism and narcissism and overhead efficiency with regard to JSE listed companies. It is also shown that there is a significant relationship between narcissism and financial leverage, as well as narcissism and plant and equipment newness, which are two components of strategic dynamism.

A possible explanation for this is the corporate governance structures in place over JSE listed companies. JSE listed companies are required to comply with The Code (Institute of Directors, 2009) which aims to encourage a balance of power amongst the

board of directors thus diluting the influence a CEO may have. These results suggest that whilst narcissistic CEOs influence two components of strategic dynamism, overall they do not have significant influence over the strategic dynamism of the company.

Following from the theoretical argument that narcissistic CEOs favour actions that attract an attentive audience, considerable evidence has been found by Chatterjee and Hambrick (2007) that CEO narcissism is positively related to multiple indicators of strategic dynamism and grandiosity. While less narcissistic CEOs may be inclined to pursue strategies adopting an incremental implementation and that entail refining and elaborating on the *status quo*, narcissistic CEOs gravitate to more extreme choices. Investing in plant and equipment as well as making radical decisions regarding capital structure would garner much more attention than overhead efficiencies providing an explanation as to why financial leverage and plant and equipment newness are influenced by narcissism but not overhead efficiency. These findings add to the evidence that company strategies are highly susceptible to human factors (Finkelstein &Hambrick, 1996; Bertrand & Schoar, 2003), and they particularly highlight the role of CEO narcissism in generating bold strategies.

The results from this research further support the research performed by in indicating that the personality traits of CEO, focussing on narcissism, have an effect on aspects of the company these CEOs run.

4.5 Conclusion

The regression model testing for significant relationships between the narcissism score and strategic dynamism did not yield any strong evidence that such a relationship exists. The results from the regression models exploring the existence of a relationship between the narcissism score and the individual components of strategic dynamism did however provide evidence of statistically significant relationships between the variables.

There was very strong evidence to suggest that there is a significant relationship between narcissism and financial leverage as well as narcissism and plant and equipment newness.

This chapter has presented statistically significant relationships between narcissism and two components of strategic dynamism, financial leverage and plant and equipment newness.

The discussion of these results reflects that the finding of no significant relationship between narcissism and strategic dynamism is not consistent with prior studies. It is noted however that this study has been conducted using JSE listed companies whilst prior literature deals with international and mostly American studies.

The significant relationship between narcissism and the two components of strategic dynamism, financial leverage and plant and equipment newness, supports the findings of prior studies that narcissistic CEOs are more likely to make radical changes as opposed to incremental changes.

These results also support the research that indicates that the personality traits of CEOs have an effect on the companies they run. These results will be further contextualised in chapter 5, which also provides an overall conclusion for this research report.

Chapter 5

5. Conclusion

5.1 Discussion of Results and Recommendations

This study of CEOs of a sample of JSE listed companies provides partial support for the hypotheses (H_2 and H_4) there is a significant relationship between CEO narcissism and two components of strategic dynamism, financial leverage and plant and equipment newness.

The unobtrusive measures of narcissism compiled to form the 5-item narcissism index appear to have generated an adequate narcissism measure which was then be used to establish the existence of the relationship between the level of a CEO's narcissism and the strategic dynamism of that particular company.

From the results analysis there appears to be a relationship between narcissism and two components of strategic dynamism taking into account which phase of the economy the CEO served his tenure in, the age of the CEO, resource availability, the age of the firm, the presence of a COO and the industry in which the company is operating. It therefore appears that boards should give consideration to narcissism as one of the factors used to choose CEO's. This supports the findings of the study carried out by Chatterjee and Hambrick (2007) that revealed a relationship between narcissism and strategic dynamism. These results also support studies by Malmendier and Tate (2005), Ben-David, Graham and Harvey (2007) and Olsen (2011) that CEO personality traits have an effect on the outcomes achieve by the company.

Investors should determine their risk profile and investment goals before deciding upon a company in which to invest. In order to aid this decision the level of CEO narcissism should be considered as it has been shown to impact the degree of change in strategic dynamism These results should be considered in conjunction with findings of Campbell, Goodie and Foster (2004) how discovered that narcissists have been found to make riskier decisions.

Beyond the theoretical contribution to this study of the effects of CEO personality on strategic outcomes, this study also makes a methodological contribution. As a result of the reliance on unobtrusive trace indicators of narcissistic tendencies, the well-known difficulties of administering personality batteries to CEOs were overcome. This supports the use of the indicators of various facets of the narcissistic personality developed by Chatterjee and Hambrick 92007). This method provided a template for using unobtrusive indicators of other personality dimensions in CEOs, and these results provides further support for research on narcissism in CEOs using unobtrusive factors.

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The presence of a COO has shown to have a significant effect only on the overhead efficiency of the company and not on the other two components of strategic dynamism or on the composite measure of strategic dynamism. This reveals that even when CEOs delegate their operational responsibilities, their influence over the company does not appear to be diluted by a significant amount. This is a significant finding in terms of corporate governance structures in South Africa as it appears that the aim of attaining a balance of power within the company's leadership may not be met. These findings can be used to support the argument put forward by Amernic and Craig (2010) that as narcissism has been found to lie at the heart of leadership (Kets de Vries, 2004), it appears that a better understanding of narcissism and could lead to

better explanations of the involvement of CEOs in episodes of misleading and unethical financial reporting that have been implicated in corporate collapses.

5.2 Research Limitations and Areas for Future Research

The most notable limitation in this study is the use of these unobtrusive measures of narcissism. It has been argued that CEOs have considerable influence over the factors used in this index; however it is possible that characteristics other than CEO narcissism are influencing these factors. It is also possible that the factors expose some aspects of narcissism more than others and therefore even though the 5-item index has been found by Chatterjee & Hambrick (2007) to have face validity, statistically cohere and yield an index that predicts logically expected outcomes; it still requires further validation and refinement. Whilst the most accurate results would be obtained by using direct measures of narcissism, such as the CEOs themselves completing NPI assessments, the likelihood of obtaining such data is extremely low. Further research should be carried out by replicating this study on many other samples and in light of the above mentioned limitation an attempt should be made to determine the correlation between the results of this study and the CEO's scores from an NPI assessment. As mentioned it would be impractical to assume such data would be readily obtainable, however it may be possible to obtain NPI ratings on CEOs from their close subordinates or others. Such an exercise would confirm the validity of the 5-item index and would also indicate the positioning of the CEOs in this sample on the NPI scale. The CEOs in this sample displayed a variance on the narcissism measure, but it cannot be ascertained, compared to the general population, if the sample was skewed or restricted in its range.

When verifying the level of the CEO's involvement in the unobtrusive measures of narcissism to be used in the index only 7 CEOs in the sample confirmed that they had significant influence over the inputs. This research would benefit from using a sample of CEOs that had all confirmed that they have a significant amount of influence over the factors included in the 5-item index.

It was also noted in the literature that narcissists may be drawn to certain types of industries (Chatterjee & Hambrick, 2007). The results show that the type of industry in which the company operates has a significant interaction with narcissism when analysing the combined effect on the strategic dynamism of the company. It thus appears that it would be beneficial to conduct a study with a large sample for each industry to measure the correlation of narcissism and strategic dynamism in each specific industry.

It would be informative for a study to be conducted examining the effect that the structural requirements imposed on organisations in South Africa via The Code (Institute of Directors, 2009) have on permeation of CEO's personality traits into the organisation. Whilst the requirements remove a certain portion of power from the CEO, the CEO may have such a powerful effect on those around him that he still may be able to influence the decisions of other people by such an extent that the objectives set out by The Code (Institute of Directors, 2009) are nullified and thus a balance of power does not exist. Conversely research in this area may provide support for the implementation of governance structures as the dilution of power may be evident.

Annually Ernst & Young, one of the big 4 accounting firms, releases a report grading the reporting quality of the top 100 listed companies on the JSE, by market capitalisation. Through this survey, Ernst & Young has assessed the progress that the top listed companies and state-owned entities that have made in producing integrated reports (Ernst & Young, 2012). The companies are graded as "excellent", "good" or "progress still to be made" and two of the companies included in the sample of CEOs examined in this study were in the top 100 and rated as having a "good" integrated report. As the unobtrusive measures are extracted from company financial statements, future studies conducted in South Africa may need to consider the ranking of the quality of the financial reports of the companies included in the sample in order to maximise the reliability of the information obtained from the annual financial statements of companies.

5.3 Concluding Remarks

The results of studies of CEO personality traits and their effects on the companies for which the CEOs work, significantly affect financial leverage and plant and equipment newness. The benefits of understanding the aspects of this relationship could influence the way people invest and the compositions on company boards and committees. Some literature goes so far as to state that a better understanding of narcissism, can lead to better explanations of the involvement of CEOs in episodes of misleading and unethical financial reporting that have been implicated in corporate collapses (Amernic & Craig, 2010).

From the literature and the results of this study it can be seen that the personality traits of CEOs do have an impact on the companies they work for. As personality is such a

complex concept it is important to continue studying these effects in order to gain a deeper understanding of the working environment and how that ultimately effects the financial performance and in turn the stakeholders of that company and the society in which that company is a corporate citizen.

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7. Appendices
Appendix A

Black Scholes Formula

$$C = SN(d_1) - N(d_2)Ke^{-rt}$$

$$d_1 = \frac{\ln\left(S/K\right) + \left(r + s^2/2\right)t}{s\sqrt{t}}$$

$$d_2 = d_2 - s\sqrt{t}$$

C = Call premium
S = Current stock price
t = Time until option exercise
K = Option striking price
r = Risk-free interest rate
N = Cumulative standard normal distribution
e = Exponential term

s = St. Deviation
ln = Natural Log

Folger (2013)

Appendix B

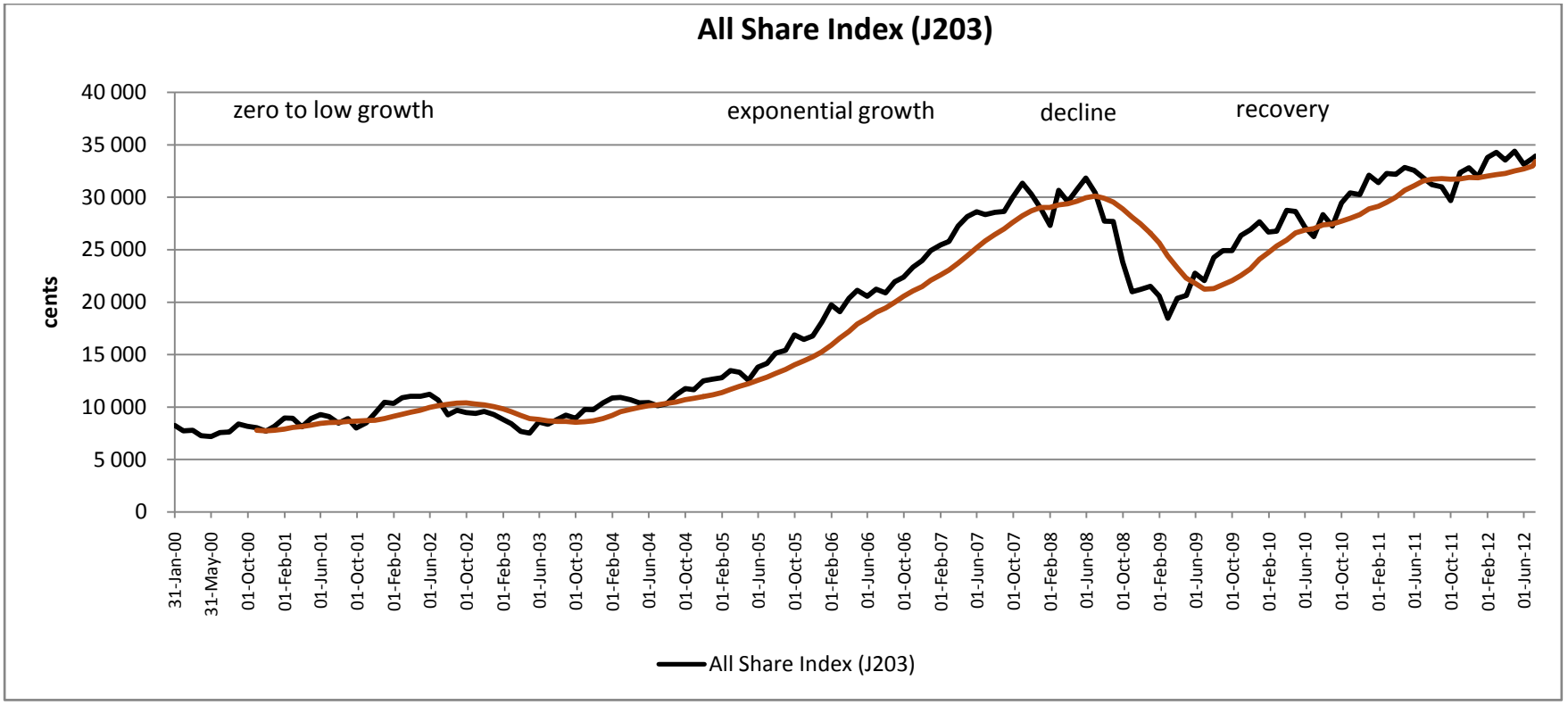
Unobtrusive Indicators of Narcissism in CEOs

	Conceptual Elements of Narcissism (from Emmons, 1987)			
	Leadership/ Authority	Self-absorption/ Self-admiration	Superiority/ Arrogance	Exploitativeness/ Entitlement
Illustrative Items From Narcissistic Personality Inventory (NPI)	I really like to be the centre of attention.	I like to look at myself in the mirror.	I usually dominate any conversation.	I insist on getting the respect that is due to me.
	I like having authority over other people	I am an extraordinary person.	I am a born leader.	I am envious of other people's good fortune.

Unobtrusive Indicators of Narcissism in CEOs	Interpretive Alignment With Elements of Narcissism			
Prominence of CEO's Photograph in Annual Reports	I am the central figure in this company.	I enjoy the visibility that comes with being CEO.		I deserve to be showcased.
CEO Prominence in Press Releases	I am the central figure in this company.	I enjoy the visibility that comes with being CEO.		I deserve to be showcased.
First Person Singular Pronouns in Interviews	Leadership is a solo endeavor, not a group activity.		The company and I are synonymous.	I deserve to be showcased.
CEO Relative Pay (cash and non-cash)			I am, by far, the most valuable person in this organization.	I deserve far more compensation than anyone else in this organization.

Chatterjee & Hambrick (2007)

Appendix C


All Share Index (J203)
zero to low growth
exponential growth
decline
recovery
cents
40 000
35 000
30 000
25 000
20 000
15 000
10 000
5 000
0
31-Jan-00
31-May-00
01-Oct-00
01-Feb-01
01-Jun-01
01-Oct-01
01-Feb-02
01-Jun-02
01-Oct-02
01-Feb-03
01-Jun-03
01-Oct-03
01-Feb-04
01-Jun-04
01-Oct-04
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01-Jun-07
01-Oct-07
01-Feb-08
01-Jun-08
01-Oct-08
01-Feb-09
01-Jun-09
01-Oct-09
01-Feb-10
01-Jun-10
01-Oct-10
01-Feb-11
01-Jun-11
01-Oct-11
01-Feb-12
01-Jun-12
All Share Index (J203)

Appendix D



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11 February 2014

Ms S Oechslin

Student Number: 355671

Dear Ms Oechslin

I have pleasure in informing you that the **SOA Post Graduate Degrees Committee** has approved the following title for your Research Report:

An exploratory study regarding the impact narcissistic CEOs have on the strategic dynamism of JSE listed companies

Furthermore the committee has approved the following supervisor: **Mr K Okyere- Boakye**, with whom you should maintain regular contact. Please ensure that the title on the bound copies of your research report is the same as that approved by the Post Graduate Committee.

You will be required to submit to the Faculty Office on submission of the report:

- Two spiral bound copies of the Research Report with a signed declaration
- one copy of the abstract
- one copy of the title page
- the Supervisor's Clearance Form

The ethics number for your research report is **CACCN/1054**. It is very IMPORTANT that you ensure that this number appears on the cover page of your research report when you submit.

Please note that you need to be registered every year until your graduation.

Please note: After confirmation of the final Research Report mark, you will be required to submit two unbound final corrected copies signed and dated, an electronic copy (in PDF format), a signed library clearance form and have completed the full ETD form.

We wish you success with your research.

Kind Regards

Ms Ntshepeng Tshabalala

Senior Faculty Officer

Faculty of Commerce, Law & Management

List of Tables

Table 3.4.1.1

List of Variables

Variable	STATA Label
Dependent Variable	
Level of Narcissism	narcissism~e
Independent Variables	
Strategic Dynamism	StrDy_inv
Financial Leverage	debtequity~n
Overhead Efficiency	sgasale_sqrt
Plant and Equipment Newness	FAAtTA
Control Variables	
CEO Age	ceoage
CEO Tenure	ceoTenure_ln
Firm Age	firmAge_ln
Resource Availability	currentrat~n
Indicator Variables	
Presence of a COO (C)	
Yes	1
No	2
Phase of the Economy (E)	
Constant	1
Boom	2
Recession	3
Recovery	4
Industry (I)	
Consumer Goods	1
Consumer Services	2
Financials	3
Industrials	4
Technology	5
Telecommunications	6
Basic Materials	7
Error terms	ε

Table 3.4.1.2

Transformation of Variables

Variable	Transformation Method
StrDy_inv	Inverse
debtequity~n	Log
sgasale_sqrt	Square Root
FAAtTA	Log
Ceoage	Not Required
ceoTenure_ln	Log
firmAge_ln	Log
currentrat~n	Log

Table 4.3.1.2

Test of Mulitcollinearity - Variance Inflation Factor

Variable	VIF	1/VIF
rec~20092014	8.18	0.1222770
Industrials	7.63	0.1310140
exp~20052007	6.86	0.1458460
consumergo~s	6.71	0.1491380
basicmater~s	6.36	0.1572570
telecommun~s	5.65	0.1769700
consumerse~s	4.76	0.2099910
recessi~2008	3.99	0.2507960
Coo	3.09	0.3234310
ceoTenure_ln	2.27	0.4406180
narcissism~e	1.94	0.5147030
firmAge_ln	1.80	0.5543770
Ceoage	1.47	0.6822820
currentrat~n	1.41	0.7073750
Mean VIF	4.44	

Table 4.3.1.3

Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

Ho: Constant variance
Variables: fitted values of StrDy_inv

chi2(1) = 0.09
Prob > chi2 = 0.7706

Table 4.3.1.4

Cook's Distance

	code	narcis~e	CookSt~2
24	Company 1	-1.527	0.394814
70	Company 2	-1.527	0.144453
71	Company 2	0.455	0.322402
73	Company 3	-0.536	0.055346
77	Company 4	-0.536	0.097318
80	Company 4	-0.536	0.064683
83	Company 4	-0.536	21.731
84	Company 4	-1.207	0.074293

Table 4.3.1.5

Test for Omitted Variables

Ramsey RESET test using powers of the fitted values of StrDy_inv
Ho: model has no omitted variables
F(3, 62) = 0.19
Prob > F = 0.9026

Table 4.3.1.6

Link Test

Source	SS	df	MS
Model	0.009565467	2	0
Residual	0.033614872	77	0
Total	0.043180339	79	0

Number of obs	=	80		
F(2, 77)	=	10.96		
Prob > F	=	0.0001		
R-squared	=	0.2215		
Adj R-squared	=	0.2013		
Root MSE	=	0.02089		

StrDy_inv	Coef.	Std. Err.	t	P>t
_hat	0.7696768	5.640021	0.1	0.892
_hatsq	0.7381903	18.0634	0	0.968
_cons	0.0178764	0.4387277	0	0.968

Table 4.3.1.7

Shapiro-Wilk W Test for the Normality of Residuals

Variable	Obs	W	V	z	Prob>z
resStrDy2	80	0.98318	1	0.315	0.37642

Table 4.3.2.2

Test of Mulitcollinearity - Variance Inflation Factor

Variable	VIF	1/VIF
rec~20092014	8.72	0.11464
industrials	7.62	0.13122
exp~20052007	7.24	0.13805
consumergo~s	6.85	0.14598
basicmater~s	6.43	0.15559
consumerse~s	6	0.16656
telecommun~s	5.65	0.17695
recessi~2008	3.99	0.25064
coo	3.09	0.3241
ceoTenure_ln	2.21	0.45323
narcissism~e	1.83	0.54759
firmAge_ln	1.77	0.5653
ceoage	1.42	0.70328
currentrat~n	1.37	0.72941
Mean VIF	4.59	

Table 4.3.2.3

Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

Ho: Constant variance
Variables: fitted values of debtequity_ln

chi2(1) = 0.00
Prob > chi2 = 0.9742

Table 4.3.2.4

Cook's Distance

	code	narcis~e	CookSt~y
5	Company 5	-0.536	.
11	Company 6	-0.536	.
21	Company 7	4.263	0.0601029
24	Company 1	-1.527	1.754889
44	Company 8	-0.536	0.0635892
70	Company 2	-1.527	0.1186601
71	Company 2	0.455	0.2593817
73	Company 3	-0.536	0.1271413
74	Company 3	-0.536	0.0938039
80	Company 4	-0.536	0.059468
83	Company 4	-0.536	17.16892
85	Company 4	-2.21	0.0508208

Table 4.3.2.5

Test for Omitted Variables

Ramsey RESET test using powers of the fitted values of debtequity_ln
Ho: model has no omitted variables
F(3, 67) = 2.00
Prob > F = 0.1221

Table 4.3.2.6

Linktest

Source	SS	df	MS
Model	38.342248 1	2	19.171 1
Residual	20.988576 3	82	0.2559 6
Total	59.330824 4	84	0.7063 2

debtequity~n	Coef.	Std. Err.	t	P>t
_hat	0.9532607	0.0873 1	10.92	0
_hatsq	-0.13511	0.0832 1	-1.62	0.10 8
_cons	0.0558473	0.0665 1	0.84	0.40 4

Number of obs	=	85
F(2, 82)	=	74.9
Prob > F	=	0
R-squared	=	0.6462
Adj R-squared	=	0.6376
Root MSE	=	0.5059 2

Table 4.3.2.7

Shapiro-Wilk W Test for the Normality of Residuals

Variable	Obs	W	V	z	Prob>z
resDE	85	0.99185	0.588	-1	0.87848

Table 4.3.3.2

Test of Mulitcollinearity - Variance Inflation Factor

Variable	VIF	1/VIF
rec~20092014	8.24	0.12136
industrials	7.12	0.14049
exp~20052007	6.82	0.14656
consumergo~s	6.65	0.15038
telecommun~s	6.57	0.15215
consumerse~s	5.97	0.16755
basicmater~s	5.89	0.16976
coo	3.99	0.25062
recessi~2008	3.97	0.25164
ceoTenure_ln	2.2	0.45414
narcissism~e	1.84	0.54222
firmAge_ln	1.77	0.56533
currentrat~n	1.43	0.69712
ceoage	1.43	0.69881
Mean VIF	4.56	

Table 4.3.3.3

Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

Ho: Constant variance
Variables: fitted values of
sgasale_sqrt

chi2(1) = 0.42
Prob > chi2 = 0.5190

Table 4.3.3.4

Cook's Distance

	code	narcis~e	CookSGA2
5	Company 5	-0.536	.
11	Company 6	-0.536	.
12	Company 6	-0.536	0.1519372
13	Company 6	0.26	0.1010533
24	Company 1	-1.527	0.2381302
28	Company 9	-2.518	0.1519372
38	Company 10	-0.536	0.27777
39	Company 10	-0.536	0.3123916
58	Company 11	0.61	0.0710733
72	Company 2	-1.277	0.0878033
75	Company 3	-0.536	0.0708042

Table 4.3.3.5

Test for Omitted Variables

Ramsey RESET test using powers of the fitted values of sgasale_sqrt
Ho: model has no omitted variables
F(3, 62) = 9.43
Prob > F = 0.0000

Table 4.3.3.6

Linktest

Source	SS	df	MS
Model	258.619152	2	129.31
Residual	59.7410016	77	0.77586
Total	318.360153	79	4.02988

sgasale_sqrt	Coef.	Std. Err.	t	P>t
_hat	0.7226846	0.31271	2.31	0.024
_hatsq	0.0223265	0.02479	0.9	0.371
_cons	0.7852689	0.9331	0.84	0.403

Number of obs	=	80
F(2, 77)	=	166.67
Prob > F	=	0
R-squared	=	0.8123
Adj R-squared	=	0.8075
Root MSE	=	0.88083

Table 4.3.3.7

Shapiro-Wilk W Test for the Normality of Residuals

Variable	Obs	W	V	z	Prob>z
resSGA	80	0.98064	1.329	0.623	0.2668

Table 4.3.4.2

Test of Mulitcollinearity - Variance Inflation Factor

Variable	VIF	1/VIF
rec~20092014	8.72	0.11464
industrials	7.62	0.13122
exp~20052007	7.24	0.13805
consumergo~s	6.85	0.14598
basicmater~s	6.43	0.15559
consumerse~s	6	0.16656
telecommun~s	5.65	0.17695
recessi~2008	3.99	0.25064
coo	3.09	0.3241
ceoTenure_ln	2.21	0.45323
narcissism~e	1.83	0.54759
firmAge_ln	1.77	0.5653
ceoage	1.42	0.70328
currentrat~n	1.37	0.72941
Mean VIF	4.59	

Table 4.3.4.3

Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

Ho: Constant variance
Variables: fitted values of FAAtTA

chi2(1) = 2.13
Prob > chi2 = 0.1448

Table 4.3.4.4

Cook's Distance

	code	narcis~e	CookFAA
10	Company 5	3.957	0.1137726
22	Company 12	-0.536	0.0586455
74	Company 3	-0.536	0.0551749
75	Company 3	-0.536	0.1051585
85	Company 4	-2.21	0.1758898

Table 4.3.4.5

Test for Omitted Variables

Ramsey RESET test using powers of the fitted values of FAAtTA
Ho: model has no omitted variables
F(3, 67) = 1.35
Prob > F = 0.2671

Table 4.3.4.6

Linktest

Source	SS	df	MS
Model	53.5340117	2	26.767
Residual	68.4136316	82	0.8343
Total	121.947643	84	1.4517

FAAtTA	Coef.	Std. Err.	t	P>t
_hat	-3.119122	2.75801	-1.13	0.261
_hatsq	-0.2036687	0.13622	-1.5	0.139
_cons	-20.70169	13.9053	-1.49	0.14

Number of obs	=	85
F(2, 82)	=	32.08
Prob > F	=	0
R-squared	=	0.439
Adj R-squared	=	0.4253
Root MSE	=	0.9134

Table 4.3.4.7

Shapiro-Wilk W Test for the Normality of Residuals

Variable	Obs	W	V	z	Prob>z
resFAA	85	0.97405	1.872	1.379	0.0839