An Examination of Optimal Level of CEO Narcissism: Why, How, and When Narcissism Impacts Firm Performance

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CEO Narcissism and Firm Performance

An Examination of Optimal Level of CEO Narcissism:
Why, How, and When Narcissism Impacts Firm Performance

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Master of Business Administration, University of Chicago, 1991
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A Dissertation Submitted to The Graduate School at the University of Missouri–St. Louis
in partial fulfillment of the requirements for the degree
Doctor of Business Administration with an Emphasis in Leadership

December 2020

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CEO Narcissism and Firm Performance

BOSWELL, SCOTT
AN EXAMINATION OF OPTIMAL LEVEL OF CEO NARCISSISM: WHY, HOW, AND WHEN NARCISSISM IMPACTS FIRM PERFORMANCE

Abstract of doctoral dissertation at the University of Missouri- St. Louis
Dissertation supervised by Dr. Ekin Pellegrini

Chief Executive Officers (CEOs) may have narcissistic tendencies that impact the firm and its performance. We explore the definition of narcissism, how it is measured, and when it might be optimal or harmful to the firm’s performance. Leaders exhibiting higher scores on one or more Dark Triad traits often are viewed negatively both inside and outside the firm. Should such negative perceptions disqualify a leader who displays a measure of a Dark Triad trait? This research answers the primary question, is there an optimal level of CEO narcissistic traits and if so, are there moderating factors that impact the level?

Narcissism and leadership have been linked consistently in theoretical arguments. The question of narcissistic traits in leaders being either good or bad remains an open question. In addition, since the inception of the Center for Research in Security Prices (CRSP) in 1926, the question of what impacts securities prices has been deeply studied. However, the top organizational leaders’ impact on the movement of securities pricing has not yet been investigated as it pertains to their leadership characteristics. We intend that this study will contribute to both theoretical disciplines.

This research study contributes to the body of knowledge pertaining to narcissistic leadership. Existing research does not assess the effectiveness, or non-effectiveness, of narcissistic leaders at various stages of a firm’s lifecycle, capitalization or industry. We could find no existing research that defined performance or success as positive stock price
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change. We believe that this is a meaningful measure because it aligns the performance of management with the most important measure of shareholder satisfaction.

The lack of available internal assessment data has required prior research to heavily focus on external measures of narcissistic traits. The current study used data from the California Psychological Inventory (CPI) to measure the CEO’s level of narcissistic traits to examine the optimal level of CEO narcissism against the stock price and financial performance of the organization that they lead. We expected and found a nonlinear relationship between CEO narcissism and both total return and CEO alpha.

We looked at the relationship of total company stock return and other accounting measures such as return on assets (ROA) and return on equity (ROE) to understand the relationship between the CEO’s narcissistic traits and the firm’s financial performance and how that impacts the performance of the stock. We also test how market capitalization, firm lifecycle, industry, and CEO’s problem-solving ability impact the optimal level of narcissism.

We found a curvilinear relationship between CEO narcissistic traits and CEO Alpha and company total return. The accounting measure, ROA did indicate a similar curvilinear relationship. ROE was not statistically significantly impacted by the level of narcissism. CEO problem solving ability did not moderate the relationship between narcissism and company performance. Industry, company lifecycle, and capitalization did moderate the impact of narcissistic tendencies listed in order of importance but the impacts of lifecycle and industry did not support our a priori hypothesis.

The research findings may provide guidance on CEO selection. The information could be used by boards of directors and executive recruiters. The information may help
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in CEO oversight and management, determining what needs to be monitored, and when it is time to make a change. CEOs who are willing to assess and address their narcissistic tendencies may be able to better manage their organization through various phases of evolution.

*Keywords*: Narcissism, CEO, Upper Echelons, Equity Return, Dark Triad, Leadership
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My journey towards the Doctor of Business Administration (DBA) began in March of 2016. My wife Robin and our two teenage sons, Scott Jr. “Senn” and Graham were on a college visit trip. Being on a college campus reminded me of my passion for higher education and my desire to obtain my terminal degree in my chosen field of business. I researched programs and learned of the DBA program that was being created. I contacted Dr. Ekin Pellegrini, Director of Executive Education and Founding Director of the DBA program. At that time, I did not know the impact that Ekin would have on my academic journey.

First, I want to thank the outstanding professors and staff of the UMSL DBA program. They are too numerous to mention by name but their passion for business education and the level of service that they provide to the students is truly outstanding.

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Once I determined that I wanted to study narcissism in leaders and company performance, I needed to determine a great source of data. I turned to my prior executive coach and great friend Terence Bostic. Due to the need for confidentiality of the data, I
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originally worked with graduate assistants Veronica High early in the process and then
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confidentiality. The CMA firm not only helped me with my project but has impacted my
life positively in many other ways.

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would become my committee co-chair, providing great insight into the financial aspects of
the paper.

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They inspired me to continue my academic journey and helped me with their knowledge.
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Senn, thank you specifically for teaching me how to work with the large quantities of data in this project. My wife Robin as my partner and collaborator in life has been with me every step of the way. She has supported my dreams from the first day and helps me in ways that are too countless to mention. Robin, thank you for your hard work, being a wonderful mom to our sons, and your tremendous love!
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Chapter 1

INTRODUCTION

In a *Psychology Today* blog, Henriques (2012) discusses the leadership style and narcissistic personality of Steve Jobs, notable founder and former Chief Executive Officer (CEO) of Apple, Inc. Based on information gleaned from Walter Isaacson’s biography of Steve Jobs (2011) and from other research and observation, Henriques comments on reports of Jobs’ bullying tactics, lack of empathy, exploitation of others and other “overt characteristics” and draws the conclusion that Jobs displayed a narcissistic personality structure. He goes so far as to offer his professional judgment that Jobs met the criteria for Narcissistic Personality Disorder (NPD). Yet, given Jobs’ reputation as a creator and innovator of superb technological products, Henriques contemplates the dichotomy of the narcissistic leader who achieves remarkable results by posing the question: “Is it ok to be a bully if you produce brilliant products?” Henrique confesses he is unable to answer that question.

In a related *Psychology Today* blog, Nadler (2012) also comments on excerpts from Isaacson’s book but refrains from making the NPD clinical diagnosis. Rather, he offers several examples of behavioral criteria that suggest Jobs was a narcissist. Nadler, too, grapples with the problem of the high-achieving narcissist and ponders whether it is “possible to have the same ends with a more humanistic and emotionally intelligent means?” (para. 14)

Researchers are increasingly intrigued by questions such as these posed in popular literature. Scholarly literature is replete with research of narcissistic leaders and the performance of the firms they lead. But, the story of Jobs’ adds a special twist. While
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among his colleagues there is a varied recollection of events, Jobs states in his commencement speech to Stanford University’s 2005 graduating class that he was fired by the company (Apple) he founded, although he was retained as its board chair. He went on to create a new company (NeXt) but was sued by Apple for competing against it by recruiting Apple’s engineers. He later was re-hired to lead Apple, which set the stage for the growth of a company having a portfolio of renowned products and services, and a market capitalization currently approximating $2 trillion.

Therefore, to Henriques and Nadler’s questions, the current study adds other questions. Why would a narcissistic leader be fired and then rehired by the same company? Should narcissistic leaders ever be hired? If so, under what circumstances should they be hired? To explore these questions, we examined previous research to understand a) how CEO narcissism is measured, b) the level of narcissistic traits that can be assessed in individual CEOs, and c) the financial performance of companies led by CEOs demonstrating various degrees of narcissistic behavior. In this effort, we sought to discover if there are reported meaningful associations between highly narcissistic CEOs and the performance of their companies at various life cycle stages (or other potential moderators). Our literature review did not reveal any studies that investigate this relationship. Accordingly, to fill this gap in the literature, this study examines the following research questions: What is the optimal CEO narcissism as defined by stock performance and other financial measures impacted by the CEO’s leadership? What are the intervening moderators in the relationship between CEO narcissism and firm performance? As a starting point, we depict the variables (see Figure 1.1) that initially served as a roadmap for our research design.
In our literature review which will be discussed in more detail in Chapter 2, we found that CEO narcissism has been frequently measured externally using publicly available data. Furthermore, we found that various external measures would coalesce into one of five categories: written word, social media, photographic appearances, self-importance, and personal rent extractions. In this study, we are particularly interested in identifying moderators, such as a firm’s age, firm’s market cap, firm’s lifecycle stage, and possibly others that impact the CEO’s firm performance. Our literature review supported some of our initial expectations, and based on previous research findings, we refined our methodology. The revised research model is more parsimonious without sacrificing rigor or relevance (Figure 1.2).
The final step of our research model adjustment included conducting a qualitative study with CMA (Boswell, Sansberry, & Stout, 2018). Results highlighted that business psychologists in the management consulting community suggest there are challenges with solely relying on external indicators in assessing narcissistic traits. Given the difficulty of accessing CEO narcissistic traits, we were pleased to be able to access California Psychological Inventory (CPI) scores anonymously and assess narcissistic trait measures with the 20 factors (Figure 1.3) in the (CPI). The use of CPI in assessing narcissistic traits has been supported by previous research as discussed in the literature review in Chapter 2. The data was generously provided by the CMA who specialize in assessment, development, and coaching of high-level executives. Upon commencing work with a client, CMA discloses to their clients that they have the ability to use the data for academic research purposes as long as confidentiality of both the participants and companies can be assured. We have described the process of blinding of the data in Chapter 3 of this study.
Research Relevancy

Our research expands the body of knowledge pertaining to narcissistic leadership by exploring an area relatively unaddressed by researchers. Existing research does not assess the effectiveness, or non-effectiveness, of narcissistic leaders at various stages of a firm’s lifecycle, capitalization industry. Harrison, Thurgood, Boivie, and Pfarrer (2020) in their study of CEO narcissism and risk utilize stock price to calculate standard deviation as a measure of risk, investigate the impact of narcissism on risk and then assess the impact of risk on total investor return. We took a more direct path and defined performance or success as a positive stock price change. We consider both total return and return net of market, industry, and capitalization impact. To add a direct connection from...
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CEO leadership to firm outcomes, we also examine accounting measures such as Return on Assets (ROA) and Return on Equity (ROE) to explore the connection between CEO performance and stock price movement. We believe that these measures are appropriate because they align CEO success with the success of the owner, the shareholder. If companies and their boards are not making optimal decisions in their CEO selection, this research could be instructive as to how to make investment decisions based on the expected performance and level of the narcissism of their CEO.

Our research may provide guidance to those who recruit CEOs, such as a board of directors, seeking to acquire specialized talent suited to the company at a specific point in time. Relatedly, it may offer guidance for CEO oversight should the findings suggest that degrees of CEO narcissism are predictors of company performance and ultimately may be an indicator of when it is time to make a change in the C-suite. It also may be useful to CEOs who are willing to assess and address their narcissistic tendencies to better manage their organization through various phases of evolution.
Chapter 2

LITERATURE REVIEW, THEORY, AND HYPOTHESES

Narcissism and leadership have a complicated relationship. Previous research that examined narcissistic traits and leadership found that narcissism may be viewed as a rather negative characteristic (Greaves, Zacher, McKenna, & Rooney, 2014). Savchuk (2019) highlights that we applaud the 10% of narcissistic CEOs that succeed as visionary but do not focus on the 90% that do not succeed. Previous research has largely examined narcissism by its traits. However, there is confusion in the literature related to the definition of narcissism, especially depending on the research discipline. Narcissism may be interpreted as a clinical malady when viewed through a psychologist’s lens. Alternatively, we may view narcissistic traits that manifest through behavior and may not meet the clinical definition of narcissism as defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM–5). Rosenthal and Pittinsky (2006) discussed the confusion behind the definition of narcissism itself as trait based by coining a construct called “narcissistic leadership.” This approach pulls away from the notion of defining narcissism in leadership as trait based. Specifically, they call for defining narcissistic leadership by examining the dynamic between the psychological motivations and behaviors between the narcissistic leader and the constituents and institutions that they lead (Rosenthal & Pittinsky, 2006).

Narcissism has been viewed as a dominant predictor of counterproductive work behaviors (CWB). Specifically, Grijalva and Newman (2014) found that narcissism is the dominant predictor of CWB among the dark triad personality traits. They also found that the relationship between narcissism and CWB is moderated by ingroup collectivism. Other negative traits such as arrogance, feelings of inferiority, insatiable need for
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recognition and superiority, hypersensitivity and anger, irrationality, and paranoia (Rosenthal & Pittinsky, 2006) have also been connected to narcissism.

Grijalva, Maynes, Badura, and Whiting (2020) uniquely evaluated the effect of the level of narcissism of the National Basketball Association (NBA) players and how it impacted team performance. They concluded that the higher the level of narcissism of players on the team, the less they collaborated, thus negatively impacting team performance. The underperformance increased the more team members became more familiar with each other through increased playing time.

Hartog, Hoogh, and Belschak (2018) highlight that narcissistic leaders tend to favor subordinates that are self-promoting since they engage in self-promotion themselves. The study found a high degree of leader-member exchange (LMX) due to the likeness in styles. Given narcissistic leaders are thus more likely to favor and promote fellow narcissists it creates a greater level of importance of finding the optimal narcissism traits in the top leader as that style can be propagated through the organization.

Grijalva, Harms, Newman, Gaddis, and Fraley (2014) found that narcissism may display a positive effect on leadership emergence. This finding is interesting as they also contribute to advancing the idea that there may exist a curvilinear trend in leadership narcissism effectiveness. In looking at the upside to narcissism, Rosenthal and Pittinsky (2006) illustrate that due to great vision and dramatic action and that these leaders do not try to understand the future, they try to shape it.

In distinguishing between positive and negative aspects of narcissism, numerous researchers made attempts to codify the positive aspects of narcissism including: “constructive” narcissism (Kets de Vries & Miller, 1997), “reparative” narcissism
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(Volkan, 1980), “charismatic” narcissism (Post, 1993). Michael Maccoby (2004) coined the term “productive narcissists” describing the notion of the narcissist’s ability to inspire people and shape the future. Lubit (2002) distinguishes between “healthy narcissism” and “destructive narcissism”. The healthy narcissistic leader shares similar narcissist traits as the destructive narcissist, such as the enjoyment of power. However, they differ in the fact that the healthy narcissist has values and follows through on plans, whereas the destructive narcissist lacks values and easily gets bored. Further, Lubit indicates that there are distinct foundational differences related to a narcissist’s childhood (see Table 2.1). This focus away from narcissism as pathological but related to developmental stages in childhood is further corroborated in Kohut’s theory of narcissism (Kohut, 1966). It is important to remember that similar to our study’s conceptualization the idea of healthy vs. destructive narcissism refers to the level of the trait exhibited and how it impacts the CEO’s performance. Fatfouta (2019) evaluates the productive and negative aspects of narcissism and provides recommendations as to how to best select, assess, and develop narcissistic leaders.
### Table 2.1: Healthy vs. Destructive Narcissism

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Healthy narcissism</th>
<th>Destructive narcissism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-confidence</td>
<td>High outward self-confidence in line with reality</td>
<td>Grandiose</td>
</tr>
<tr>
<td>Desire for power, wealth and admiration</td>
<td>May enjoy power</td>
<td>Pursues power at all costs, lacks normal inhibitions in its pursuit</td>
</tr>
<tr>
<td>Relationships</td>
<td>Real concern for others and their ideas; does not exploit or devalue others</td>
<td>Concerns limited to expressing socially appropriate response when convenient; devalues and exploits others without remorse</td>
</tr>
<tr>
<td>Ability to follow a consistent path</td>
<td>Has values; follows through on plans</td>
<td>Lacks values; easily bored; often changes course</td>
</tr>
<tr>
<td>Foundation</td>
<td>Healthy childhood with support for self-esteem and appropriate limits on behavior towards others</td>
<td>Traumatic childhood undercutting true sense of self-esteem and/or learning that he/she doesn't need to be considerate of others</td>
</tr>
</tbody>
</table>

**Assessment of Narcissism via External vs Self-Report Measures (CPI)**

Brennan and Conroy (2013) posed an important question that relates to our research: “Can personality traits of chief executive officers (CEOs) be detected at a distance?” Their study analyzes the characteristics over time of a bank CEO who ultimately resigned in the wake of the 2008 banking crisis. Specifically, these researchers address two questions: “(1) Is there evidence of hubris in the corporate narratives of the bank CEO letters to shareholders? (2) Did the evidence of hubris increase over the tenure
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of the CEO?” The researchers found that prior research supports the relationship between narcissism and hubris. They analyzed the CEO’s annual letter to shareholders by coding each sentence for indicators of hubris and concluded that a pattern of increasing hubris occurred over time. While admitting that other researchers might subjectively interpret the sentences and arrive at a different conclusion, Brennan and Conroy (2013) nevertheless report that there is statistical significance in their findings and that they believe other coders would arrive at similar conclusions. Hence, they suggest that CEO psychological factors may be measured using external means.

An exhaustive literature review by O’Reilly, Doerr, Caldwell, and Chatman (2014) enlightens their external assessment of narcissism. Their study seeks to explore how CEO narcissism affects CEO compensation. They discuss Mocaby’s (2007) characterization of Jobs as a “prototypical productive narcissist,” offering yet another confirmation of Steve Jobs as a narcissist. O’Reilly et al. (2014) study is another example of previous research that externally measures CEO narcissism. By surveying the CEOs’ employees and validating survey results with analyses of the CEOs’ word usage (from CEO letters to shareholders and quarterly earnings calls), the researchers found support for their narcissism metric created by the initial employee survey.

Another method for external measurement of CEO psychological factors was employed by Park, Kim, Chang, Lee, and Sung (2018) in their study of CEO hubris and firm performance at Korean firms. Because adopted structures and governance of Korean firms mirror their Anglo-American counterparts, the researchers believe their research is applicable to Western-based firms. They suggest that social desirability bias creates a challenge with self-reported psychological factors like hubris in CEOs (Cycyota and
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Harrison 2006; Tourangeau and Yan 2007). They came to a similar conclusion with Chatterjee and Hambrick (2007) who suggest that external indicators could be used to examine hubris. Accordingly, Park et al. (2018) used various external metrics, such as media praise of CEOs, CEO’s awards and certificates, and CEO letters contained in annual reports to assess CEO hubris. Factor analysis of the three indicators formed a single factor that was statistically and theoretically relevant. While these results focus on hubris, we believe the methodology nevertheless has utility in the study of other personality traits, such as narcissism.

A comprehensive method for external measurement of CEO narcissism is part of a study by Marques-Illescas, Zebedee, and Zhou (2018). In their research, they sought to determine the influence of CEO personality traits on the Securities and Exchange Commission (SEC) disclosures by reviewing the tone of earnings releases. They measured narcissism using the three item scale developed by Olsen et al. (2014). The three items are (1) prominence of CEO photographs in annual reports, (2) relative cash payment between CEO and the highest paid non-CEO executive, and (3) relative non-cash payment between CEO and the highest paid non-CEO executive. Their research further supported the psychometric properties of the composite narcissism measure.

Sumner, Byers, Boochever, and Park (2012) investigate the relationship between Twitter activity, the Big Five personality traits, and the anti-social traits of narcissism, Machiavellianism, and psychopathy extending existing research into tweets as an indicator of the Dark Triad. Although they found a strong correlation among the variables, they also report the results were significantly more predictive of traits across a population than the ability to predict the traits of an individual. Further, their findings suggest that the use
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of predictive models, such as crowdsourced machine learning algorithms may be imperfect in predicting Dark Triad traits from Twitter activity.

Rijsenbilt and Commandeur (2012) follow the direction of much of the research on CEO narcissism as a negative behavior or outcome. Their research indicates a statistically significant positive relationship between CEO level of narcissism and fraudulent corporate activities. The authors suggest that narcissistic CEOs take bold action to obtain frequent praise with potentially detrimental consequences. This research is another attempt in explaining the negative aspects of narcissistic CEO performance. The study used numerous unobtrusive measures including cash and total compensation ratios, executive rank by salary, CEO exposure, awards, publications, number of lines used in biography, photographs in the annual report, perquisites, CEO power, governance index, CEO duality, number of official role titles, CEO acquisition behavior, number and value of acquisitions to assess CEO narcissism.

Bodt, Bollaert, Grandin, and Roll (2015) utilized a linguistic method to assess narcissistic levels by reviewing interview transcripts and developing an I / We ratio. More recently, Gupta, Nadkarni, and Mariam (2018) measured CEO narcissism with the video-metric approach, which has been recently employed by Petrenko, Aime, Ridge, and Hill (2015) and Gupta and Misangyi (2018). We are intrigued by this approach because of the findings that unobtrusive ratings of personality traits have been suggested to have greater validity than self-report measures in assessing five-factor model (FFM) personality traits (Oh, Wang, & Mount, 2011).

Research continues to investigate the addition of external measurement of narcissistic traits. Fung, Qiao, Yau, and Zeng (2018) use videography to determine
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narcissistic traits Similarly, Harrison et al. (2019) used text from transcripts of earnings calls to develop a tool to measure the big five traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism). They then applied their tool to 3,000 CEOs of Standard & Poor’s (S&P) 1500 firms and measured it against the trait's influence on strategic change. Recent firm performance was supported as a moderator of the impact of narcissism on strategic change.

As a pilot to this study, we performed a case study analysis (Boswell et al, 2018) by interviewing five highly experienced business psychologists to better understand the meaning of narcissism and how it should be interpreted in our study. All five expressed concern with the efficacy of using external measures of narcissism. Psychologist E in the study stated, “In our field, most of us hold pretty strongly that you don't diagnose somebody unless you treat them.” Psychologist C stated, “You're trying to diagnose something from afar because you don't have direct access; proceed with caution.” They suggested that narcissism is a clinical diagnosis reserved for private, rather than public, assessment of the individual being observed. Even though none were aware of literature pertaining to external measures, they expressed skepticism that any such measures would be objective. They also emphasized that impairment is the crossover from someone that exhibits narcissistic traits or tendencies to clinically diagnosed narcissistic disorder. Rosenthal and Pittinsky (2006) support this conclusion and offer the term “narcissistic leadership” to study leader narcissism.

We find it appropriate, perhaps necessary, to proceed with a study focused on narcissistic traits or tendencies rather than that of a clinical definition and any attempt to measure narcissism from afar.
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Why California Psychological Inventory (CPI)?

The desired approach of using internal measures of CEO narcissistic traits is limiting. Many CEOs have never been subjected to internal trait measurement. Obtaining the data on CEOs that have participated in an internal study of their traits is difficult to source in great numbers due to confidentiality concerns. The need for a sufficiently large number of CEO data points has historically resulted in the use of external unobtrusive measures. We utilized internal evaluation data accessed through the CMA firm that participated in our pilot qualitative study. The availability of over 62,000 employee assessments across 773 organizations utilizing the CPI allowed us to obtain data for a statistically meaningful analysis.

The data includes CEO assessments comprised of the CPI containing 20 scales that based on the percentile indicated translate into the level of narcissistic traits of the measured executive (Wink & Gough, 1990). We also had access to the Watson-Glaser critical thinking analysis to determine the level of those abilities in the CEO tested.

It is not the intent to consider the assessment data a specific diagnosis, but rather an indicator of the level of narcissistic traits in the CEO. Although not a specific diagnosis, the research on psychometric properties of the CPI in assessing leadership in specific situations with specific personality types (Gough, 1969) indicates that it has predictive power. Additional studies have been completed and each confirms the validity of the assessment as a tool for measuring traits that impact how leaders lead (Carson & Parker, 1966; Gough, 1989; Gough, 1990; Gough & Bradley, 1996; Megargee & Carbonell, 1988). A criticism of self-report measures such as the CPI is that the participant can “game” the answers to make themselves look better. CPI controls for that
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by utilizing three validity measures imbedded in the questions (Research Department CPP Inc., 2007). If the validity measure is triggered the results are disregarded.

The CPI and Narcissism

Wink and Gough (1990) developed narcissism scales for the California Psychological Inventory (CPI) and the Minnesota Multiphasic Personality Inventory (MMPI). These scales were developed based on the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM – III) building on previous research (Ahhatar & Thomson, 1982; Kernberg, 1975; Kohut, 1971, 1977). The resulting 20-factor CPI scale consisted of 49 items to assess narcissism. Research Department CPP Inc. (2007) confirm the validity in the current version of the instrument, the CPI 260. We will use the CPI as the basis for our measure of narcissistic traits because whereas the MMPI focuses on clinical diagnosis, the CPI assesses common interpersonal behaviors in the general population which is more relevant for leadership research and practice.

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Olsen et al. (2014) examine the relationship between firm performance measures of earning-per-share (EPS) and stock valuation compared to the narcissistic personality characteristics of CEOs of Fortune 500 companies. Their work includes an examination of the definition of narcissism and various characteristics therein, including both positive and negative attributes. They conclude in their analysis that companies that increase production and sales with the intent to favorably increase accounting measures positively correlate to the level of narcissism of the CEO. These findings lend credence to our expectation that there may be an optimal level of CEO narcissism that relates to optimally performing companies.
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Judge, Piccolo, and Kosalka (2009) highlighted a contrary finding. They found that one of the conclusions of the Chatterjee and Hambrick (2007) study determined that although firm performance fluctuated over time under the leadership of a narcissistic CEO that the results were ultimately no different than their less narcissistic counterparts.

The Park et al. (2015) article offers another interesting insight. Although the authors did not use quantitative research to support their conclusion, they did conclude that the relationship between what they call a corporate psychopath and organizational damage is potentially nonlinear. Their conclusion lends some credence to our expectation that there may be a nonlinear relationship between CEO narcissism and firm lifecycle performance.

Wonneberg (2007) conducted a study on the nature of narcissism within the organizational leadership using online assessments of 254 employees of financial services organizations. He measured the level of narcissism through the organization and examined the relationship between narcissism and the Big Five personality traits (neuroticism, extraversion, open to experience, agreeableness, and conscientiousness). Although the study does not attempt to measure the impact of narcissism, Wonneberg’s findings provide incite as to the underlying drivers of employee behaviors and their reaction to levels of narcissism in their leader. For example, the need for extroversion, assertiveness, and aggressiveness early in a firm’s development supports a potential hypothesis for a firm’s lifecycle stage to be an important moderator. In addition, the conclusion that narcissism increased based on the number of leadership positions and the position of the person relative to the CEO is telling because it implies that a level of narcissism may be necessary to ascend within the organization. Those same traits could
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ultimately be a hindrance for the CEO during the mature phase of the company lifecycle due to the need for a leader that would typically be more steady handed, collaborative, and willing to put the firm’s ongoing success in a stable state over their own need for recognition.

Wonneberg (2007) concludes that narcissism has a dualistic effect. Grandiosity, arrogance, and envy can damage an organization due to societal demands for corporate responsibility. Conversely, narcissistic tendencies can be helpful in the face of economic pressures. The conclusion supports a potential hypothesis that there may be a non-linear, or possibly a curvilinear, relationship between narcissism and organizational success.

CEO Leadership and Upper Echelons Theory

Upper echelons theory states that top management managerial background, personality, and characteristics are partial predictors of organizational outcomes (Hambrick & Mason, 1984). Waldman, Javidan, and Varella (2004) utilized the theory to understand the role of the CEO in studying the impact of charismatic leadership. Peterson, Galvin, and Lang (2012) examined CEO servant leadership, narcissism, founder status, and organizational identification and how they impact firm performance measured by ROA. They relied on upper echelons theory to explain the tie between CEO performance impact on firm performance. The conclusion was that servant leadership did positively impact firm performance and was negatively related to narcissism (although not measured along a spectrum of traits) and positively to founder status. They concluded that organizational identification partially mediated the relationship between narcissism and founder status to narcissism. We will utilize upper echelons theory to explain the linkage between CEO personality (in this case narcissistic traits) and firm performance.
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Bodt et al. (2015) highlight the importance of narcissistic traits in CEO leadership and that the optimal level will change over time. They use the linguistic model described in the prior section to measure the change in the CEO’s level of narcissism. They then studied if compensation and or board governance change contributed to the change in the level of the CEOs’ narcissism.

Harrison et al. (2020) in their study of CEO narcissism and risk use CEO observable personality traits, such as conscientiousness, neuroticism, and extraversion and examine their influence on the market’s perception of the firm's risk and ultimately shareholder returns. Linguistic tools from the authors predecessor study on narcissism measurement (Harrison et al., 2019) established the measures for conscientiousness, neuroticism, and extraversion. Their study concluded that these CEO traits impacted the relationship between risk as measured by stock price volatility and return. The traditional finance theories discussed in the following paragraphs outline the relationship between risk and return. The impact of CEO personality traits extends upper echelon theory by demonstrating that CEO personality traits affect market perceptions and shareholder value creation.

Our research differs from Harrison et al. (2020) study of CEO narcissism and risk in the following aspects, by utilizing the CPI as an assessment tool to determine the level of narcissistic traits, the research cited on CPI and the findings of Boswell et al. (2018) should produce a more accurate measurement of narcissistic traits. In addition, the CPI allows us to measure the traits as a scale as opposed to the existence or nonexistence of a personality trait. Although we find the examination of the change of the relationship of risk and return impacted by CEO personality interesting, we seek to find an optimal level
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of narcissistic traits and by testing moderators will seek to explore whether the optimal level changes based on firm lifecycle, size or industry.

**Relevant Finance Theory**

As the above referenced research identifies linkage between narcissistic leadership traits and firm performance. To translate that firm performance to the performance of the firm’s stock price, we identified three areas of finance literature that are pertinent to our research work: 1. Modern Portfolio Theory as a determinant in investor decisions. 2. Capital Asset Pricing Model to determine how securities are priced. 3. Efficiency Theory that connects the firm’s financial performance in the form of ROA and ROE to be translated into the stock price performance. These theories create the basis for how a CEO’s leadership through the lens of upper echelons theory impacts firm performance that drives the stock price change.

**Modern Portfolio Theory (MPT)**

Modern Portfolio Theory (MPT) utilizes the mathematical framework of mean-variance optimization to assemble a portfolio of assets that maximizes the expected return for a given level of risk (defined as the variance of share price). The theory assumes that investors are rational and risk-averse, always choosing the portfolio with lower risk at any given level of return. According to modern portfolio theory, the act of diversification can reduce portfolio risk (see Figure 2.1). The process is defined as a mean-variance optimization (Markowitz 1952, 1959). To this day MPT is utilized by investment management firms large and small for asset allocation.
Innovating on the work of modern portfolio theory by adding the concept of a risk-free rate of return as defined currently and by mean variance optimizing your assets with price volatility one can create a security market line that was optimal and with proper diversification could eliminate asset specific volatility (nonsystematic) and only be left with the risk of the market (systematic risk) creating an efficient frontier. In our analysis, this becomes important informed by the prior research that contends that CEOs with high narcissistic traits may be willing to assume more risk or may not perceive the level of risk as high as those with lower narcissistic traits. The investor would position themselves on the efficient frontier known as the capital market line (CML) also known as the capital allocation line (CAL) (see Figure 2.2) based on their desired return or risk tolerance (Treynor, 1961; Sharpe, 1964).
**Market Efficiency Theory**

An important assumption in MPT is the efficient dissemination of information to the market participants. This allows investors to assess expected return and risk. Investors will construct portfolios that are mean variance optimized. Realistically we know that all market participants do not have the same information at the same time thus making sub-optimal investment decisions and market inefficiencies that can be exploited. The academic work testing Modern Portfolio Theory suggests that in the short run due to the lack of perfect information creates less efficient portfolios security market line (SML). Over time information is available to all leading to rational decisions and an efficient market (Fama, 1968; Fama & French, 1992). This imperfect information in the short term will impact the investors' beliefs about the firm, the CEO’s performance that is impacted by narcissistic traits.

In Fama’s 1968 research he looks at security performance over time and attempts to show that in the short run there are pricing anomalies in the markets that informed investors can take advantage. In the long run, these same anomalies disappear and are arbitraged away as information becomes available to all investors. (Fama, 1968)
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In the 1992 research by Fama and French, they illustrate that certain anomalies can last longer due to perceptions of risk in the security. The basis of this assumption is formed in comparing the performance of growth vs. value stock portfolios. (Fama & French, 1992)

We believe that the risk perception that is analyzed in Fama and French (1992) could be similar to the risk in a CEO’s leadership style inside of the organization which leads us to include variables including capitalization and industry as moderators of the interaction between the CEO’s level of narcissistic traits and stock price performance. (see Figure 2.3)

Figure 2.3: Security Market Line
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Hypotheses

Is there an optimal level of CEO narcissism? In our review of the literature on the dark side of leadership, we found that much of the previous research on dark side traits, such as narcissism illustrates the negative impact of these behaviors. This study’s primary goal is to examine whether CEO narcissism is universally negatively related to firm performance.

Boswell, Sansbery, and Stout (2019) in their quantitative analysis of narcissistic leaders’ impact on employee work attitudes supported the hypothesis that narcissistic tendencies coalesce into two categories, productive and non-productive. Boswell et al. (2018) study concluded that lower levels of narcissistic tendencies are best for longer-term engagements where relationships are valued, and organizational culture is healthy. Higher levels of narcissistic tendencies are best for shorter-term engagements where relationships and culture are not as important as getting quick results. Our a priori assumption is that as the level of narcissistic traits reach either extremely high or low levels the leadership result would be sub-optimal. At the highest levels, the leader may start to reach the diagnosed levels of narcissistic personality disorder and at minimum, the extreme nature may lessen their ability to work with others. At extremely low levels the assumption is that the leader may have trouble operating with the ego strength necessary to deal with difficult situations and make tough decisions.
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Figure 2.4: Narcissistic Tendencies vs. Narcissism

In their meta-analysis of CEO narcissism, Cragen, Olsen, and Wright (2019) highlight several future areas to be examined in CEO narcissism research. By utilizing personality assessment data, we hope to add to the methods to advance CEO narcissism research. In addition, our work to find optimal narcissistic trait levels based on firm performance, moderated by lifecycle, size, and industry will help answer what conditions create the demand for CEOs that have narcissistic traits and the consequences of those traits.

**Measuring the Optimal level of CEO Narcissism**

This study attempts to measure the optimal level of CEO narcissism against the stock price performance of the organization that they lead. We utilize various finance theories and upper echelons theory discussed in the prior section to tie the firm’s stock price performance more closely to the impact of the CEO. We also looked at the impact of CEO narcissism on ROA and ROE.

Described below is a measure of stock price change that we refer to as CEO alpha. The intent with this measure is to remove both positive and negative market and economic...
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factors that are outside of the control of the CEO. Utilizing these tools, we intend to test
the following hypothesis:

Hypothesis 1. There is an optimal level of narcissism in an organization’s CEO as
measured by the impact on the firm’s financial performance (total return, CEO Alpha,
ROA, and ROE).

Hypothesis 1a. There is an optimal level of narcissism in an organization’s CEO when
measured against the impact on a time-weighted % change in stock price during their
tenure.

  Hypothesis 1-a1. There is an optimal level of narcissism in an organization’s
CEO when measured against the impact on a time-weighted % change in stock
price (total return) during their tenure.

  Hypothesis 1-a2. There is an optimal level of narcissism in an organization’s
CEO when measured against the impact on a time-weighted % change in stock
price (CEO Alpha) during their tenure.

Hypothesis 1b. There is an optimal level of narcissism in an organization’s CEO when
measured against the impact on the average ROE and average ROA during their tenure.

  Hypothesis 1-b1. There is an optimal level of narcissism in an organization’s
CEO when measured against the impact on ROE during their tenure.

  Hypothesis 1-b2. There is an optimal level of narcissism in an organization’s
CEO when measured against the impact on ROA during their tenure.

Walker (2017) highlights this extreme in writing about the negative impact of
Elizabeth Holmes as CEO on the rise and fall of Theranos, illustrating the upper bound of
narcissistic behavioral impact on a corporation. We have chosen to measure firm success
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by stock price performance of publicly traded firms as this is the ultimate benefit to the shareholder as owner. Knowing that stock price change is impacted by many factors outside of the CEOs control including the economy and general market performance, industry performance, and capitalization of the company, we also created CEO Alpha as an additional dependent variable with the following equation: CEO Alpha = total return during CEO tenure– industry return of the index based on capitalization. We have also chosen to test ROE and ROA as dependent variables. They have the benefit as publicly reported accounting measures to not be subject to stock market price volatility.

We expected to find a nonlinear relationship between CEO narcissism as the independent variable regressed against total return and addition to CEO alpha, defined by the stock price change during the CEO’s tenure, as the dependent variable. We expected to find lower total return and CEO alpha in firms that are led by CEOs with low narcissistic tendencies given the potential inability to make challenging decisions. We also expected to see an inflection point where the level of narcissism reaches the level that the leader’s ego-driven behaviors take precedence over the firm’s success. Grijalva et al. (2014) conducted a meta-analytic review of narcissism and leadership. They concluded that narcissism positively impacted leadership emergence (growth stage) and had no significant relationship to leadership effectiveness. The authors conclude that this may mask an underlying curvilinear trend and move forward the idea that there may be an optimal level of mid-range narcissism.

We felt that ROE and ROA had the same potential for a curvilinear relationship avoiding market pricing inefficiencies discussed in the above relevant finance literature (Fama, 1968; Fama &French, 1992). Conversely, we also are concerned that previous
CEO Narcissism and Firm Performance research has shown that CEOs with a high level of narcissistic traits engage in accruals management having a direct effect on ROE and ROA and thus jeopardizing the statistical significance of them as success measures (Capalbo, Frino, Lim, Mollica, & Palumbo, 2017).

The “CEO Alpha”. We have chosen to measure firm success by stock price performance of publicly traded firms. Mentioned above, stock price change is impacted by many factors outside of the CEO’s control including the economy and general market performance, industry performance, and capitalization of the company. Although not a perfect measure we have chosen to define one of our dependent variables with the following equation: CEO Alpha = total return during CEO tenure – industry return by capitalization sector. We utilized the Global Industry Code (GIC) Industry sector sub performance of the appropriate benchmark by capitalization (S&P 500 for Large Cap, S&P 400 for Mid Cap, and S&P 600 for Small Cap) as the industry return by capitalization sector. We subtract the aforementioned company’s industry's performance to remove cyclical or event-driven market impact (an example being insurance industry stocks falling in a year with significant hurricane damage to their insureds).

The average CEO tenure in the United States is 5 years (Schulhofer, Marcec, & Benelli, 2018). We chose to measure the firm performance by using time-weighted returns over the tenure of the CEO given that the average 5-year tenure eliminated most short-run market inefficiency due to the lack of perfect information and that over time information is available to all leading to rational decisions and an efficient market. (Fama, 1968; Fama & French 1992).
Potential Issues with CEO Alpha. We strongly believe that the use of long-term stock price performance as a measure for CEO success is justified. The CEO's primary duty is to the shareholder and the most unbiased measure of performing that duty is the risk-adjusted return provided to the shareholder. Above, we discuss removing factors that the CEO does not control. Our suggested CEO alpha does not consider price volatility (standard deviation of the stock price) or other measured risk factors.

In addition, short term stock price movement tends to be very collinear in the short term, meaning that today's stock price change is highly predictive of tomorrow's stock price movement. Jagadeesh and Titman (1993) quantify this phenomenon in their research where they examine stock price movement and momentum. Jagadeesh and Titman (2001) evaluate alternative reasons for price momentum being a factor in return predictability. We attempt to mitigate this potential issue by using 20 years of monthly stock performance data time-weighted over the CEO tenure.

The second major issue in the use of stock price returns is the endogenous nature of those returns. There is a significant academic study in determining a model to predict or measure stock returns. Many of these studies suffer from the fact that the error term when measuring the impact of the independent variable on the dependent variable is itself predictable or potentially explainable. Fama and French (2004) illustrate the inherent weakness of the Capital Asset Pricing Model (CAPM) by showing that the error term in Sharpe (1964) and Lintner (1965) is predictable. Jenson (1968) argues that the error term is not an error term but an alpha or excess positive or negative return. Fama and French (2004) argue that the predictability itself invalidates the model and if it is predictable then the researcher needs to understand why.
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Fama and French (1995) attempt to randomize the error term by adding additional factors to the CAPM. They introduce company size and book to value (which is come to be known as the 3-factor model.) The addition of these factors randomizes the error term. They have also investigated adding robust vs week earnings performance and conservative vs aggressive portfolios to expand into a 5-factor model.

In order to address the endogenous nature of stock returns, we deploy Fama and French (1995) methods. We do this by taking into account the return of the indexes in our measurement of stock returns. Also, and most importantly, we are looking for CEO narcissistic traits to be a predictor or factor thus eliminating the predictability of the error term in our regression.

It is also noted that narcissistic tendencies can lead to the use of earnings management tactics to enhance the CEO’s self-image (Anderson & Tirrell, 2004).

Moderators

It is expected that there are circumstances when greater or lesser levels of narcissistic tendencies are optimal, or at least desirable. Figure 3.1 depicts the findings of Boswell et al. (2018) of the predicted level of CEO narcissistic traits for various firms’ situations.

Figure 2.5 Approximate Placement of Optimal Narcissism
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Since this study utilizes data only from public companies, we could not support or reject all the predicted levels from Boswell et al. (2018) but tested firm lifecycle, capitalization, and industry.

**Firm Lifecycle.** We hypothesize higher levels of optimal narcissism in early and declining stage companies. We will test the company lifecycle stage (see Figure 2.4) as a moderator. We expect that the optimal level of narcissism will be greater in growth stage and declining stage companies compared to mature companies that are in the prime of their existence. Martinson (2014) used lifecycle as an antecedent to CEO selection and reviewed the various methods of defining the measurement of firm life cycle. Like Martinson, we have chosen to focus on change in sales growth (Anthony & Ramesh, 1992) as the determinate for assigning the life cycle to the firm.

_Hypothesis 2:_ Company lifecycle as measured by revenue change will moderate the relationship between CEO narcissism and firm performance, such that the relationship will be positive in the growth and declining stage, and negative in the maturity stage.

Figure 2.6: Hypothesized Optimal CEO Narcissism at Various Firm Lifecycle Stages
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Our thought is that growth firms need focused, strong-willed, perhaps stubborn, CEOs who can buffer criticism and drive success when others do not think it is possible. We speculate that mature phase firms perform optimally when led by stable, politically savvy CEOs who understand the needs of teams across diverse business disciplines. These characteristics point towards balanced CEOs with a lower level of narcissism as being optimal. In the stage of decline, a firm often is facing stiff, existing competition as well as the introduction of new technologies and methods of doing business. In this stage, we believe that leaders need a similar level of tough-mindedness as described in the growth stage of development, but for different reasons. In the decline stage, we expect that CEOs must be willing to make tough decisions that can include tossing away existing products in favor of new technologies, eliminating or changing employees that have outdated skills, and shrinking the workforce. Accordingly, in the decline stage, we envision CEOs with greater levels of narcissism than required in times of lesser demands.

Chatterjee and Pollock (2017) evaluate the need for CEOs with a high level of narcissistic traits to require a high level of acclaim externally and control internally. This need impacts their board selection including choosing high profile directors that will bring them acclaim and exert less control in the organization. To maintain control the same CEO will hire younger and less experienced lieutenants that will be subservient to the CEO. The authors note that this is easier to do in growth stage companies given a flatter organizational structure thus allowing for a higher level of narcissistic control in start-up organizations.

Anecdotal evidence of this hypothesis can be ascertained by reviewing the blog from Psychology Today (Henriques, 2012) that references Steve Jobs’ early success at
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Apple, his failure to succeed in the mature stage of company development, and his return during the organization’s decline to CEO where he positively changed the direction of the organization. Another anecdotal episode involves Hunter Harrison, the now deceased railroad executive, who had a reputation for fixing organizations inside the declining railroad industry. He reportedly was tough-minded and considered ruthless. Recruited to serve as CEO and “fix” CSX, the board and shareholders saw the firm’s results improve until the time of his death (Southerland 2017). This type of scenario leads us to believe that higher levels of leadership narcissism are required in turn-around situations such as when a firm is in steep decline.

**Firm Capitalization and Industry.** To measure CEO impact, we will attempt to remove factors in stock price performance that are outside of the influence of the CEO. By subtracting out market capitalization index-based performance, we eliminate market impact and capitalization impact from stock price performance. We also removed the stock price performance of the industry by removing the industry impact (GIC code industry stock performance by using industry sector performance as calculated by the S&P 500, S&P 400, and S&P600 indexes). We tested if these same factors are moderators to the optimal level of narcissism.

*Hypothesis 3:* Firm size as measured by capitalization will moderate the relationship between CEO narcissism and firm performance, such that the relationship will be positive in smaller capitalization firms and negative in larger capitalization firms.

We hypothesize that we will see a shift in the level of narcissism with smaller capitalization companies. This is impacted by the same factors in hypothesis 2 however
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emphasizes that company size plays a role in determining the positive attributes of narcissistic traits such as healthy self-esteem and willingness to take risks.

*Hypothesis 4: The optimal level of narcissism will shift based on industry.*

We hypothesized that the level of optimal CEO narcissism will shift based on the industry that the firm participates. Although we are not hypothesizing the need in specific industries, potential attributes of the industry may accentuate the need for a leader with differing levels of narcissistic traits. Examples include the need for a high level of creativity and or risk-taking in some industries. On the other extreme as mentioned above in the CSX example, railroads are an example of a portion of an industry in decline and thus the need to have a CEO with higher levels of narcissistic traits. These examples contrast with other steady-state or mature industries that may function better under a CEO with lower levels of narcissistic traits.

**The Smart Narcissist.** We hypothesized that for CEOs that have higher critical thinking ability, narcissistic traits may be more strongly and positively related to firm performance than those that score lower on this type of assessment, no matter the lifecycle, capitalization, or industry of the firm. This concept first came to light in a qualitative study that the researcher competed with two co-authors as part of their DBA curriculum. Boswell et al. (2018) found that the business psychologists interviewed had evidenced the ability for leaders with high problem solving abilities to be able to exhibit higher levels of narcissistic traits in any sector of the economy and still be successful if they showed greater critical thinking ability as measured by the Watson-Glaser assessment. The authors coined the term “the smart narcissist”. It was felt that these
smart narcissists could use their critical thinking to better mask their negative aspects of narcissistic traits and accentuate the positive.

*Hypothesis 5: CEO’s critical thinking ability will moderate the relationship between CEO narcissism and firm performance, such that the relationship will be positive when CEO critical thinking ability is high and insignificant when CEO critical thinking ability is low.*

*The Watson Glaser critical thinking assessment.* In 1925 Goodwin Watson, a professor, and E. M. Glaser, a student, at Columbia Teachers College created and published the assessment. (Person, n.d.) The Watson Glaser critical thinking test is designed to assess an individual’s ability to digest and understand situations and information. Crites (1965) states that the assessment is effective at measuring problem solving ability. More recent research by Sternod and French (2016) also confirms the validity of the test. Additional research has utilized medical professionals (Bauwens & Gerhard, 1987) and collegiate level students (Wilson & Wagner, 1981) to test and support the psychometric properties of the test. The assessment measures the respondent’s ability vs the general population and a college educated population. Given our analysis is of the top leader in the organization we chose to use the subjects ranking for college educated individuals.

*Potential future moderators including risk-taking and narcissism.* Chattlerjee and Hambrick (2011) studied the risk-taking behaviors of CEOs. They concluded that CEOs react to contextual signals as to when to take risk and when not to take risk. They concluded that higher levels of narcissism make the CEO less sensitive to the contextual signals and thus willing to take more risk. The study’s findings are similar to the work of
CEOs with higher levels of narcissism were more willing to take a bet, were overconfident when taking bets, and made decisions on expected future performance, not past results.

Zhu and Chen (2014) study the impact on director selection based on the level of narcissism of the CEO. Assuming that CEOs with higher level of narcissistic traits would favor board members like them or that at least those used to working with CEOs in past assignments with similar traits, the risk profile of the firm could be elevated based on board oversite. Although not part of this study we did provide the standard deviation of the stock returns over the CEO’s tenure for future research.

We speculate that venture capital firms and private equity firms seeking to acquire, and “flip” under-performing firms likely will benefit from highly narcissistic leaders. Due to a lack of available public data, we suggest that future research examines this segment of company performance.
Chapter 3

RESEARCH DESIGN

Methodology

We use a quantitative research design that emphasizes a positivist approach as it relates to the methodology of this study. Quantitative research (Meyers, 2013; Van De Van, 2007) utilizes quantifiable measurements and statistical analysis of data. The primary tool used for statistical analysis is IBM SPSS 26.

Theories used in research design

As outlined in the literature review this study utilizes and relies on several financial theories including modern portfolio theory (MPT) (Markowitz 1952), capital asset pricing model (CAPM) (Sharpe 1964; Treynor, 1961) and market efficiency. In the social sciences and leadership studies, previous research focused on breaking down the definitions of narcissism into component traits when measuring CEO narcissistic traits. In addition, upper echelons theory (Hambrick & Mason, 1984) is the tie that links CEO personality traits to firm performance. Although not primary to the research we also utilize human motivation theory (McClelland, 2009). The theory states that humans are motivated by the need for achievement, affiliation, and power. The connection with upper echelons theory is that the motivators that drive those with high narcissistic traits may be closely related to achievement and power.

Data Collection and Research Sample

The primary independent variable (IV) level of narcissistic traits is a narcissistic trait composite that was calculated using the 20 behavioral factors identified in the CPI
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(Carson & Parker, 1966; Gough, 1989; Gough, 1990; Megargee & Carbonell, 1988)
utilizing the 49 items identified in Gough and Bradley (1996).

To obtain the behavioral data we worked with CMA, a firm that specializes in the assessment, development, and coaching of high-level executives that either are candidates under consideration for hiring by a prospective employer or are already employed. Established in 1975, CMA annually advises 600 client companies and conducts more than 6,000 leadership assessments. They have worked with over 1,800 organizations since their founding. The principals in the firm are licensed psychologists with significant experience and clinical practices that expose the firm to a broad range of clientele. The firm’s informational materials state: “Our services are designed for any size or type of company, regardless of industry…” It is with gratitude that we acknowledge the interest and support from the CMA staff and professionals and their significant contribution to this work.

CMA’s client disclosure and Missouri statute allows CMA to offer archival data for academic research purposes. We have included our IRB approval in Appendix 1. CMA assured the required anonymity by blinding participant data, removing all information that could be used to identify the identity of the individual taking the assessment or the company that employed them at the time of the assessment.

Over 62,000 assessments were made available for the study. The data set included the 20 CPI factors necessary to create the narcissism composite score, Watson Glaser critical thinking result measured against the college graduate population, title, and date of assessment. We narrowed the data to the 1,999 assessments that were completed by individuals that held the title of chair, CEO, or president. From this point forward in the
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study, our reference to “CEO” is based on the assessment being completed by a respondent with the title of chair, CEO, or president.

Separately CMA provided a list of 773 companies that commissioned the 62,000 assessments. All assessments were completed between the years 2000 and 2019. To create an additional level of anonymity, we did not know which of the companies had a CEO assessment associated. We researched each organization to determine if they were public, private ownership, ESOP, private equity owned, or not for profit. Companies that were public during some portion of the study comprise 262 of the 773 companies. While researching if a company was public, we also looked for change of control of private to public, public to private, or acquisition by a public or private company. We accessed shares outstanding to determine market capitalization for each firm. All changes of control were utilized to determine the data that we gathered for each organization.

Utilizing Wharton Research Data Services (WRDS) to access The Center for Research in Security Prices (CRSP) we downloaded monthly stock prices for each organization that was public during all or a portion of the 20 years evaluated. Also accessed from CRSP were the companies’ GIC industry, monthly industry performance data, average industry ROE and average industry ROA for small, mid, and large-capitalization stocks for each of the 10 industry groups. Compustat data was accessed through WRDS to obtain quarterly ROE, quarterly ROA, and annual revenue for each organization for which it was available.

Monthly stock price data was converted to monthly time-weighted rate of return via the following equation: Monthly Return = (\text{Stock Price Month}_{t+1} - \text{Stock Price Month}_t) / \text{Stock Price Month}_t. Not all firms in the study were members of the S&P 500, S&P 400,
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or S&P 600 indexes. For that reason, we used the capitalization criteria for each index and compared the organization's market capitalization to categorize each organization as either large, mid, or small capitalization. Annual revenue was converted to a revenue growth rate based on the equation: $\text{Revenue Growth} = \frac{(\text{Annual Revenue}_{t+x} - \text{Annual Revenue}_t)}{\text{Annual Revenue}_t}$. Each company was assigned a lifecycle category of growth, mature, or decline based on the research of Anthony and Ramesh (1992).

A data set including monthly firm total return, industry, capitalization segment, and lifecycle category was appended to the subset of the 773 companies. CMA then blindly matched the above performance and descriptive data to the 62,000 assessments. We then screened the assessments only including those associated with a CEO, chairman, or president. The data included 197 CEOs that had been assessed and led public companies. Due to either company missing performance data or CPI data on the CEO, our final sample included 180 CEOs for whom we have a valid narcissism score and monthly investment performance data.

To ensure confidentiality, CMA took the aforementioned data and appended it to the subset of the corresponding 62,000 assessments. We screened the assessments based on employee title. Only assessments that were completed by employees that had the title of chair, CEO, or president were included.

**Study Variables**

**Dependent Variables**

Time-weighted total return for each of the 180 observations was created by calculating a geometric mean of the monthly performance. Total return is the dependent variable for hypothesis H1-a1. An industry time-weighted weight of return was created
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for each of the 180 observations by calculating a geometric mean of the monthly performance of the industry the company is associated. CEO Alpha was calculated by subtracting the industry time-weighted return from the time-weighted total return. CEO alpha is the dependent variable for hypothesis H1-a2. Average ROE and ROA were created by calculating the arithmetic mean of the quarterly company ROE and ROA. Average industry ROE and ROA for the industry of each company were created using arithmetic mean. ROE and ROA net of industry ROE and ROA was calculated by subtracting average industry ROE and ROA from average company ROE and ROE. ROE, net ROE, ROA and net ROA serve as the dependent variables for H1-b1 and H1-b2 respectively. Although not part of the study we chose to also calculate the standard deviation of the monthly returns as a measure of volatility and total risk of the stock.

**Independent Variables**

Table 3.1 contains the correlation between the 20 CPI factors with defined narcissistic traits. We created a raw narcissistic trait score by multiplying each assessments’ CPI descriptive score by the level of correlation to narcissism using the following equation (Table 3.1):

\[
\text{NarcRaw} = (D_o \times 0.46) + (C_s \times 0.14) + (S_y \times 0.32) + (S_p \times 0.42) + (S_a \times 0.43) + (I_n \times 0.33) + (E_m \times 0.25) \\
+ (R_e \times -0.35) + (S_o \times -0.28) + (S_c \times 0.67) + (G_i \times -0.5) + (C_m \times -0.04) + (W_b \times -0.19) + (T_o \times -0.38) + (A_c \times -0.16) + (C_f \times 0.02) + (I_s \times -0.06) + (F_x \times -0.03) + (S_n \times -0.39)
\]

A subject illustrating no narcissistic tendencies through their CPI results would receive a score of -271.63 and a subject illustrating maximum narcissistic tendencies through their CPI results would receive a score of 234.26. To illustrate the results in percentile we created a Narcissism Composite variable by converting the range to a range of 0 to 100
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using the following equation: \[ \text{NarcSc} = \frac{(\text{NarcRaw} - (-271.63))}{(234.26 - (-271.63))} \times 100 \]

We felt it important to make this conversion of our independent variable to percentage to allow our work to be more accessible to practitioners. CPI results are calculated and assessed based on the percentile to the general population. Our calculation will facilitate using the narcissism composite in the same manner.

Table 3.1: CPI 20 Factor Correlation to Narcissistic Trait Levels

(Wink & Gough, 1990) factors updated by Research Department, CPP Inc. (2002)

<table>
<thead>
<tr>
<th>CPI Descriptive Statistics</th>
<th>Correlation with Narcissism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominance (Do)</td>
<td>0.46**</td>
</tr>
<tr>
<td>Capacity for Status (Cs)</td>
<td>0.14**</td>
</tr>
<tr>
<td>Sociability (Sy)</td>
<td>0.32**</td>
</tr>
<tr>
<td>Social Presence (Sp)</td>
<td>0.42**</td>
</tr>
<tr>
<td>Self-Acceptance (Sa)</td>
<td>0.43**</td>
</tr>
<tr>
<td>Independence (In)</td>
<td>0.33*</td>
</tr>
<tr>
<td>Empathy (Em)</td>
<td>0.25**</td>
</tr>
<tr>
<td>Responsibility (Re)</td>
<td>-0.35**</td>
</tr>
<tr>
<td>Social Conformity (So)</td>
<td>-0.28**</td>
</tr>
<tr>
<td>Self-Control (Sc)</td>
<td>-0.67**</td>
</tr>
<tr>
<td>Good Impression (Gi)</td>
<td>-0.5**</td>
</tr>
<tr>
<td>Communality (Cm)</td>
<td>-0.04</td>
</tr>
<tr>
<td>Well-being (Wb)</td>
<td>-0.19**</td>
</tr>
<tr>
<td>Tolerance (To)</td>
<td>-0.38**</td>
</tr>
<tr>
<td>Achievement via Conformance (Ac)</td>
<td>-0.16**</td>
</tr>
<tr>
<td>Achievement via Independence (Ai)</td>
<td>-0.08</td>
</tr>
<tr>
<td>Conceptual Fluency (Cf)</td>
<td>0.02</td>
</tr>
<tr>
<td>Insightfulness (Is)</td>
<td>-0.06</td>
</tr>
<tr>
<td>Flexibility (Fx)</td>
<td>-0.03</td>
</tr>
<tr>
<td>Sensitivity (Sn)</td>
<td>-0.39**</td>
</tr>
</tbody>
</table>

Note. ** Correlation is significant at the p<.01 level. * Correlation is significant at the p<.05 level
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**Moderators**

The industry variable utilizes the Global Industry Code (GIC) sectors. We coded the 10 sectors (Table 3.2) and use the Hayes PROCESS macro in SPSS to evaluate if industry moderates the relationship between CEO narcissism and firm performance. In 2016 real estate was separated from financials, but to keep the data consistent for the 20 years studied we left real estate included in the financial industry.

Table 3.2: GIC Industry Codes

<table>
<thead>
<tr>
<th>Category</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Services</td>
<td>1</td>
</tr>
<tr>
<td>Consumer Discretionary</td>
<td>2</td>
</tr>
<tr>
<td>Consumer Staples</td>
<td>3</td>
</tr>
<tr>
<td>Energy</td>
<td>4</td>
</tr>
<tr>
<td>Financials</td>
<td>5</td>
</tr>
<tr>
<td>Health Care</td>
<td>6</td>
</tr>
<tr>
<td>Industrials</td>
<td>7</td>
</tr>
<tr>
<td>Information Technology</td>
<td>8</td>
</tr>
<tr>
<td>Materials</td>
<td>9</td>
</tr>
<tr>
<td>Utilities</td>
<td>10</td>
</tr>
</tbody>
</table>

Company lifecycle and capitalization (Tables 3.2 and 3.4) were coded as described previously. They were also evaluated with the Hayes Process macro in SPSS.

Table 3.3: Company Lifecycle coding

<table>
<thead>
<tr>
<th>Category</th>
<th>Code</th>
<th>Compounded Annual Growth Rate (CAGR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth</td>
<td>1</td>
<td>&gt; 20%</td>
</tr>
<tr>
<td>Mature</td>
<td>2</td>
<td>&gt;0% and &lt; 20%</td>
</tr>
<tr>
<td>Decline</td>
<td>3</td>
<td>&lt;0%</td>
</tr>
</tbody>
</table>
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Table 3.4: Company Capitalization coding

<table>
<thead>
<tr>
<th>Category</th>
<th>Code</th>
<th>Capitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Capitalization</td>
<td>1</td>
<td>&lt; $1.4 billion</td>
</tr>
<tr>
<td>Mid Capitalization</td>
<td>2</td>
<td>&gt;$1.4 billion and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;$8.2 billion</td>
</tr>
<tr>
<td>Large Capitalization</td>
<td>3</td>
<td>&gt;8.2 Billion</td>
</tr>
</tbody>
</table>

**Analysis**

To test hypothesis H1 we conducted a linear regression in SPSS for each of our dependent variables (Return = H1-a1, CEO Alpha=H1-a2, ROE and net ROE = H1-b1, ROA and ROA Change = H1-b2) with the narcissistic composite as the independent variable to determine the linear relationship and statistical significance. Utilizing the same variables, we utilized the curve estimation analysis in SPSS to investigate the potential of a curvilinear shape. We then utilized the Hayes PROCESS macro model 1 to independently test Industry, Capitalization, and Lifecycle as a moderator of the statistically significant relationships between the dependent variable and the narcissism composite. We chose to evaluate each variable independently utilizing PROCESS model one. Our goal is to understand the impact of each moderator independently and to avoid the potential for autocorrelation among our selected moderators. A company may have attributes that are associated with industry, capitalization, and lifecycle.
Chapter 4

RESULTS

Descriptive Statistics

Table 4.1 presents the descriptive statistics of all study variables. Skewness and kurtosis are in or very close to the acceptable range of -1 to +1 normality for narcissism, industry, capitalization, and lifecycle. Our dependent variables, Return, CEO Alpha, and both ROE and ROA measures are outside of the skewness and kurtosis bounds of normality. Return and CEO Alpha have similar characteristics given CEO Alpha is derived from return. Return and CEO Alpha show a negative skewness. We will further elaborate in our discussion of outliers the reason for this variation. Both measures of ROE are skewed positively, and both measures of ROA are skewed negatively. All four dependent variables exhibit a high level of kurtosis illustrating a leptokurtic distribution. Figures 4.1 (Return), 4.2 (CEO alpha), 4.3 (ROE), 4.4 (net ROE), 4.5 (ROA), and 4.6 (net ROA) illustrate graphically the skewness and leptokurtic distribution of the dependent variables.
Table 4.1: Means, Standard Deviations, Skewness and Kurtosis for study variables

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>M</th>
<th>Md</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narcissism composite</td>
<td>179</td>
<td>58.20</td>
<td>58.43</td>
<td>4.03</td>
<td>-.10</td>
<td>.02</td>
</tr>
<tr>
<td>Watson Glaser- college</td>
<td>149</td>
<td>65.77</td>
<td>74.00</td>
<td>26.37</td>
<td>-.63</td>
<td>-.66</td>
</tr>
<tr>
<td>Return</td>
<td>125</td>
<td>.03</td>
<td>.79</td>
<td>.21</td>
<td>-7.06</td>
<td>66.98</td>
</tr>
<tr>
<td>CEO Alpha</td>
<td>125</td>
<td>-.06</td>
<td>-.03</td>
<td>.19</td>
<td>-7.95</td>
<td>78.27</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>125</td>
<td>.10</td>
<td>.09</td>
<td>.58</td>
<td>1.22</td>
<td>.87</td>
</tr>
<tr>
<td>Net Standard Deviation</td>
<td>125</td>
<td>.04</td>
<td>.03</td>
<td>.50</td>
<td>.97</td>
<td>.95</td>
</tr>
<tr>
<td>Return on Equity</td>
<td>127</td>
<td>.77</td>
<td>.47</td>
<td>2.05</td>
<td>10.05</td>
<td>108.69</td>
</tr>
<tr>
<td>Net Return on Equity</td>
<td>126</td>
<td>.33</td>
<td>-.47</td>
<td>2.24</td>
<td>7.27</td>
<td>68.99</td>
</tr>
<tr>
<td>Return on Assets</td>
<td>127</td>
<td>.34</td>
<td>.26</td>
<td>3.03</td>
<td>-9.13</td>
<td>97.30</td>
</tr>
<tr>
<td>Net Return on Assets</td>
<td>126</td>
<td>-.44</td>
<td>-.27</td>
<td>3.08</td>
<td>-8.32</td>
<td>86.16</td>
</tr>
<tr>
<td>GIC Industry Code</td>
<td>180</td>
<td>5.18</td>
<td>5.00</td>
<td>2.29</td>
<td>-.27</td>
<td>-.37</td>
</tr>
<tr>
<td>Capitalization Sector</td>
<td>180</td>
<td>1.68</td>
<td>1.50</td>
<td>.76</td>
<td>.60</td>
<td>-1.04</td>
</tr>
<tr>
<td>Lifecycle segment</td>
<td>183</td>
<td>1.88</td>
<td>2.00</td>
<td>.67</td>
<td>.15</td>
<td>-.78</td>
</tr>
</tbody>
</table>

Figure 4.1: Return Histogram
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Figure 4.2: CEO Alpha Histogram

Figure 4.3: Return on Equity Histogram

Figure 4.4: Net Return on Equity Histogram
Data Screening

The initial sample size was $N = 180$. Except for industry and capitalization, each variable had one or more missing values. The variable with the most missing values was ROA with a final sample size of 126. Missing data points represent unavailable CRSP data on Return and CEO Alpha, Compustat data on ROE and ROA, or complete CMA assessment data on Narcissism Composite and Watson Glaser. The full listwise deletion leaves a remaining $N = 82$. We contemplated options of replacing missing values with the
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various methods available, a total listwise deletion, or a listwise deletion based on each analysis and the impact on our results. Our desire to understand the statistical impact of all actual data available led us to eliminate data listwise on each analysis. We felt the benefit of the actual data outweighed the benefit of the larger data sample with replacements or the use of only the 82 companies that had a complete data set. We will discuss the pros and cons of this decision further in Chapter 5.

The listwise deletion in each regression varied slightly with $N = 125$ for return and CEO alpha and $N = 124$ for ROE and ROA. When we introduce the third variable in testing moderation in hypotheses 2 through 5 the listwise deletion across three variables created a varying sample size in each equation. The minimum observations available (lifecycle variable) is 111.

We conducted data screening for the dependent variables based on skewness and kurtosis values. Univariate outliers were examined using Z-scores, based on Meyers et al.’s (2017) cutoff of 2.50 for extreme cases. One outlier was detected for Return with the same outlier occurring in CEO Alpha. ROE and ROA each had one unique outlier. Multivariate outliers were examined using Mahalanobis distances, with a cutoff of 18.467 based on 4 df at $p < .001$. One variable exceeded this value. When these were removed, the scores appeared to be multivariate normal, and univariate normal for all dependent variables. Accordingly, the sample size for the remaining analyses was $N = 121$.

Even considering the effectiveness of the variable removal in positively impacting normality, we chose not to eliminate the variables. We were concerned about eliminating both very high and very low performing companies and the narcissism level of the CEOs whose organizations achieved the results. The outliers contain explanatory power that is
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important to our study. We tested our concern by running regressions on both the full data set and the data with the outliers removed. Our full data set created regressions that were statistically significant for return, CEO Alpha, and ROA (we will review the full regression results in the upcoming pages) \((p < .05)\) and not statistically significant \((p > .05)\) for the data set with outliers removed. This confirmed our decision that the outliers did have a meaningful purpose in our study thus we chose to retain them and continue with the knowledge that our data has normality issues.

Table 4.2: Correlations among study variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CEO narcissism</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. CEO critical thinking</td>
<td>.21*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Return</td>
<td>-29**</td>
<td>-02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. CEO alpha</td>
<td>-27**</td>
<td>-01</td>
<td>.99**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Return on equity</td>
<td>.01</td>
<td>-20*</td>
<td>-21*</td>
<td>-21*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Net return on equity</td>
<td>.11</td>
<td>-22*</td>
<td>-24*</td>
<td>-24*</td>
<td>.91**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Return on assets</td>
<td>.20*</td>
<td>.21*</td>
<td>-.07</td>
<td>-.01</td>
<td>-.05</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Net return on assets</td>
<td>.18*</td>
<td>.20*</td>
<td>.08</td>
<td>.09</td>
<td>-.08</td>
<td>.04</td>
<td>.04</td>
<td>.97**</td>
<td></td>
</tr>
<tr>
<td>9. Firm size</td>
<td>.04</td>
<td>.04</td>
<td>.23**</td>
<td>.19*</td>
<td>-.01</td>
<td>.07</td>
<td>.12</td>
<td>.19*</td>
<td></td>
</tr>
<tr>
<td>10. Lifecycle</td>
<td>.08</td>
<td>.01</td>
<td>-.29**</td>
<td>-.23*</td>
<td>-.02</td>
<td>-.08</td>
<td>.04</td>
<td>-.04</td>
<td>-.13</td>
</tr>
</tbody>
</table>

*Note. ** Correlation was significant at the 0.01 level (2-tailed); * Correlation was significant at the 0.05 level (2-tailed).

Bivariate correlations illustrate both expected and some unexpected results. Return and CEO alpha was significant and expectedly negatively correlated with CEO narcissism. We will more fully study the linear and curvilinear relationship between these variables later in chapter 4. Unexpectedly ROE and net ROE are significantly and negatively related to return and CEO alpha. There are many potential anomalies that could influence this result. First, often stock price change can be impacted by positive and negative financial results compared to equity analyst projections. Analysts often rely
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heavily on ROE as an indicator of company performance. Companies missing
expectations positively or negatively can impact stock price movements. We will also
more fully discuss in chapter 5 the potential for CEOs to manipulate financial results
inside of the guidelines of generally accepted accounting principles (GAAP).

Frequencies of Multi Categorical Modifiers

With $N=180$ we evaluated the distribution of the multi categorical modifiers. The
modifiers themselves were normally distributed. Even with the normal distribution,
evaluating 180 companies out of just under 4,000 public companies in the US the modifier
may have underrepresented categories. Although our data has geographic representation
across the United States (US), it is more heavily weighted to the Midwest US based on the
location of the CMA firm and their work. Although they work with firms in all industries,
Table 4.2 illustrates they have a concentration in financials, industrials, healthcare, and
communication services. Table 4.3 illustrates they represent more small-capitalization
firms at 50% of the total compared to 35% for US companies in total. Table 4.4 illustrates
an expected distribution of Lifecycle segments with 53.4% of the firms being mature,
29.4% of the firms are growth stage and only 17.2% are in the decline stage.
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Table 4.3: Industry Frequency

<table>
<thead>
<tr>
<th>Industry</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication services</td>
<td>22</td>
</tr>
<tr>
<td>Consumer discretionary</td>
<td>9</td>
</tr>
<tr>
<td>Consumer staples</td>
<td>8</td>
</tr>
<tr>
<td>Energy</td>
<td>6</td>
</tr>
<tr>
<td>Financials</td>
<td>59</td>
</tr>
<tr>
<td>Healthcare</td>
<td>24</td>
</tr>
<tr>
<td>Industrials</td>
<td>30</td>
</tr>
<tr>
<td>Information technology</td>
<td>6</td>
</tr>
<tr>
<td>Materials</td>
<td>13</td>
</tr>
<tr>
<td>Utilities</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>180</td>
</tr>
</tbody>
</table>

Table 4.4: Capitalization Sector Frequency

<table>
<thead>
<tr>
<th>Sector</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>90</td>
<td>50.0</td>
<td>50.0</td>
</tr>
<tr>
<td>Mid</td>
<td>57</td>
<td>31.7</td>
<td>81.7</td>
</tr>
<tr>
<td>Large</td>
<td>33</td>
<td>18.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>180</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.5: Lifecycle Segment Frequency

<table>
<thead>
<tr>
<th>Segment</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth</td>
<td>48</td>
</tr>
<tr>
<td>Mature</td>
<td>87</td>
</tr>
<tr>
<td>Decline</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>163</td>
</tr>
<tr>
<td>Missing</td>
<td>17</td>
</tr>
</tbody>
</table>
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**Hypothesis 1**

For each of the six dependent variables, we ran a linear regression with Narcissism Composite as the independent variable looking for a statistically significant linear relationship between the two variables. A curve estimation was then performed to assess the existence of a curvilinear relationship. Both Quadratic and Cubic models were tested. We looked for an increased $R^2$ and a meaningful positive change in F statistic to determine the optimal model taking into account the need for parsimony to gain utilization by practitioners.

Linear regression was conducted to examine narcissism as a predictor of company total return. Except for the aforementioned skewness and kurtosis, the data met the assumptions of linearity, homoscedasticity (Figure 4.7a), and normality of residuals based on the examination of plots of standardized residuals against standardized predicted values (Figure 4.7b). The overall model was statistically significant ($F(1,122) = 10.946, p = .001$), and indicated that narcissism composite explained a significant proportion of the variance in Return ($R^2 = .082$). The standardized regression coefficient was $-0.287 (p = .001)$ (see Table 4.5).
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Figure 4.7a: Return Regression Scatterplot

![Scatterplot]

Figure 4.7b: Return Regression Normal P-P Plot

![Normal P-P Plot]

Table 4.6: Regression Analysis Summary for Narcissism Predicting Return

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>.95</td>
<td>.277</td>
<td>3.43</td>
<td>.001</td>
</tr>
<tr>
<td>Narcissism Composite</td>
<td>-.016</td>
<td>-.287</td>
<td>-3.31</td>
<td>.001</td>
</tr>
</tbody>
</table>

Results illustrate that there is a statistically significant linear relationship between return and the narcissism composite. The negative beta is consistent with Greaves et al.
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(2014) supporting that narcissistic traits in CEOs may negatively impact company performance. To test our hypothesis of an optimal level of narcissism we conducted a curve estimation to determine if the relationship is curvilinear.

The quadratic model was statistically significant (F(2,121) = 8.299, p < .001), and indicated that the narcissism composite explained a significant proportion of the variance in Return ($R^2 = .121$) an increase in $R^2$ of .039 over the linear model. The standardized regression coefficient was 3.633 ($p = .03$) and then -3.925 ($p = .02$) after the point of inflection (see Table 4.6).

We then tested the cubic model which was statistically significant (F(2,121) = 8.713, $p < .001$), and indicated that Narcissism explained a significant proportion of the variance in Return ($R^2 = .126$) an increase in $R^2$ of .005 over the quadratic model. The standardized regression coefficient was 3.757 ($p = .03$) and then -4.058 ($p = .02$) after the point of inflection.

Table 4.7: Hierarchical Regression Analyses of Linear and Non-Linear Narcissism Terms Predicting Return

<table>
<thead>
<tr>
<th>Predictors</th>
<th>$\beta$ Narcissism</th>
<th>$\beta$ Narcissism$^2$</th>
<th>$\beta$ Narcissism$^3$</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Linear</td>
<td>-.287*</td>
<td></td>
<td></td>
<td>.082*</td>
<td></td>
</tr>
<tr>
<td>Step 2: Quadratic</td>
<td>3.633*</td>
<td>-3.925*</td>
<td></td>
<td>.121**</td>
<td>.039**</td>
</tr>
<tr>
<td>Step 3: Cubic</td>
<td>Excluded</td>
<td>3.757*</td>
<td>-4.058*</td>
<td>.126**</td>
<td>.005**</td>
</tr>
</tbody>
</table>

*Note. * $p<.05$. ** $p<.01$
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The regression statistics for the cubic model are slightly more predictive than the quadratic model, however, the cubic model excluded the narcissism composite and only allowed the squared and cubed variable to remain in the analysis thus still implying the best fit model had a quadratic shape. SPSS eliminates a predictor variable if the variance is already contained in the other two variables (Field, 2014). Due to the similarity of the two models as illustrated by the $\Delta R^2$ statistics we retained the more parsimonious quadratic model which provides support for Hypothesis 1-a1. (Figure 4.8)

Figure 4.8: Return Curve Estimation Graph

We followed the identical statistical analysis that we conducted to test hypothesis 1-a1 to examine hypothesis 1-a2 by conducting a linear regression of narcissism as a predictor of company CEO alpha. Except for the aforementioned skewness and kurtosis, the data met the assumptions of linearity, homoscedasticity (Figure 4.9a), and normality of residuals based on the examination of plots of standardized residuals against standardized
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predicted values (Figure 4.9b). The overall model was statistically significant ($F(1,122) = 9.870, p = .002$), and indicated that narcissism composite explained a significant proportion of the variance in CEO alpha ($R^2 = .075$). The standardized regression coefficient was -.274 ($p = .002$) (see Table 4.7).

Figure 4.9a: CEO alpha Regression Scatterplot

![Scatterplot](image)

Figure 4.9b: CEO alpha Regression Normal P-P Plot

![Normal P-P Plot](image)
Results suggest a statistically significant linear relationship between CEO alpha and the narcissism composite, although less than that of total return. Like return, the CEO alpha negative beta supports the work of Greaves et al. (2014) in the negative relationship between CEO narcissism and firm performance. To test the optimal level of narcissism, we conducted a curve estimation to determine if the function is curvilinear and if so, whether the curve is quadratic or cubic.

The quadratic model was statistically significant (F(2,121) = 7.9, p = .001), and indicated that narcissism composite squared term explained a significant proportion of the variance in CEO Alpha ($R^2 = .115$) an increase in $R^2$ of .040 over the linear model. The standardized regression coefficient was 3.765 ($p = .030$) and then -4.044 ($p = .020$) after the point of inflection.

We then tested the cubic model which was statistically significant (F(2,121) = 8.357, $p < .001$), and indicated that narcissism composite cubic term explained a significant proportion of the variance in CEO Alpha ($R^2 = .121$) an increase in $R^2$ of .006 over the quadratic model. The standardized regression coefficient was 3.930 ($p = .028$) and then -4.218 ($p = .019$) after the point of inflection. (see Table 4.8)
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Table 4.9: Hierarchical Regression Analyses of Linear and Non-Linear Narcissism Terms

Predicting CEO Alpha

<table>
<thead>
<tr>
<th>Predictors</th>
<th>$\beta$ Narcissism</th>
<th>$\beta$ Narcissism$^2$</th>
<th>$\beta$ Narcissism$^3$</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Linear</td>
<td>-.274*</td>
<td></td>
<td></td>
<td>.075*</td>
<td></td>
</tr>
<tr>
<td>Step 2: Quadratic</td>
<td>3.765*</td>
<td>-4.044*</td>
<td></td>
<td>.115*</td>
<td>.040*</td>
</tr>
<tr>
<td>Step 3: Cubic</td>
<td>Excluded</td>
<td>3.930*</td>
<td>-4.218*</td>
<td>.126**</td>
<td>.006**</td>
</tr>
</tbody>
</table>

Note. * $p<.05$. ** $p<.01$

The regression statistics for the cubic model are slightly more predictive than the quadratic model, however, due to the same exclusion of the narcissism composite variable illustrates that the best fit is a quadratic shape and provides support for the non-linear relationship outlined in Hypothesis 1-a2. (Figure 4.10)

Figure 4.10: CEO Alpha Curve Estimation Graph
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In chapter 5 we will more fully discuss the reason for the similarity in result of total return to CEO alpha and our logic behind which we suggest will be more impactful to the practitioner.

We followed the identical statistical process utilized to test hypothesis 1-a to examine hypothesis 1-b. We conducted a linear regression to examine narcissism as a predictor of company ROE. Unlike return and CEO alpha the data did not meet the assumptions of linearity, homoscedasticity (Figure 4.11a), and normality of residuals based on the examination of plots of standardized residuals against standardized predicted values (Figure 4.11b) The overall model was not statistically significant ($F(1,124) = .662, p = .417$), and indicated that narcissism composite did not explain a statistically significant proportion of the variance in ROE ($R^2 = .005$). The standardized regression coefficient was $.073 (p = .605)$. (see Table 4.9)

Figure 4.11a: ROE Regression Scatterplot
Table 4.10: Regression Analysis Summary for Narcissism Predicting ROE

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>(Constant)</td>
<td>-1.374</td>
<td>2.653</td>
</tr>
<tr>
<td>Narcissism Composite</td>
<td>.073</td>
<td>.045</td>
</tr>
</tbody>
</table>

The above analysis illustrates that there was not a statistically significant linear relationship between ROE and the narcissism composite. We chose to still check to see if by testing a quadratic or cubic model statistical significance would be achieved. Both models failed to be statistically significant. The quadratic model was not statistically significant (F(2,124) = .450, p = .638), and indicated that narcissism composite explained a very small proportion of the variance in ROE ($R^2 = .007$) an increase in $R^2$ of .002 over the linear model. The cubic model was also not statistically significant (F(2,124) = .463, $p = .630$), and indicated that narcissism composite explained a very small proportion of the
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variance in ROE ($R^2 = .007$) an increase in $R^2$ of .002 over the linear model and the same as the quadratic model. (see Table 4.10)

Table 4.11: Hierarchical Regression Analyses of Linear and Non-Linear Narcissism Terms Predicting ROE

<table>
<thead>
<tr>
<th>Predictors</th>
<th>$\beta$ Narcissism</th>
<th>$\beta$ Narcissism$^2$</th>
<th>$\beta$ Narcissism$^3$</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Linear</td>
<td>.073</td>
<td></td>
<td></td>
<td>.005</td>
<td></td>
</tr>
<tr>
<td>Step 2: Quadratic</td>
<td>1.011</td>
<td>-.939</td>
<td></td>
<td>.007</td>
<td>.002</td>
</tr>
<tr>
<td>Step 3: Cubic</td>
<td>Excluded</td>
<td>.574</td>
<td>-.503</td>
<td>.007</td>
<td>.000</td>
</tr>
</tbody>
</table>

*Note. * $p<.05$. ** $p<.01$

Although the results for average company ROE as the dependent variable were not statistically significant, we tested net ROE as a dependent variable before determining that the results do not support hypothesis 1-b1. Net ROE also did not meet the assumptions of linearity, homoscedasticity (Figure 4.12a), and normality of residuals based on the examination of plots of standardized residuals against standardized predicted values (Figure 4.12b). The overall model was not statistically significant ($F(1,123) = 1.1389, p = .241$), and indicated that narcissism composite did not explain a statistically significant proportion of the variance in ROE ($R^2 = .011$). The standardized regression coefficient was .106 ($p = .241$). (see Table 4.11)
The above analysis illustrates that net ROE, although better than ROE, still does not have a statistically significant linear relationship with the narcissism composite. We still checked to see if by testing a quadratic or cubic model statistical significance would
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be achieved. Both models failed to be statistically significant. The quadratic model was not statistically significant \(F(2,122) = .4968, p = .383\), and indicated that narcissism composite explained a small proportion of the variance in RO \(R^2 = .016\) an increase in \(R^2\) of .005 over the linear model. The cubic model was also not statistically significant \(F(2,123) = .987, p = .376\), and indicated that narcissism composite explained a very small proportion of the variance in ROE \(R^2 = .016\) an increase in \(R^2\) of .005 over the linear model and the same as the quadratic model. In addition, similar to the analysis utilizing return and CEO alpha the narcissism composite variable was excluded from the analysis (See Table 4.12).

Table 4.13: Hierarchical Regression Analyses of Linear and Non-Linear Narcissism Terms Predicting net ROE

<table>
<thead>
<tr>
<th>Predictors</th>
<th>(\beta) Narcissism</th>
<th>(\beta) Narcissism(^2)</th>
<th>(\beta) Narcissism(^3)</th>
<th>(R^2)</th>
<th>(\Delta R^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Linear</td>
<td>.106</td>
<td></td>
<td></td>
<td>.011</td>
<td></td>
</tr>
<tr>
<td>Step 2: Quadratic</td>
<td>1.049</td>
<td>-.908</td>
<td></td>
<td>.016</td>
<td>.005</td>
</tr>
<tr>
<td>Step 3: Cubic</td>
<td>excluded</td>
<td>.847</td>
<td>-.745</td>
<td>.016</td>
<td>.000</td>
</tr>
</tbody>
</table>

*Note. * \(p<.05\). ** \(p<.01\)

Net ROE illustrated a better fit than ROE, but not enough to be statistically significant. The results fail to support Hypothesis 1-b1.

We followed the identical statistical evaluation used in our testing of hypothesis 1-b1 to determine the level of support for hypothesis 1-b2. We completed a linear regression to examine narcissism as a predictor of company ROA. In addition to the aforementioned
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skewness and kurtosis, the data although statistically significant did have issues with linearity, homoscedasticity (Figure 4.15a), and normality of residuals based on the examination of plots of standardized residuals against standardized predicted values (Figure 4.15b). The overall model was statistically significant ($F(1,124) = 5.251, p = .024$), and indicated that narcissism composite explained a significant proportion of the variance in ROE ($R^2 = .041$). The standardized regression coefficient was $.202 (p = .024)$. (see Table 4.13)

Figure 4.13a: ROA Regression Scatterplot
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Figure 4.13b: ROA Regression Normal P-P Plot

![Normal P-P Plot of Regression Standardized Residual](image)

Dependent Variable: Return on Assets

Table 4.14: Regression Analysis Summary for Narcissism Predicting ROA

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-8.427</td>
<td>3.839</td>
<td>-2.195</td>
<td>.030</td>
</tr>
<tr>
<td>Narcissism Composite</td>
<td>.151</td>
<td>.066</td>
<td>.202</td>
<td>.024</td>
</tr>
</tbody>
</table>

The above analysis illustrates that although there are challenges with the linearity there is a statistically significant linear relationship between ROA and the narcissism composite. The linear regression analysis of the narcissism composite on return and CEO alpha produced negative betas. Prior to performing the curvilinear analysis this would have led us to believe that narcissism was negative. The linear regression analyzing the impact on ROA prior to the curvilinear analysis had a positive beta connotating that in this case more narcissism is good. One possible explanation that we will more fully explore in chapter 5 is that narcissistic CEOs may have a greater tendency to manipulate earnings and thus impact ROA (Capalbo et al, 2017). To once again test if there is an optimal level
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of narcissism for this dependent variable, we conducted a curve estimation to determine if the function is curvilinear and if so, whether the curve is quadratic or cubic.

The quadratic model was statistically significant ($F(2,123) = 3.631, p = .029$), and indicated that narcissism composite explained a proportion of the variance in ROA ($R^2 = .056$) an increase in $R^2$ of .015 over the linear model. The standardized regression coefficient was 2.809 ($p = .134$) and then -2.610 ($p = .163$) after the point of inflection.

The cubic model was statistically significant ($F(2,123) = 3.647, p < .029$), and indicated that narcissism composite explained a proportion of the variance in ROA ($R^2 = .056$) an increase in $R^2$ of .015 over the linear model and the same as the quadratic model. The standardized regression coefficient was 1.535 ($p = .108$) and then -1.339 ($p = .160$) after the point of inflection. (see Table 4.14). Similar to the previous analysis a variable was excluded from the analysis by SPSS indicating that the impact on ROA was explained by the two included variables. In this analysis Narcissism$^2$ was excluded. The same inference can be made that the two variables included in the model indicates a quadratic shape with one inflection point.

Table 4.15: Hierarchical Regression Analyses of Linear and Non-Linear Narcissism Terms Predicting ROA

<table>
<thead>
<tr>
<th>Predictors</th>
<th>$\beta$ Narcissim</th>
<th>$\beta$ Narcissim$^2$</th>
<th>$\beta$ Narcissim$^3$</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Linear</td>
<td>.202*</td>
<td></td>
<td></td>
<td>.041*</td>
<td></td>
</tr>
<tr>
<td>Step 2: Quadratic</td>
<td>2.809</td>
<td>-2.610</td>
<td></td>
<td>.056*</td>
<td>.015*</td>
</tr>
<tr>
<td>Step 3: Cubic</td>
<td>1.535</td>
<td>excluded</td>
<td>-1.339</td>
<td>.056*</td>
<td>.000*</td>
</tr>
</tbody>
</table>

Note. * $p<.05$. ** $p<.01$
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Figure 4.14: ROA Curve Estimation Graph

There is a statistically significant curvilinear relationship between the narcissism composite and ROA (Figure 4.16). Since the $R^2$ is small and the betas are not statistically significant, we will test net ROA before deciding to accept or reject Hypothesis 1b-1.

Net ROA has the same issues of linearity, homoscedasticity (Figure 4.17a), and normality of residuals based on the examination of plots of standardized residuals against standardized predicted values (Figure 4.17b) The overall model was statistically significant ($F(1,123) = 3.959, p = .049$), and indicated that narcissism composite explained a significant proportion of the variance in ROE ($R^2 = .031$). The standardized regression coefficient was $.177(p = .024)$. (see Table 4.15)
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Figure 4.15a: Net ROA Regression Scatterplot

![Scatterplot](image)

Figure 4.15b: Net ROA Regression Normal P-P Plot

![Normal P-P Plot](image)

Table 4.16: Regression Analysis Summary for Narcissism Predicting net ROA

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>B: -8.221</td>
<td>β: -2.095, p: .038</td>
</tr>
<tr>
<td>Narcissism Composite</td>
<td>B: .134</td>
<td>β: .177, t: 1.990, p: .049</td>
</tr>
</tbody>
</table>
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The results for net ROA are statistically significant but not as insightful as ROA, return, or CEO alpha. We once again tested if there is an optimal level of narcissism for this dependent variable and conducted a curve estimation to determine if the function is curvilinear and if so, whether the curve is quadratic or cubic.

The quadratic model was statistically significant ($F(2,122) = 3.649, p = .029$), and indicated that narcissism composite explained a significant proportion of the variance in net ROA ($R^2 = .056$) an increase in $R^2$ of .025 over the linear model. The standardized regression coefficient was 3.543 ($p = .060$) and then -3.370 ($p = .073$) after the point of inflection. The cubic model was statistically significant ($F(2,123) = 3.647, p < .029$), and indicated that the narcissism composite explained a proportion of the variance in net ROA ($R^2 = .056$) an increase in $R^2$ of .015 over the linear model and the same as the quadratic model. The standardized regression coefficient was 1.890 ($p = .049$) and then -1.721 ($p = .073$) after the point of inflection. (see Table 4.16)

Table 4.17: Hierarchical Regression Analyses of Linear and Non-Linear Narcissism Terms Predicting net ROA

<table>
<thead>
<tr>
<th>Predictors</th>
<th>$\beta$ Narcissism</th>
<th>$\beta$ Narcissism$^2$</th>
<th>$\beta$ Narcissism$^3$</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Linear</td>
<td>.177*</td>
<td></td>
<td></td>
<td>.031*</td>
<td></td>
</tr>
<tr>
<td>Step 2: Quadratic</td>
<td>3.543</td>
<td>-3.370</td>
<td></td>
<td>.056*</td>
<td>.015*</td>
</tr>
<tr>
<td>Step 3: Cubic</td>
<td>1.890*</td>
<td>excluded</td>
<td>-1.721</td>
<td>.056*</td>
<td>.000*</td>
</tr>
</tbody>
</table>

*Note. * $p<.05$. ** $p<.01$
There is a similar statistical significance of the curvilinear relationship for net ROA and ROA as the dependent variable with the independent variable remaining narcissism composite. The betas are closer to being statistically significant vs. ROA and the quadratic and cubic relationship are also very close. We have chosen to retain the quadratic model as it is more parsimonious than the cubic model that produced extremely similar results. In addition, the excluded variable in the cubic model indicates a quadratic shape with one inflection point. The results provide support for Hypothesis 1-b2. Even though the results show support for this hypothesis because of the skewness, kurtosis, and linearity issues we have concerns in the viability of the model.

Results suggest a curvilinear relationship between the narcissism composite and the dependent variables return, CEO alpha, ROA and net ROA, providing support for Hypotheses 1-a1, 1-a2, and 1-b2. Results fail to support Hypothesis 1-b1. In Chapter 5,
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we will more fully discuss which of the models is superior for this study. Our ultimate selection for firm performance was return. We thus chose to use the relationship between narcissism and return when testing the moderators described in Hypotheses 2 through 5.

**Moderators**

The following portion of this chapter examines the relationship between the independent variable, narcissism composite with the dependent variable return. We selected this model to evaluate against moderators more fully because of its statistical significance, simplicity, and applicability to practitioners. The primary goal in this portion of the study is to examine the potential moderating effect of company lifecycle, firm size, industry, and CEO critical thinking. For this reason, we have evaluated the moderators against the linear equation. To examine these relationships, we used Hayes’s (2020) PROCESS Macro. Due to the listwise deletion of variables of missing values created by the addition of the moderator, the base linear model of narcissism composite relationship to return slope will change slightly in each evaluation. The resulting equations maintain the expected negative slope.

**Hypothesis 2**

We examined whether the relationship between the CEO narcissism composite and company return is moderated by company lifecycle. The model containing company lifecycle as a moderator of the relationship between the narcissism composite and return explained a significant proportion of variance in return ($R^2 = .311; F(3,111) = 9.4813, p < .001$). Narcissism composite was negatively related to return, but the relationship was not statistically significant ($b = -.0103, p = .397$). Given that lifecycle is a multi-categorical value of 1, 2, 3, PROCESS creates 2 intercepts. The moderation between lifecycle 1 and 2
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growth and mature) was not significant (b = .132, p = .445), and between lifecycle 2 and
3 (mature and decline) was significant (b = -.0304, p = .047). The total model explained a
significant proportion of variance above the model with only the main effects (Δ R² =
.0910; ΔF (2,105) = 6.395, p = .002). Thus, company lifecycle did significantly moderate
the relationship between CEO narcissism and return.

To understand the form of the interaction the simple slopes were examined. The
impact of CEO narcissism on return for growth companies was non-significant (b = -.103,
p = .396). The impact of CEO narcissism on return for mature companies was non-
significant (b = .000, p = .994). The impact of CEO narcissism on return in declining
companies was negative and significant (b = -.040, p < .001). The form of the interaction
is shown in the plot in Figure 4.17.

Results do not provide support for Hypothesis 2. We expected a positive
relationship between CEO narcissism and return in growth stage companies, which was
not supported. Results also did not provide support for the negative relationship expected
between CEO narcissism and return in mature companies. Although the negative
relationship between CEO narcissism and return in declining stage companies was
significant, Hypothesis 2 had expected a positive relationship. Results suggest that CEO
narcissism may not have any positive impact on return regardless of company’s lifecycle.
Supplemental Analysis of Lifecycle. Boswell et al. (2018) hypothesized that not only would there be a curvilinear relationship between CEO narcissism and return but when moderated by company lifecycle it would shift. Since only the declining stage company lifecycle is statistically significant, that is the model we tested with a curve estimation function. We ran the analysis only on organizations that are in the declining stage. We believe that the negative beta from PROCESS may mask a quadratic effect and thus is not necessarily directionally accurate. The quadratic model is significant (F(1,23) = 4.193, \( p = .029 \)), and indicated that narcissism composite explained a significant proportion of the variance in return (\( R^2 = .276 \)) an increase in \( R^2 \) of .091 over the linear model. The standardized regression coefficient was 6.544 (\( p = .133 \)) and then -6.981 (\( p = .111 \)) after the point of inflection. Although the overall model is significant, we believe the limited number of observations (\( n=28 \)) contributed to the non-significance of the
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slopes. The curvilinear shape (Figure 4.18) supports Boswell et al. (2018) and presents an opportunity for future research.

Figure 4.18: Declining Stage Lifecycle Curve Estimation

**Hypothesis 3**

We examined whether the relationship between the CEO narcissism composite and return is moderated by capitalization. The model containing capitalization as a moderator of the relationship between the narcissism composite and return explained a significant proportion of variance in return ($R^2 = .1868; F(5,118) = 5.4214, p < .001$). Narcissism composite was negatively related to return and kept its statistical significance ($b = -.027, p < .001$).

Given that industry is a multi-categorical value of 1 (small), 2 (mid), and 3 (large) PROCESS creates 2 intercepts. To understand the form of the interaction simple slopes were examined. The moderation between capitalization 1 and 2 (small and mid) was
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significant (b = .0022, p = .024), and between capitalization 2 and 3 (mid and large) was not significant (b = -.026, p = .060). The total model explained a significant proportion of variance above the model with only the main effects ($\Delta R^2 = .0473; \Delta F(2,118) = 3.4332, p = .035$). Thus, company capitalization did significantly moderate the relationship between CEO narcissism and return.

To understand the form of the interaction simple slopes were examined. The impact of CEO narcissism on return for small cap companies was significant (b = -.027, p < .001). The impact of CEO narcissism on return was negative and non-significant for both mid cap companies (b = -.005, p < .529) and large cap companies (b = -.001, p = .968). The form of the interaction is shown in the plot in Figure 1.

Results do not provide support for Hypothesis 3. Although the negative relationship between CEO narcissism and return in small companies was significant, Hypothesis 3 had expected a positive relationship. We did expect a negative relationship in large cap companies; however, the interaction was not statistically significant. Even though the interaction was negative it was less than the other mid and small companies which was not hypothesized. Results suggest that CEO narcissism may not have any positive impact on return regardless of firm capitalization.
Supplemental Analysis of Capitalization. Like the supplemental analysis on lifecycle, we explored the curvilinear nature of the slopes on the moderated multi-categorical variable. We evaluated our only statistically significant category, small-cap companies (n=90). The quadratic model is significant ($F(2,61) = 9.708, p < .001$), and indicated that narcissism composite explained a significant proportion of the variance in return ($R^2 = .241$) an increase in $R^2$ of .097 over the linear model. Unlike the supplemental analysis on the lifecycle, both coefficients were statistically significant. The results of the model were significant, and Figure 4.23 depicts the assertion of the slope being curvilinear. The standardized regression coefficient was 5.430 ($p = .011$) and then -5.187 ($p = .007$) after the point of inflection.
Hypothesis 4

We examined whether the relationship between the CEO narcissism composite and return is moderated by industry. The interaction explained a significant proportion of variance in return ($R^2 = .44.54; F(17,105) = 4.9608, p < .001$). CEO narcissism composite was negatively related to return and kept its statistical significance ($b = -.0641, p < .001$). Information technology industry was not included in the analysis due to limited observations ($n=1$) resulting from listwise deletion of missing data. Given that industry is a multi-categorical value of 1 through 9 PROCESS creates 8 intercepts. The total model explained a significant proportion of variance above the model with only the main effects ($\Delta R^2 = .1455; \Delta F(8,105) = 6.395, p = .002$). Thus, industry did significantly moderate the relationship between CEO narcissism and return. The results support Hypothesis 4.
To understand the form of the interaction simple slopes were examined. The form of the interaction is shown in the plot in Figure 4.24. The negative impact of CEO narcissism on return for communications services is the only industry that shows statistically significance ($n=22$, $b = -0.0641$, $p < .001$). The impact of CEO narcissism on return was positive in two industries, energy ($n=6$, $b = 0.002$, $p = .929$) and healthcare ($n=24$, $b = 0.005$, $p = .701$), but the relationship was not statistically significant. The impact of CEO narcissism on return on the balance of the industries was negative and non-significant; consumer discretionary ($n=9$, $b = -0.0003$, $p = .986$), consumer staples ($n=8$, $b = -0.003$, $p = .841$), financials ($n=59$, $b = -0.006$, $p = .471$), industrials ($n=30$, $b = -0.004$, $p = .6042$), materials ($n=13$, $b = -0.012$, $p = .564$), and utilities ($n=3$, $b = -0.001$, $p = .944$). The direction of the slopes is ultimately impacted by the curvilinear relationship of narcissism and return.

The results do support Hypothesis 4. We made no a priori assumptions as to the direction or impact by industry, only that there would be an overall impact. The significance of the model supports that assumption. We will discuss in Chapter 5 the need for further research into the causes of the slope of the moderation by industry.
Supplemental Analysis on Industry. To test our curvilinear assumption of the slopes we ran a curve estimation on the only significant industry slope, communication services. The quadratic model is significant \( F(2,12) = 5.736, p = .022 \), and indicated that narcissism composite explained a proportion of the variance in CEO alpha \( R^2 = .473 \) an increase in \( R^2 \) of .168 over the linear model. Unlike the supplemental analysis on lifecycle, both coefficients were statistically significant. The results of the model were significant and Figure 4.25 graphically depicts the curvilinear function. The standardized regression coefficients, although not statistically significant are 8.364 \( (p = .092) \) and then -8.926 \( (p = .074) \) after the point of inflection.
Hypothesis 5

We examined whether the relationship between the CEO narcissism composite and company return is moderated by the CEO’s critical thinking ability. The interaction explained a small proportion of variance in return and is not statistically significant ($R^2 = .0288$; $F(3,102) = 1.0087, p = .3921$). The total model did not explain a significant proportion of variance above the model with only the main effects ($\Delta R^2 = .0012$; $\Delta F(1,102) = .1233, p = .7262$). CEO’s critical thinking ability did not moderate the relationship between CEO narcissism and return. Results do not provide support for Hypothesis 5. The form of the interaction is shown in Figure 4.23.
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Figure 4.23: Critical Thinking Moderator Interaction (Watson Glaser College Educated Percentile)
Chapter 5

DISCUSSION

The primary focus of this study was to evaluate the impact of CEO narcissism on the performance of their firm. In our literature review, we highlight significant research on the negative impact of dark triad traits including narcissism. Is this negative impact always the case and if not where and how does CEO narcissism impact company performance and does the level matter?

The first question that we answer is how to quantify the performance of a firm. Our goal was to measure performance based on what is most important to the owner of the company. At the most basic level, in the case of a public company the shareholder is focused on the return on investment. The investor is also interested in the risk of their investment, but we chose to focus on the result for the investor, in this case, time-weighted return. We will investigate the CEO's impact on risk in a future study.

We recognize that the CEO cannot control all things that impact their stock price so we also created a CEO alpha where we removed return that was created based on market movement or specific company characteristics such as size and industry. Although not directly as applicable to the shareholder, we also chose to evaluate the CEO's narcissistic trait level impact on internal accounting measures of success, such as ROE and ROA.

Next, we reviewed relevant literature to locate an appropriate measurement tool to evaluate narcissistic traits. The ideal method is direct diagnosis by a trained professional (Boswell et al., 2018). This method had two weaknesses for our research. First, the diagnosis tends to focus on the disorder and not the underlying trait levels. Second, if a
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CEO has been evaluated, the chance of that result being available to the public (even if identities were hidden) is highly unlikely. For that reason, previous research has largely taken the path of using external indicators to assess narcissism as discussed in our literature review. Assessing narcissism via external indicators is not considered viable by psychologists who follow the premise that you cannot diagnose what you do not treat (Boswell et al., 2018). We were able to obtain archival self-evaluation data in the form of CPI scores which gave us a unique opportunity in assessing narcissism. Psychologists find the self-report method superior to external measures since they can validate the questions in the assessment. We will highlight the challenges of this method in the limitations discussion.

Unlike previous research discussed in the literature review, we a priori assumed that CEO narcissism is not always negative and in fact its impact could be curvilinear. We expected an optimal level of narcissism in an organization’s CEO as determined by the firm’s financial performance (total return, CEO Alpha, ROA, and ROE). We then evaluated each measure of success as a separate sub hypothesis.

Return

We first examined the relationship between narcissism and company success measures. The effect of the narcissism composite was significant in explaining significant variance in return. Consistent with previous research the slope was negative implying that the higher the narcissistic traits of the CEO the lower the expectation of return. Results suggested a statistically significant negative linear relationship between return and CEO narcissism. The negative relationship supports Greaves et al. (2014) assertion that narcissism has a negative impact on company performance. To provide support for our
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hypothesis, we needed to illustrate that the model is curvilinear representing an optimal level of narcissism. Optimality would assume a single inflection or point of change. To validate the curve shape, we also tested a cubic model to eliminate the potential of a second direction change in the curve.

The quadratic model between CEO narcissism and return was statistically significant. The regression statistics for the cubic model are slightly more predictive than the quadratic model and both are significantly more predictive than the linear model. The magnitude of the difference in effect from quadratic to cubic model (i.e., practical significance) was very small. The quadratic model compared to the cubic model is parsimonious and easier to interpret how the two variables are interacting in application. We also could also find no theoretical reason to retain a cubic model. For these reasons, we suggest that the quadratic function between CEO narcissism and return provides support for Hypothesis 1-a1.

The inflection point in our model indicates a narcissism composite score of 56, which represents a score that is at the 56th percentile of the population as predicted by the CPI. Our findings suggest that this is the optimal level in maximizing predicted return. Greaves et al. (2014) suggest that CEO narcissism decreases company performance. Contrary to Greaves et al. (2014) in our study increases in CEO narcissism increase company returns until the inflection point of 56. After the point of inflection, results suggest that CEO narcissism levels beyond 56 detract from return. Results indicate that when selecting or monitoring a CEO there is an optimal level of narcissism and a tool that can assess, and monitor narcissism level can be helpful in the process given non optimal CEO narcissism may negatively impact company returns.
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It is worthy to consider that the optimal level is $6\%$ higher than the average narcissism composite as determined by using the CPI 20 factors. The results indicate that it may be appropriate to hire a CEO that has a higher level of narcissism as calculated by the narcissism composite. This makes intuitive sense as the higher healthy levels of narcissism (Fatfouta, 2019) are justified based on the need for strength of personality in the organization’s top leader.

We also found it interesting that the estimated optimal level is over one percent below the mean ($M = 58.20$) and median ($Mdn = 58.43$). CEO narcissism scores in our study connote that companies on average hire CEOs that have narcissistic traits above the optimal point.

**CEO alpha**

We followed the same steps to examine narcissism as a predictor of company CEO alpha. The analysis illustrates that like return, there is a significant negative linear relationship between CEO narcissism and CEO alpha. Our a priori assumption of an optimal level of narcissism requires a curvilinear model. Utilizing curve estimation, we measured the effect of the narcissism composite on CEO alpha. We further tested if the model was quadratic or cubic. The quadratic and cubic models were both statistically significant. Similar to hypothesis 1-a1 results, SPSS excludes a predictor variable if the explanatory power is already contained in the other two variables (Field, 2014). With the excluded variable leaving a model with one point of inflection we retained the more parsimonious quadratic model that provides support for Hypothesis 1-a2.

The inflection point in the model using CEO alpha indicates a narcissism composite of 55.75, slightly lower than the 56 predicted by return. It also suggests a result
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contrary to Greaves et al. (2014) in that increases in narcissism level increase return until the inflection point of 55.75. Results suggest that utilizing an assessment tool to assess CEO narcissism level can be useful in selecting and monitoring a CEO.

At 5.75% higher than the average narcissism composite the model indicates it may be appropriate to hire a CEO that has a higher level of narcissism as calculated by the narcissism composite. Compared to the mean and median CEO narcissism composite, this model also indicates that companies are hiring CEOs with narcissism levels above the optimal level.

We now have two hypotheses (1-a1 and 1-a2) that are supported by the results of the study. Although not part of an overall hypothesis, in Chapter 2 we discuss how we favor the use of CEO alpha (over return) as it was created to eliminate market effects outside of the control of the CEO. Given the similarities in the two models, which variable do we feel is more appropriate in practice? To answer this question, we need to discuss how we believe the similarities in the results occurred. Although there is significant variation in the mean and standard deviation of return ($\mu = .035, \sigma = .216$) and CEO alpha ($\mu = -.065, \sigma = .199$) they are highly and significantly correlated ($r = .989, p < .001$). With CEO alpha being created by subtracting capitalization-weighted industry returns from total return, we did expect a high correlation between the two variables but did not contemplate the correlation occurring at this level.

Since short term stock returns are highly endogenous, we felt it necessary to measure time-weighted return over long periods. Also, to capture the full body of work of the CEO we calculated the return over their period of service. We believe that the longer-term aspect of the annualized return created a level of efficiency where both returns
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represent the company’s variance from the market and the industry. We believe that the length of time over which the time-weighted annual return was calculated allowed for efficient pricing in both the industry and company total returns (Fama & French, 1992).

In addition, Fama and French (2004) assert that a consistent error term over time ultimately is investment alpha. The combination of these theories would contemplate that both return and CEO alpha have an imbedded investment alpha and that the market return due to efficiency (reversion to the mean) equalizes over time allowing total return to not only resemble CEO alpha but itself leaving a differential of performance that is impact by the firm and not by the market. Eliminating the industry and market return ignores the fact that the CEO is operating a company in that environment and needs to react to market and industry conditions. The level of importance of capitalization and industry is investigated and discussed in the moderator portion of this work.

While both models explaining the impact of narcissism on return and CEO alpha produce rigorous and meaningful results, the model utilizing return explains more of the variance. Total return is more parsimonious in its calculation, easier to understand and utilized by practitioners.

Return on Equity

During study design, we expected a significant relationship between narcissistic traits of a CEO and stock price performance. Although our goal was to create a dependent variable that was most impactful to the shareholder, we were concerned that the many variables that impact stock price could render it ineffective in our model. Still wanting to provide guidance to practitioners around CEO selection and ongoing performance based on their level of narcissistic traits, we wanted to avoid the impact of market anomalies on
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our dependent variable. ROE and ROA as accounting measures avoid market impact so we chose to use them as dependent variables representing company performance. We also created and tested variables called net ROE and net ROA by subtracting industry ROE and industry ROA. Like CEO alpha our desire was to eliminate impacts to ROE and ROA that are outside of the influence of the CEO.

To test Hypothesis 1b, we followed the same process in testing hypothesis 1a. Linear regression was used to examine narcissism as a predictor of company ROE. The linear model measuring the relationship between CEO narcissism and ROE was not statistically significant. We chose to still check to see if by testing a quadratic or cubic model statistical significance would be achieved. Both models failed to be statistically significant thus not providing support for Hypothesis 1-b1.

The relationship between CEO narcissism and net ROE had a better linear fit and explanatory power than ROE but was still outside of the bounds of significance. We still checked to see if a quadratic or cubic model would provide a better fit. Both models failed to be statistically significant. The results do not provide support for Hypothesis 1-b1. These findings indicate that CEO narcissism may not have a significant impact on ROE because it may be that CEOs based on their levels of narcissism have a greater tendency to manipulate earnings (Capalbo et al, 2017). Highly narcissistic CEOs can manipulate company accounting profit and asset value while staying within the bounds of generally accepted accounting principles (GAAP).

**Return on Assets**

With both ROE and ROA being accounting measures with return in the numerator we expected a degree of correlation. The varying needs for capital and assets to run
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unique businesses introduces variability between ROE and ROA. Even with the expected unique nature of the two variables we were surprised at the lack of significant correlation in our data set ($r = -.045, p = .618$). The lack of a significant association highlights that the two variables act independently and thus may produce different results, so we conducted the same analysis that we completed for ROE on ROA and net ROA.

The model measuring the effect of the narcissism composite and ROA was significant but did have issues with normality. Unlike return, the CEO Alpha has a positive relationship with CEO narcissism. A possible explanation of this anomaly over the rest of the dependent variables may be the ability for CEOs to have a greater tendency to manipulate earnings and how assets are measured (Capalbo et al, 2017). Highly narcissistic CEOs can manipulate company accounting profit and asset value while staying within the bounds of generally accepted accounting principles (GAAP). Thus, if the CEO with a high narcissistic composite manages earning and asset values to maximize his ROA, the expected regression would indicate a positive slope.

We further conducted a curve estimate to determine if a quadratic equation would point to an optimal level of narcissism for the CEO. Both the quadratic and cubic model were statistically significant. Before determining our level of support for ROA we also tested net ROA. The results measuring the impact of the narcissism composite and net ROA are statistically significant but with less explanatory power than ROA. The same curve estimate analysis was completed. The quadratic and cubic model are statistically significant. For the same reasons highlighted in the discussion of return and CEO alpha and ROA, we chose to retain the quadratic model.
Like our evaluation of return vs CEO alpha, the net effect of ROA minus industry ROA is highly correlated ROA ($r = .967$, $p < .001$). We believe that similar to return and CEO alpha (geometric means) ROA and net ROA are both averages that are calculated over the longer time periods of the CEO’s tenure. As we did with return vs CEO alpha, we are selecting ROA over net ROA due to its calculation being more parsimonious. Although we find the results provide support for Hypothesis 1-b2, we have reservations as to the validity of the model and therefore refrain from making substantive conclusions.

Our reservations of the support of this hypothesis stem from the data issues of skewness, kurtosis, and linearity discussed in chapter 4. Additionally, if we believe that CEOs with high levels of narcissistic traits may have a higher likelihood to manipulate accounting measures to their organization’s benefit, it would change the shape of the curve thus eliminating the predictive power of the model if they are achieving the higher ROA (Capalbo et al, 2017).

In our discussion of return versus CEO alpha we highlighted the reason for selecting return as the dependent variable in our preferred model. The narcissism composite’s impact on ROA and net ROA although significant has issues with normality and was less explanatory than return. In addition, the significant impact of CEO narcissism on return is consistent with our goal of the success measure being one that the investor directly benefits from.

Our study’s findings with respect to the influence of CEO narcissism on ROE do not provide significant results and therefore are not effective at determining an optimal level of narcissism in a CEO. Although narcissism levels are predictive of ROA, the model containing return as the predictive variable is superior.
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Moderators

The moderators evaluated in this study included company lifecycle, industry, capitalization, and CEO critical thinking. All pre-moderated equations showed the expected negative slope between CEO narcissism and return.

Company Lifecycle

We examined whether the relationship between CEO narcissism and company return is moderated by company lifecycle. The model containing CEO narcissism composite, company lifecycle, and the interaction explained a significant proportion of variance in return and was more predictive than the linear model, thus, company lifecycle did significantly moderate the relationship between CEO narcissism and return. To understand the form of the interaction simple slopes were examined. The relationship between CEO narcissism and company return was not significant in growth stage and mature stage companies. However, results suggested that CEO narcissism had a significant and negative impact on company return in declining companies. We had expected an upward shift in the need for narcissistic traits in growth stage and declining stage companies. Therefore, the results did not support Hypothesis 2.

Results suggest that CEO narcissism significantly and negatively impacts company return in declining companies. This may be because in declining stage companies, the need for empathy, a healthy work culture, and the greater good of the organization may be more important than personality strength of the CEO than we expected in our a priori assumptions. We also consider that the slope itself may not be negative but curvilinear.

We further explored this relationship in declining stage companies and found a quadratic relationship. The inflection point is at 57 similar to the inflection point of 56 in
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the narcissism-return relationship, representing a 1% higher level of expected optimal narcissism for the declining stage companies. This inflection point in declining stage companies suggests that there is an optimal level of the narcissism composite when measured on the impact of return in declining stage companies. The higher optimal level of narcissism indicated by the higher inflection point of 57 for declining stage companies versus 56 for the all companies may indicate the need for strength of personality exhibited in higher levels of narcissism in declining stage companies as expected in our a priori assumptions.

If we had the ability to run the same analysis on growth and mature companies, we could test if the optimal level dropped back to or below 56 for mature companies and at or above 57 for growth companies it would support our original Hypothesis 2. The limited number of observations creates a challenge in getting to a level of statistical significance in the growth (n=48) and mature (n=87) stages, but the curvilinear shape is promising to potentially expand the idea of optimal levels of narcissism by lifecycle in Boswell et al. (2018) and an opportunity for future research.

Capitalization

We examined whether the relationship between CEO narcissism and company return is moderated by capitalization. The model containing CEO narcissism composite, capitalization, and the interaction explained a significant proportion of variance in return. Capitalization did moderate the relationship between CEO narcissism and return, however our a priori expectation was that smaller companies would benefit from a CEO with higher narcissistic traits due to the need for strength of personality and action. Conversely, we expected the larger the company the need for those traits would lessen and
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instead replaced by a leader who would consider the needs of the larger organization as opposed to their own. The relative slopes were in the reverse order of what we hypothesized and did not support Hypothesis 3.

We further found a significant quadratic relationship with an optimal level of narcissism composite at 55.5 (.5% lower than the 56 for the overall data set). Results suggest a significant negative relationship between CEO narcissism and return in small-cap companies after narcissism composite score reaches 55.5. These findings suggest that capitalization does impact how CEO narcissism levels impact return. Our finding of the quadratic relationship in small capitalization companies indicates an optimal level of narcissism based on capitalization and after that optimal point, CEO narcissism in small-cap companies negatively impact company returns. This suggests that smaller organizations may need a more empathetic leader that puts the needs of the organization and the employees above his own compared to the leader of the larger organization that needs the strength of personality suggested by higher narcissism levels to push for results in larger and potentially more bureaucratic organizations.

**Industry**

We examined whether the relationship between the CEO narcissism and company return is moderated by industry. The model containing CEO narcissism composite, industry, and the interaction explained a significant proportion of variance in return above the model with only the main effects. Thus, company industry did significantly moderate the relationship between CEO narcissism supporting Hypothesis 4. Looking at the 10 industries, information technologies was excluded due to lack of sufficient data (n=1).
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Similar to lifecycle and capitalization, industry had one significant and negative slope in communication services. Two industries, energy and healthcare had insignificant positive slopes. In the balance of the industries, CEO narcissism’s relationship to return was negative and non-significant including, consumer discretionary, consumer staples, financials, industrials, materials, and utilities. Although lacking statistical significance we find it interesting that energy and healthcare industries indicate a need for higher levels of CEO narcissism for successful impact on return. It may be that these industries have leadership needs that require higher levels narcissism and possibly a curvilinear impact. Even if not curvilinear it is intriguing to examine the level of variability in both direction and scale of the slopes and findings can be used by companies in varying industries in the selection and ongoing management of the CEO.

To test our curvilinear assumption of the slopes we ran a curve estimation on the only significant industry slope, communication services. The quadratic model was significant with an inflection point when the narcissism composite reaches 56.5 or .05% higher than the optimal narcissism composite of 56 for the entire data set. The communications services industry is interesting in that it contains companies that comprise some of our economies growth sector such as social media and some in decline such as traditional media that includes newspapers. We would expect both the growth companies and the companies in decline in this industry to favor CEOs with higher levels of narcissism. The result of an optimal level of narcissism .5% higher than the total sample confirms the expected result of higher optimal level of narcissism in the CEO.
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**Critical Thinking Ability “The Smart Narcissist”**

We examined whether the relationship between the CEO narcissism composite and company return is moderated by the CEO’s critical thinking ability. The model containing CEO narcissism composite, CEO’s critical thinking ability, and the interaction was not significant and did not support Hypothesis 5. Results suggest that the average CEO in our study has a critical thinking ability above 65.55% of the college educated population (Table 4.1). We expected that the average CEO would have above average critical thinking ability but this analysis points that a high critical thinking ability does not help them mask the negative impacts of narcissism on return.

**Implications for Research**

This study expands the body of knowledge on narcissistic leadership in three areas; measurement methodology, the curvilinear relationship between narcissism and firm investment performance, and the changing impact of narcissistic leadership based on the firm's lifecycle, capitalization, and industry.

Previous research primarily utilizes externally observed factors to assess narcissism in CEOs. In our literature review, we cite 17 articles that use external measures. Brennan and Conroy (2013) attempt to determine if narcissism can be determined from a distance. Although they conclude that it does, psychologists feel that it’s challenging to make the assumptions from afar (Boswell et al, 2018). Self-reported measures such as CPI have been supported as effective measures of narcissistic traits (Wink & Gough, 1990).

Grijalva and Newman (2014) and Rosenthal and Pittinsky (2006) view narcissism as a primary predictor of counterproductive work behavior (CWB). Therefore, our results
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should also extend CWB research especially regarding the moderating effects we have identified between narcissism and return. Grijalva et al. (2014) found that narcissism displays a positive effect on leadership emergence highlighting the potential positive aspect of narcissistic traits. Our novel finding of a curvilinear effect using stock price change (return) supports that there is the potential for an optimal level of narcissistic traits which informs leadership theory beyond narcissism.

Implications for Practice

These research findings may guide CEO selection. The information could be used by boards of directors and executive recruiters. Firms that can conduct a self-evaluation on their CEO candidate can determine if the candidate’s scores are in the optimal range. Based on the outcome of interest they can determine if the needed level is higher or lower for their specific situation.

The information may help in CEO oversight and management, determining what needs to be monitored, and when it is time to make a change. As a firm transitions through lifecycle and capitalization, results may inform the changing needs in level of narcissistic traits in their top leader.

CEOs who are willing to assess and address their narcissistic tendencies may be able to better manage their organization through various phases of evolution. In addition to the assessment or reassessment of their traits, they could obtain coaching to moderate their tendencies in an effort to maximize company returns.

Limitations

Our findings have potential limitations stemming from the research design and data structure. First, although our analysis focuses on the impact of CEO narcissism on
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Company performance, there is no assurance that the inverse relationship may be taking place. Companies of certain performance levels may be inclined to select a CEO with that level of narcissism thus reversing causal direction of the relationship. Although we have not contemplated away to test the inverse relationship of the variables, the study as defined provides a model that can be utilized by practitioners.

The primary independent variable is a CEO narcissism composite based on the work of Wink and Gough (1990) utilizing the self-reported CPI to measure narcissistic trait levels. In lieu of a direct diagnosis of individuals with narcissistic personality disorder, it is difficult to measure narcissistic traits. This study is not intending to diagnose a disorder but to estimate traits. Given the impracticality of directly diagnosing CEOs, researchers choose between external or self-reported measures. A criticism of self-reporting is the ability of the participant to answer to make themselves look good. This would be particularly worrisome if the subject had a high level of narcissism thus making them more likely to self-aggrandize and weaken the validity of the results of the assessment. We feel that this is mitigated by three validity factors inside the CPI that are proven to detect and then invalidate the results (Research Department CPP Inc., 2007). Our study included no data from assessments that failed the validity tests.

Our study utilized the CPI to determine the level of narcissistic traits of the CEO at one point in time of the assessment. We did not have the ability to have a periodic assessment to assess if there was a change in the CEO’s scores over time. We believe that although multiple assessments per CEO could add additional insights to our study, the likelihood of significant change of traits is slow. Change in traits can be situational and can be accelerated with coaching or therapy (Rosenthal & Pittinsky, 2006).
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The next limitation for consideration is the sample size. Although we began with over 62,000 assessments conducted for over 700 firms, after screening the data to only include publicly traded firms that had assessed their CEO (pre or post hire) we ended up with a sample size of 180 which is a fraction of the just under 4000 public US corporations. We exceeded the 75 observations that we felt was needed to achieve validity to draw conclusions from the study’s findings.

Our limited data set could have contributed to the high level of skewness and kurtosis in each of our four dependent variables. The skewness and kurtosis conditions were created by a small group of outliers discussed in the results section of the study. We chose not to eliminate the outliers and accept the skewness and kurtosis. The outliers themselves were extremely high or low performing companies that if eliminated would have removed valuable data and predictors of the optimal level.

The company lifecycle variable has limitations in that there is no single agreed upon method for determination where a company is on the lifecycle continuum. We chose to rely on the work of Martinson (2012) as we felt the method used was parsimonious and included a thorough literature review. Additionally, we did not account for the potential of a company changing lifecycle categories during the CEO’s tenure but instead relied on an average revenue growth across tenure.

The final potential limitation is the source of our data. CMA kindly agreed to provide anonymous blinded data for the study. They are one of the top firms in the professional development industry and conduct business with organizations across the country and throughout the world. The data is archival and is compiled from client relationships so there is no way to assure there is not a concentration of unknown factors.
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We have highlighted the concentrations by industry and capitalization in the results section. In addition, CMA’s location in St. Louis, Missouri may lead to a greater percentage of Midwest companies in the data set. We do not think this potential data concentration meaningfully impacts the outcome of our study.

Future Directions

This study provides the opportunity for additional analysis to expand and clarify its findings and create additional avenues of research for further examination of narcissism, leadership, and company performance. The validity of external measures determining narcissistic traits can be challenging. O’Reilly et al. (2014) evaluated their use and determined while not without issue they can be predictive. The external measures in their research can be extended and validated by creating a relationship to known self-reported indicators of narcissistic traits measures such as the CPI. This type of analysis could extend to additional externally observed behaviors that impact firm performance and tend to aggrandize the CEO. Examples include CEOs participating in their organization’s commercials, building significant corporate headquarters, and the use of corporate aircraft.

In our discussion of ROE and ROA, we note how narcissistic CEOs through the use of accruals can impact earnings and thus change ROE and ROA (Capalbo et al, 2017). Can this same level of narcissism lead a CEO to believe that their share price is undervalued and repurchase it? If research supported the existence of this behavior, it would significantly impact ROE. We feel this impact of narcissistic CEOs warrants additional study.

Our study used a time-weighted rate of return over the CEO’s tenure. Future research could evaluate if narcissistic trait levels impact CEO tenure. Additionally, future
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research can investigate not only if narcissistic traits impact CEO tenure but also why. Does CEO narcissism change over time and if so, how does it occur? Could a CEO exhibit higher or lower narcissistic tendencies in certain circumstances such as in times of stress? Future research could assess how these changes impact firm performance.

Using upper echelons theory, we concluded that the CEO’s leadership style impacted firms’ performance. An extension of the theory would be to use all C-suite executives to look at team narcissism. This type of analysis could also be extended to how narcissism impacts performance based on the interactions of the C-suite team similar to the work of Grijalva et al. (2020) on the interaction of narcissistic team members in the NBA.

Our work was limited to public companies to be able to use stock price performance. We speculate that venture capital firms and private equity firms seeking to acquire, and “flip” under-performing firms likely will benefit from highly narcissistic leaders and extend the thought that narcissism optimal levels are impacted by the companies needs and situation. Due to a lack of available public data, we did not include this in the current study. Although not public it could be possible to get company performance data from private equity funds and investors.

We believe that our curvilinear examination of CEO narcissism could be extended to include the impacts of risk. Our use of stock performance and the use of self-reported measures and curvilinear findings could be combined with the work of Harrison et al. (2020) on CEO narcissism perceptions and risk and how that impacts the performance of the company.
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Although we were able to illustrate that company lifecycle and capitalization are significant moderators of the relationship between CEO narcissism and return, results did not support our a priori assumption of higher optimal level of narcissistic traits for growth and declining companies and small and mid-capitalization companies. An extension of the research could also determine if the slopes of the categorical variables are themselves curvilinear. The curvilinear shape could potentially support the hypothesis in Boswell et al. (2018) that assumes that optimal level of narcissism occurs in growth stage and declining stage companies that is greater than that of the mature organization even though their linear counterparts did not. In addition, if the shift of the moderated effect is curvilinear, it gives the potential of the optimal level being higher in the lifecycle and capitalization could ultimately support Hypothesis 2 and 3.

The results did support that industry moderates the effect of the narcissism composite on return. We contemplated but ultimately made no a priori assumption as to the impact of specific industries. Additional research examining curvilinear relationships is warranted to determine an industry specific optimal level of narcissism creating additional insight for those hiring and employing CEOs in specific industries.

Lastly, CMA has recently joined into a partnership with one of the world’s leading executive recruiting firms specializing in hiring CEOs. Our ability to extend the study with additional data can be used to enhance the validity of this study and other future study findings.
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General Conclusions

By evaluating the relationship between CEO narcissism measured by a narcissism composite created from the 20-factor output of the CPI and corporate success measures as our dependent variables, our results provided support that the impact of CEO narcissism is curvilinear. The curvilinear nature of the relationships allows the practitioner to look at the level of narcissism at the point of infection as optimal. After testing four success measures (return, CEO alpha, ROE, and ROE) we found the model containing return as the dependent variable to be the most explanatory. In addition to being the most explanatory, it is the most parsimonious. Practitioners can easily understand time-weighted rate of return and how it is used in practice to evaluate the CEO’s success.

Although the analysis of lifecycle and capitalization did not support our a priori assumptions, the results did support lifecycle, capitalization, and industry as moderators and gives additional insight into how CEO’s narcissistic trait level can impact firms in different ways depending on their specific circumstances. It will allow the practitioner to customize their assumptions of the optimal level of narcissistic traits based on the specific assignment circumstance. In addition, although critical thinking was not found to be a significant moderator the slope directions were in line with our a priori assumptions and merit further investigation.

We are encouraged that these findings may provide guidance on CEO selection by boards of directors and executive recruiters. The potential exists to also use the findings in CEO oversight. We also believe that the significant moderators of industry, lifecycle and capitalization can guide practitioners in CEO selection and oversight based on their company’s circumstances.
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Appendix A: Institutional Review Board Exemption Approval

Office of Research Administration

DATE: January 27, 2020
TO: Scott Boswell, DBA
FROM: University of Missouri-St. Louis IRB
PROJECT TITLE: An Examination of Optimal Level of CEO Narcissism: Why, How, and When Narcissism Impacts Firm Performance
REFERENCE #: [154065]-1
SUBMISSION TYPE: New Project
ACTION: DETERMINATION OF EXEMPT STATUS
DECISION DATE: January 27, 2020
REVIEW CATEGORY: Exemption category # 4

The chairperson of the University of Missouri-St. Louis IRB has APPROVED the above mentioned protocol for research involving human subjects and determined that the project qualifies for exemption from full committee review under Title 45 Code of Federal Regulations Part 46.101b. The time period for this approval expires one year from the date listed above. You must notify the University of Missouri-St. Louis IRB in advance of any proposed major changes in your approved protocol, e.g., addition of research sites or research instruments.

You must file an annual report with the committee. This report must indicate the starting date of the project and the number of subjects to date from start of project, or since last annual report, whichever is more recent.

Any consent or assent forms must be signed in duplicate and a copy provided to the subject. The principal investigator must retain the other copy of the signed consent form for at least three years following the completion of the research activity and they must be available for inspection if there is an official review of the UM-St. Louis human subjects research proceedings by the U.S. Department of Health and Human Services Office for Protection from Research Risks.

This action is officially recorded in the minutes of the committee.

If you have any questions, please contact Carl Basai at 314-510-6029 or basai@ums.edu. Please include your project title and reference number in all correspondence with this committee.