The Effect of CEO Narcissism on Firm Performance

An analysis of the relationship between CEO narcissism and firm performance and the moderating effects of CEO gender and age

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ABSTRACT

In recent years, the upper echelons literature has increasingly focused on CEO’s personality traits and their influence on organizational outcomes. This study aims to contribute to this field of research by investigating the effect of CEO narcissism on firm performance. Additionally, CEO gender and CEO age are introduced as potential moderators. Using a unique sample of 830 firm-year observations of CEOs from 263 S&P 500 companies in the 2016-2021 period, I create a composite narcissism index based on the prominence of the CEO’s photograph in the annual reports as well as their cash and non-cash compensation relative to the next-highest paid executive. The random effects regression models employed do not find any support for the hypothesized relationships. I find that CEO narcissism does not have a significant influence on firm performance extremeness, and that both CEO gender and CEO age do not moderate the relationship. The results are robust to several alternative specifications, including alternative measures of performance extremeness and CEO narcissism. By focusing on performance extremeness, this study provides new insights into the relationship between CEO narcissism and firm performance. The findings are relevant for both research and practice, extending the previous literature and offering valuable insights for managers, investors and creditors in hiring and investment decisions.

Key words: chief executive officers, narcissism, personality, firm performance, upper echelon theory, gender, age
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<th>Full Form</th>
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<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
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<td>DSM</td>
<td>Diagnostic and Statistical Manual of Mental Disorders</td>
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<td>FE</td>
<td>Fixed Effects</td>
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<td>Mergers and Acquisitions</td>
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<td>Narcissistic Personality Disorder</td>
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<td>R&amp;D</td>
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<td>RCT</td>
<td>Role Congruity Theory</td>
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<td>RE</td>
<td>Random Effects</td>
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<td>ROA</td>
<td>Return on Assets</td>
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<td>ROI</td>
<td>Return on Investment</td>
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<td>S&amp;P 500</td>
<td>Standard and Poor’s 500 Index</td>
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<td>SIC</td>
<td>Standard Industrial Classification</td>
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<td>UET</td>
<td>Upper Echelon Theory</td>
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<td>US</td>
<td>United States</td>
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<td>WRDS</td>
<td>Wharton Research Data Services</td>
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1 INTRODUCTION

Research in the strategic management literature has been increasingly focusing on the critical role that senior executives have in decision-making and their subsequent effect on organizational outcomes. According to the upper echelons theory (UET), organizations can be seen “as a reflection of [their] top managers” (Hambrick & Mason, 1984, p. 193) where strategic choices and firm performance are partially predicted by the managers’ background characteristics. Based on their demographic characteristics, experiences and personality, chief executive officers (CEOs) have individual interpretations of situations that directly affect their behavior and choices. According to Hambrick and Mason (1984), the CEO’s personality traits play a particularly important role in explaining their behavior. Nevertheless, most research within UET has focused on demographics and overlooked the effects of personality characteristics. Only in recent years did the upper echelon literature extend its focus to underlying personality dimensions that can influence strategic decisions within a company (Chatterjee & Hambrick, 2007; Gerstner et al., 2013; Nadkarni & Herrmann, 2010). Narcissism was identified as one of the personality traits that affect a CEO’s beliefs and actions and has been increasingly studied by scholars. Research on the effects of CEO narcissism on firm performance was spurred by the development of unobtrusive narcissism measures that do not rely on first-hand data provision by CEOs. Chatterjee and Hambrick (2007) introduced a narcissism index using indicators based on publicly available data that is widely used by many authors today (Cragun et al., 2020).

Narcissism is part of the ‘Dark Triad’ of personalities, which includes narcissism, Machiavellianism and psychopathy (Paulhus & Williams, 2002). Seen as both a clinical disorder and a personality dimension, narcissism is characterized by an exaggerated sense of self-importance, the need for excessive admiration, a sense of entitlement and a general lack of empathy (American Psychiatric Association, 2013). Research suggests that narcissists are more likely to emerge as leaders than non-narcissists (Brunell et al., 2008), which makes the focus on CEO narcissism highly relevant. Many of the characteristics of narcissism are seen as ‘leader-like’, for instance, being socially dominant and extroverted, as well as the high self-esteem narcissists display (Ensari et al., 2011; Judge et al., 2002). Previous literature has directed attention to both the ‘bright side’ and ‘dark side’ of narcissistic leadership, showing that narcissists can be perceived as creative, innovative and highly driven (Campbell et al., 2011; O’Reilly et al., 2014), but also as dominant and selfish, creating destructive work environments and unhappy employees (Blair et al., 2008; Campbell & Foster, 2007).
Based on their considerable latitude of action, CEOs have significant influence over their company’s strategy, policy and practice (Hambrick, 2007; Hambrick & Finkelstein, 1987). It is therefore expected that through their influence on strategic decisions and actions, a CEO’s narcissistic traits directly affect performance levels of the firm. Previous literature has examined the effect of CEO narcissism on firm performance, but has yielded inconsistent findings (Reina et al., 2014). Narcissistic CEOs tend to choose ‘high risk, high reward’ actions that lead to either big wins or big losses (Chatterjee & Hambrick, 2007; D’Aveni, 1994; Eisenhardt, 1989). They take extreme risks because they believe in their superior abilities (Chatterjee & Hambrick, 2011) and choose bold, attention-getting initiatives such as mergers and acquisitions (M&A) to gain the attention and admiration of others (Raskin & Terry, 1988; Wallace & Baumeister, 2002). Narcissistic CEOs often have selfish objectives that are not necessarily aligned with those of shareholders, and use their firms as tools to fulfill their own personal needs (Thompson, 1967). However, the bold strategic actions chosen by narcissists can also lead to overperformance if they result in, for instance, first-mover advantages or successful innovations (Finkelstein, 2003; Lieberman & Montgomery, 1988). The direct effect of CEO narcissism is thus not straightforward. Therefore, I examine the following as the primary research question in this study:

*RQ1. How does the degree of CEO narcissism influence firm performance?*

To provide a richer understanding of executive narcissism, this research will also apply a gendered lens to CEO narcissism to explore how CEO gender affects the narcissism-firm performance relationship. Most studies focus on male CEOs only – simply because most CEOs are men. However, there are important distinctions between men and women when it comes to narcissism, but also their influence on firm strategy. Many narcissistic traits closely resemble masculine stereotypes, for instance, assertiveness, dominance and the need for achievement (Grijalva et al., 2015). This leads to a consensus in literature that men are more narcissistic than women, but also that narcissism is better accepted for men. The same is the case for men and leadership roles, where there is a great overlap between characteristics seen as vital for leaders and those that are commonly associated with men (Huddy & Terkildsen, 1993; Koenig et al., 2011; Rudman et al., 2012). Women displaying those traits face considerable backlash because of the inconsistency between gender roles for women and behaviors seen as typical for leadership roles (Rudman et al., 2012). Combining social role theory with token theory, which argues that individuals belonging to the numerical minority enjoy lower status and prestige as well as less influence compared to the numerical majority (Kanter, 1977), leads to the prediction that there may be differences between male and female CEOs when it comes to how
narcissism manifests and which effects it has on firm strategy and performance. To examine this, the following research question is formed:

**RQ2. How does the CEO’s gender influence the relationship between CEO narcissism and firm performance?**

As a novel concept, this study introduces CEO age as a second moderator. While no previous research has looked at the influence of an executive’s age on the narcissism-firm performance relationship, findings suggest that age may have an effect on both narcissism and firm performance. The aging process of an individual leads to various physiological and psychological changes that may influence decision-making and leadership behavior, including risk preferences, which is one of the levers through which narcissism could influence firm performance (Bhabra & Zhang, 2016). Moreover, research has shown that with age, additional personality features are developed that interact with already existing contradictory personality traits (Ashton & Lee, 2016). To examine these concepts and their relationships, the following research question further guides this study:

**RQ3. How does the CEO’s age influence the relationship between CEO narcissism and firm performance?**

I aim to contribute to both theory and practice. This thesis extends previous research by looking specifically at performance extremeness and introducing both CEO gender and age as moderators. Furthermore, it confirms previous claims about the reliability of the narcissism index used. The practical contributions of this study lie in the usefulness to managers and supervisory board members in the hiring process, and to investors and creditors in investment decisions. Moreover, with the increase of the share of women in leadership positions, it offers valuable insights into how gender differences affect personality traits as well as their manifestation and influence on organizational outcomes.

With the use of hand-collected data for measurements of CEO narcissism, the hypotheses are tested based on a panel dataset of 263 companies from the Standard and Poor’s 500 index (S&P 500) over a period from 2016 to 2021. Random effects models are used to examine both the direct effect of CEO narcissism on firm performance as well as the moderating effects of CEO gender and age. Several robustness tests are conducted to validate the findings. The empirical results show no significant effect of CEO narcissism on performance extremeness. This is in contrast to previous studies but could be explained by properties of the selected sample or the measurements used, most
importantly the insufficient reliability of the narcissism index used to measure CEO narcissism. Furthermore, this study finds no support for the proposed moderating effect of CEO gender, which may be caused by the changing societal beliefs about the role of women and their influence on strategic decisions. The findings also suggest that CEO age does not have a moderating effect on the narcissism-firm performance relationship. This could be due to the specific characteristics of the CEO position that affect how personality traits change and develop with age.

The rest of the thesis is structured as follows. The next sections present the research methodology and review the existing literature on narcissism, narcissistic leadership, its impact on firm performance, as well as the links between gender, age and narcissism, to enable the development of hypotheses. Thereafter, I introduce the data and model specifications in addition to the methodology of the study. Subsequently, the results of the analyses are presented and discussed. The thesis ends with a conclusion highlighting contributions and including limitations as well as avenues for further research.

2 RESEARCH METHODOLOGY

This section explains the research methodology of this study. It presents the research philosophy and approach chosen, followed by clarifications about the research design and strategy. Finally, the data collection process is described.

2.1 Research Philosophy

Research philosophies refer to the researcher’s beliefs and assumptions about knowledge development. At every stage of the research process, assumptions are made that shape how research is conducted and findings are interpreted. They can be classified into three predominant types of assumptions: epistemological, ontological and axiological. Epistemology is concerned with sources of knowledge and their validity and legitimacy, hence, epistemological assumptions concern beliefs about human knowledge (Burrell & Morgan, 1979; Saunders et al., 2019). Ontological assumptions are about the realities encountered in research. Ontology concerns the nature of reality, i.e., whether the world is socially constructed and diverse or external with one observable reality (Guba & Lincoln, 1989). Axiology concerns the role of values and ethics, ranging from value-free to value-bound research. Assumptions of all three types can be located on a continuum, ranging from an objectivist
extreme to a subjectivist extreme. Based on the three types of assumption and their objectivism-subjectivism dimensions, five research philosophies can be distinguished: positivism, critical realism, interpretivism, postmodernism and pragmatism (Saunders et al., 2019).

This thesis can be assigned to positivism, which deals with an observable social reality and often aims to produce law-like generalizations. This is reflected in my assumptions. The ontological assumptions are driven by the fact that this study is conducted from an external point of view without any affiliation to the observed companies and individuals. Epistemologically, it is based on measurable facts and observable data, and uses causal explanations and predictions to contribute to existing knowledge. While the study does not aim to make rigorous generalizations as in, for instance, natural sciences, the scientific approach adopted is chosen in hopes of generalizing the results to the population from which the sample was taken. As for axiological assumptions, this thesis can be described as value-free. I am neutral and independent of what is researched, as I do not have any previous experience in research of executive characteristics and am not affiliated with any of the subjects studied. Furthermore, I have an objective stance toward any findings. Nevertheless, it must be acknowledged that this research topic was chosen based on personal interest, but this will neither influence the execution of the study nor its findings.

In sum, positivism classifies the research philosophy of this study. I use existing theory to develop hypotheses, which are then tested and confirmed or rejected. This may lead to further developments of theory which could later be tested by other researchers. By introducing a highly structured methodology, I hope to enable replication (Gill & Johnson, 2010). The measurable, quantifiable data used in this study facilitates statistical analyses and allows me to undertake the research in a value-free way as it cannot be influenced by my values.

2.2 Research Approach

In addition to the research philosophy, the research design is characterized by its research approach, which can be deductive or inductive. In a deductive approach, existing theory is used as a starting point, which is then further tested. In contrast, induction often starts with data collection and aims to generate or build theory and conceptual frameworks based on specific observations (Saunders et al., 2019).
This thesis uses a deductive approach. Deduction aims to explain causal relationships between concepts and variables (Saunders et al., 2019). Based on existing literature, I develop hypotheses. Collected data is used to then confirm or reject these hypotheses. Hence, this study’s aim is more related to theory falsification or verification than theory generation and building. This is in line with Blaikie’s (2010) essential steps for a deductive approach. He describes that first, a tentative idea is put forward, which is subsequently framed as a set of testable propositions. These propositions are based on and compared with existing theories and literature. Then, data is collected to measure the concepts and variables and analyze the premises. If the results of the analyses are not consistent with the hypotheses, the theory must be rejected or modified and the process rerun, and if they are, the theory is corroborated (Blaikie, 2010). As this is what this study aims to do, deduction describes the research approach.

2.3 Research Design

The research design is a general plan about how the researcher will answer their research questions (Saunders et al., 2019). It specifies the sources for data collection as well as how to collect and analyze it.

The first methodological choice revolves around whether to use a quantitative, qualitative or mixed methods research design. This thesis uses a quantitative research design. Generally, quantitative research is associated with positivism and a deductive approach to theory development, both being characteristics that were established for this study above. Quantitative research aims to examine causal relationships between variables by using various statistical analysis techniques. If a single data collection technique is used, one conducts a mono-method quantitative study, while more than one quantitative data collection techniques characterize a multi-method quantitative study (Saunders et al., 2019). This study relies on available data from databases as well as manually collected data, both of quantitative nature, and hence it can be described as a multi-method quantitative study.

The second methodological choice concerns the purpose of the research design, which can be either exploratory, descriptive, explanatory, evaluative, or a combination of these. This thesis can be termed explanatory research. It studies a problem in order to establish causal relationships between
variables. Research questions seeking explanatory answers often begin with ‘Why’ or ‘How’, which is also the case for this study (Saunders et al., 2019).

2.4 Research Strategy

A research strategy describes how the researcher plans to tackle the research questions and is closely linked to the research philosophy and choice of methods. Research strategies appropriate for quantitative research designs include, for instance, experiments, surveys, archival and documentary research, and case studies (Saunders et al., 2019).

This study uses neither experiments nor surveys for data collection. It also does not focus on a specific company or set of companies, therefore, it is not a case study. Instead, it employs archival and documentary research. I make use of the wide range of available data sources that provide data mostly in digitalized form. By relying on publicly available company information, I can maintain the independent and objective position of an outsider to the study, which is critical to my research philosophy of positivism. However, it must be kept in mind that there are limitations to using this type of data, which will be elaborated on in the following paragraph.

2.5 Data Collection

This thesis is written from an outside perspective and hence based on publicly available data. As dictated by the research philosophy, I aim to remain independent and objective, which could be jeopardized by any direct contact to the subjects in the study. Furthermore, because of the sample selection, access to the subjects in the study is limited, which prohibits me from collecting primary data. Even if I could, the data obtained would most likely be limited, so relying on publicly available data allows for a greater sample size which strengthens the findings of the study.

I use academic books and studies to inform on existing literature, theories and previous findings. Moreover, I use secondary data for the analyses, collected through the databases CompuStat and ExecuComp (both available through Wharton Research Data Services (WRDS)) as well as companies’ annual reports and websites. Secondary data provides many advantages but must be handled with respect to its limitations. Most importantly, its easy accessibility saves resources like time and money during data collection (Vartanian, 2011). In turn, more time can be used to evaluate
and interpret the data. Furthermore, it allows my study to have a longitudinal dimension, which would not be possible if I had to collect all data myself in this moment. However, it must be kept in mind that secondary sources are often originally created for a different purpose. Hence, researchers using it have to be sensitive to the nature and purpose of the data selected, because it may influence the way in which it can be analyzed and the generalizations that can be drawn (Saunders et al., 2019). For instance, data may be aggregated in some way, which fit the purposes of the original research for which it was collected, but not necessarily new research. Additionally, secondary data may outline subjective opinions and interpretations (Saunders et al., 2019). Despite these limitations, secondary data can provide great value as long as the researcher keeps the disadvantages in mind and properly evaluates the data sources and the data itself.

### 3 THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

In this section, the existing literature on the topic will be explored. First, the concept of narcissism and its effects on leadership and firm performance are explained. Second, the notion of gender is introduced, including both its direct impact on narcissism, leadership and firm performance, as well as the moderating effect it may have on the narcissism-firm performance relationship. Finally, age, its impact on firm performance and its moderating influence in the context of this study are addressed.

#### 3.1 Narcissism

**3.1.1 History and Definition**

Narcissism was first introduced in psychological writings by Ellis (1898). In his descriptions of excessive self-love that he referred to as ‘narcissus-like’, Ellis cited a story from Greek mythology about Narcissus, a young man who fell in love with his own reflection in a pool of water and later drowned trying to reach for it (Grenyer, 2013). Shortly after, narcissism was introduced in the field of psychiatry as well by Näcke (1899) who coined the term by adding the ‘-ism’ to Ellis’ wording. These early views considered narcissism a feature of specific individuals instead of a universal condition. However, Freud’s publications laid the foundation for viewing narcissism as a clinical disorder (Freud, 1914). Nemiah (1961) was the first to explicitly describe narcissism as a disorder when he introduced the term ‘narcissistic character disorder’, which was later extended by
Kernberg (1967) in his clinical description of ‘narcissistic personality structure’ and his distinction between normal and pathological narcissism. In 1968, it was Kohut (1968) who finally coined the term ‘narcissistic personality disorder’ (NPD), which is what narcissism is officially referred to today from a clinical point of view. The Diagnostic and Statistical Manual of Mental Disorders-III (DSM-III) (American Psychiatric Association, 1980) included NPD in the official diagnostic system in 1980, based on the increased interest in and research about narcissism in previous years. In this clinical sense, narcissism is usually described as a categorical phenomenon, i.e., a condition one either has or does not have.

However, narcissism can be seen as a personality dimension as well, which is what the focus of this thesis will be. Since the late 1980s, research about narcissism as a personality trait has increased. Several researchers, including Emmons (1987) and Raskin and Terry (1988), showed that narcissism is also a personality dimension, a continuum on which people can score from low to high (Rijsenbilt & Commandeur, 2013). This was also acknowledged in the latest version of the DSM, DSM-V, which added an alternative model for personality disorders compared to the 4th edition. This dimensional model for personality disorders describes how certain disorders, including NPD, cannot only be seen from a categorical perspective, but also as maladaptive variants of personality traits on which people can score on a spectrum (American Psychiatric Association, 2013).

Although the DSM presents NPD as a single construct, there is increasing recognition that there are at least two distinct dimensions of narcissism: grandiose and vulnerable narcissism. Wink (1991) was one of the first personality researchers to explicitly acknowledge the differences in the use of the concept of narcissism. He identified two dimensions of narcissism, which he labeled grandiosity-exhibitionism and vulnerability-sensitivity. Although some overlap exists between the two types, evidence suggests that they assess distinct constructs (O’Reilly et al., 2018).

The first subtype is grandiose narcissism, also referred to as overt, willful, exhibitionist, or thick-skinned (Levy et al., 2011). It is the more assertive and extroverted form of narcissism, characterized by a sense of personal superiority and entitlement, high self-esteem, overconfidence and low social empathy (O’Reilly et al., 2018). These individuals can be socially charming, interpersonally exploitative, envious and arrogant (Dickinson & Pincus, 2003; Levy et al., 2011). Grandiose narcissism primarily reflects traits related to aggression, dominance and grandiosity, and includes a strong need for the admiration of others as well as the desire to maintain a pretentious self-image (J. D. Miller et al., 2011; Rohmann et al., 2012).
The other subtype is vulnerable narcissism, also called covert, hypersensitive, pathological or thin-skinned (Levy et al., 2011; O’Reilly et al., 2018). It relates to various facets of neuroticism, including anxiety, low levels of self-esteem, and self-consciousness (O’Reilley et al., 2014). Individuals scoring high on vulnerable narcissism are characterized by a fragile self-concept, hypersensitivity to others’ evaluations, feelings of inferiority and dissatisfaction with the self (Levy et al., 2011; O’Reilly et al., 2018; Zeigler-Hill & Jordan, 2011). They are shy and “quietly grandiose” (Gabbard, 1989, p. 527), meaning they are modest and self-inhibited, but harbor underlying grandiose expectations for themselves and others (Dickinson & Pincus, 2003; South et al., 2011).

A large body of research has focused on grandiose narcissism (O’Reilly et al., 2018). This dimension also seems particularly relevant when it comes to narcissistic leadership (O’Reilly et al., 2014). For instance, Watts et al. (2013) have demonstrated that among presidents of the United States (US), grandiose narcissism but not vulnerable narcissism was related to positive and negative leadership outcomes. Therefore, in organizational settings, most conceptualizations of narcissism use measures that assess grandiose narcissism or at least place a heavy weighting on grandiosity (O’Reilly et al., 2014). Furthermore, most experts agree that the NPD symptoms explained in the DSM emphasize the grandiose dimension (J. D. Miller & Maples, 2011). Factor analyses have revealed that the NPD criteria set is primarily or entirely consistent with the grandiose subtype (Fossati et al., 2005; J. D. Miller et al., 2008). The most popular measure of narcissism, the Narcissism Personality Inventory (NPI) developed by Raskin and Hall (1979), also measures the grandiose variant of narcissism, while measures related to vulnerable narcissism are scarce (J. D. Miller & Maples, 2011).

Based on its importance in the organizational context and following prior research that has focused on CEO narcissism (Chatterjee & Hambrick, 2007, 2011; Olsen et al., 2014; Resick et al., 2009), I limit my discussion in this thesis to grandiose narcissism. All subsequent mentions of CEO narcissism refer to grandiose narcissism.

The definition of narcissism I will use in this thesis is based on the DSM-V. Most definitions in the current literature on CEO narcissism can be traced back to the DSM, showing that its definition is not only applicable to the clinical form, but also widely accepted in a nonclinical approach to narcissism (Cragun et al., 2020). Additionally, the DSM is continuously updated based on the latest empirical findings, making it a suitable foundation for further research. The DSM defines narcissism along several criteria, including an exaggerated sense of self-importance, the need for excessive admiration, a sense of entitlement, a lack of empathy, and frequent envy of others. People showing
narcissistic traits often have fantasies of unlimited power and success, they believe they are ‘special’ and should be treated accordingly. In order to achieve their own ends, narcissists take advantage of others, and are characterized by arrogant behaviors or attitudes (American Psychiatric Association, 2013). They are usually satisfied with the way they are and see little room for improvement (Chatterjee & Hambrick, 2007). This inflated self-view combined with the need for recognition often makes narcissists ignorant toward objective evidence and feedback (John & Robins, 1994; Morf & Rhodewalt, 1993). It is not unlikely for them to react defensive or even aggressive when facing criticism (American Psychiatric Association, 2013).

To be clear about the definition of narcissism this thesis uses, it is important to distinguish narcissism from related constructs to avoid confusion. Other main constructs dealing with positive self-regard are self-esteem and overconfidence. Self-esteem describes an individual’s overall view of the self as worthy and infers a certain level of self-liking and -respect (Bailey, 2003). Hence, self-esteem is related to narcissism in the aspect of self-admiration, proven by Emmons (1984) who found a significant correlation between the two variables. However, the concepts differ in that narcissists have a constant need to protect, manage and enhance their self-view (Raskin et al., 1991). They have a “contingent self-esteem” (Kernis, 2005, p. 1595), contingent upon continuous reinforcement and sensitive to interpersonal feedback. Hence, narcissism incorporates certain features that self-esteem does not have, including arrogance, a sense of entitlement and most importantly the continuous need for affirmation (Chatterjee & Hambrick, 2007).

Overconfidence describes the excessive confidence in one’s abilities or judgment, which typically leads to increased risk-taking (Brunzel, 2021; Ham et al., 2018). Narcissists tend to overestimate their performance compared to actual performance, leading to the conclusion that narcissists generally exhibit a high degree of overconfidence (Brunzel, 2021). However, the core difference between the two concepts is that narcissists have this constant need for confirmation that overconfidence itself does not entail. Among other things, this leads to narcissists exhibiting poorer decision-making than purely overconfident individuals (Ham et al., 2018). Furthermore, overconfidence lacks the exploitative character that narcissism encompasses, which is why individuals that are overconfident, but not narcissistic, display more agreeable and conscientious behavior than narcissists (Brunzel, 2021; Schaefer et al., 2004).
3.1.2 Narcissistic Leadership

Research has shown that, compared to the general population, CEOs demonstrate higher rates of narcissistic traits (Ingersoll et al., 2019; Kets De Vries & Miller, 1984). There are several reasons for this. First, narcissists sort into CEO-oriented career tracks. Narcissists have a desire to leave behind a grand legacy of achievement, which attracts them to organizational leadership roles (Maccoby, 2004). Furthermore, narcissism is positively correlated with the need for power and admiration (Carroll, 1987). The role of the CEO is generally viewed as the person with the greatest power and visibility within a firm, explaining why there is evidence that narcissists sort into business schools and later into career tracks toward executive roles (Brown et al., 2013; Young & Pinsky, 2006). Second, narcissists’ traits enable them to be at an advantage when it comes to leader accession within a company. Many of the characteristics of narcissism are seen as ‘leader-like’, for instance, being socially dominant and extroverted, as well as having a high self-esteem (Ensari et al., 2011; Judge et al., 2002). Therefore, narcissists are likely to be viewed as having leadership potential (Brunell et al., 2008; Nevicka, Ten Velden, et al., 2011). Additionally, their ability to manipulate others and quickly build, albeit superficial, relationships helps narcissists in advancing to leadership positions (Kets De Vries & Miller, 1984). This explains why narcissism can be a deciding factor in the corporate ladder sorting process, leading to more narcissists emerging in executive roles (Kets De Vries & Miller, 1985; Maccoby, 2004).

When it comes to evaluating narcissistic leadership, there has been contradicting evidence since narcissism can be both effective and ineffective with regards to leadership. I will describe these manifestations of narcissism in line with Hogan and Kaiser’s (2005) ‘bright side’ and ‘dark side’ approach, showing both the good and the destructive side of narcissistic leadership. On the ‘bright side’, narcissistic leaders are seen as creative, innovative and open to challenges (O’Reilly et al., 2014). When new to the company, they are seen as highly driven and motivational leaders (Campbell et al., 2011). They are perceived as charismatic, personable and likeable (Maccoby, 2004). Because of their confidence, they are viewed as competent and enthusiastic (Back et al., 2013; Goncalo et al., 2010a), and it was shown that narcissistic leaders easily attract followers and are good at convincing others of their ideas (Goncalo et al., 2010b; Hogan & Hogan, 2001).

However, even more than the positive facets narcissistic leadership can have, CEO narcissism is known for its detrimental effects. Due to their dominance, hostility and selfishness, narcissistic leaders create destructive work environments and unhappy employees (Blair et al., 2008; Campbell
& Foster, 2007). They are more likely to bully subordinates (Bushman & Baumeister, 1998) and engage in counterproductive work behavior (Michel & Bowling, 2013). Characterized as authoritarian and dominant leaders, narcissistic CEOs aim to control everything and everyone in the firm, which creates a work environment in which subordinates are stripped of all autonomy and cannot use their intellectual capabilities to contribute to organizational outcomes (Kets De Vries & Miller, 1985). Narcissistic leaders are known to violate integrity standards and more likely to cheat (Blickle et al., 2006). It has been shown that they are less likely to engage in prosocial organizational behavior and even inhibit the exchange of information within their companies (Blickle et al., 2006; Nevicka, De Hoogh, et al., 2011). As mentioned before, narcissism manifests through an unwillingness to accept feedback and a defensive or even aggressive attitude toward criticism (American Psychiatric Association, 2013). Narcissistic leaders tend to reject blame for failure and instead put it on others, including their colleagues (John & Robins, 1994) and evaluators (Kernis & Sun, 1994). Lastly, narcissistic leaders are bad mentors. Their lack of empathy and extreme independence make it difficult for them not only to receive feedback and be mentored, but also to mentor others in return. Narcissistic leaders rather instruct than teach, and are not interested in building personal relationships to subordinates (Maccoby, 2004).

3.1.3 Narcissism and Firm Performance

Narcissistic CEOs do not only impact the people around them, but they also have the ability to influence organizational outcomes, mainly due to their structural position within a company. The stream of research that investigates how CEO narcissism affects organizational outcomes is grounded in UET. Introduced by Hambrick and Mason in 1984, UET postulates that organizations are reflections of their top executives’ priorities and values. Executives’ experiences, values and personalities affect their choices, which in turn influence organizational performance. This argument builds upon the concept of bounded rationality. The situations executives face are often complex and made up of more information than a person can grasp within a given time frame, which is why many decisions are made under bounded rationality. Executives need to interpret situations, influenced by their experiences, personality and values, and base their decisions upon those interpretations. Hence, the characteristics of an executive influence organizational outcomes. This causal relationship lays the foundation for the stream of research concerning the effect of CEO characteristics on firm performance. CEOs have considerable latitude of action regarding, for instance, acquisitions, product
lines, restructuring and resource allocation, and thereby significant influence over the company’s strategy, policy and practice (Hambrick, 2007; Hambrick & Finkelstein, 1987). Nohria et al. (2003) provide evidence that 15% of the variance in a company’s profitability depends on the CEO. Furthermore, Crossland and Hambrick (2007) find that especially CEOs of US companies have a significant impact on firm performance. This is explained by the fewer constraints they face compared to CEOs in other countries, the national values of individualism in the US, prevailing governance structures, and the predominate ownership structure of widely dispersed and well-diversified shareholders. Therefore, research on CEO characteristics is of high significance.

In terms of those characteristics, many researchers have focused on CEO demographics. There is evidence in the literature for the effect of characteristics such as age (Hambrick & Mason, 1984; Peni, 2014; Serfling, 2014), gender (Davis et al., 2010; Jalbert et al., 2013; N. Smith et al., 2006), education level (Barker & Mueller, 2002; Kaur & Singh, 2018; Saidu, 2019) or tenure (Luo et al., 2014; Orems & Reheul, 2013; Simsek, 2007) on firm performance. However, research on personality traits and their effect on organizational outcomes is scarcer. The main reason is that personality characteristics are harder to measure since they are not directly observable and, hence, less data is available for analyses. Nevertheless, focusing solely on CEO demographics will rule out the possibility of identifying certain psychological traits in CEOs that affect organizational outcomes, which is why the upper echelon literature extended its focus to underlying personality dimensions, including narcissism, that can influence strategic decisions within a company (Chatterjee & Hambrick, 2007; Gerstner et al., 2013; Nadkarni & Herrmann, 2010).

Existing research on the effect of CEO narcissism on firm performance has yielded inconsistent findings (Reina et al., 2014). Some authors found a positive effect of CEO narcissism (Cragun et al., 2020; Olsen et al., 2014; Wales et al., 2013), while others show no (Chatterjee & Hambrick, 2007; Resick et al., 2009) or negative (Ham et al., 2018; O’Boyle et al., 2012; Rijsenbilt, 2011) effects on firm performance. The effects CEO narcissism can bring about revolve mainly around the issues of extreme risk-taking, overinvestments, and self-serving behavior.

Extreme risk-taking is caused by the narcissistic CEO’s belief in their superior abilities (Chatterjee & Hambrick, 2011). They believe they can positively affect the outcomes of business initiatives, which shifts the expected payoffs, for essentially all alternatives, upwards (Sanders, 2001; Shapira, 1995). The confidence levels narcissists exhibit often exceed accurate perceptions of a situation (Lakey et al., 2008). Additionally, when considering opportunity costs, narcissistic CEOs
are more likely to ignore counterfactual information (Campbell et al., 2004; Judge et al., 2006). They often only see what they want to see and hear what they want to hear, which further influences the probability estimates they make (Molden & Higgins, 2005; Weick, 1979). This leads to narcissistic CEOs taking actions that would be perceived as infeasible or too risky by other CEOs (Chatterjee & Hambrick, 2007).

Furthermore, CEO narcissism can be associated with overinvestments, particularly in research and development (R&D) and M&A expenditures (Ham et al., 2018; Rijsenbilt & Commandeur, 2013). Narcissists are exhibitionists, which is why they favor bold, attention-getting initiatives to gain the attention and admiration of others (Raskin & Terry, 1988; Wallace & Baumeister, 2002). They prefer highly visible actions over incremental improvements of the status quo (Chatterjee & Hambrick, 2007). Acquisitions, especially large ones, are among the most visible actions a CEO can take. But they do not only garner attention for the CEO, a narcissistic CEO also strongly believes that they will perform better than the target’s current management, so taking over the target would be an opportunity to show their superior abilities (Chatterjee & Hambrick, 2007). Nevertheless, many acquisitions are value-destroying (Alexandridis et al., 2012; Ham et al., 2018; Malmendier & Tate, 2005), which is why CEO narcissism may negatively impact firm performance.

Moreover, narcissistic CEOs can hurt their companies through their inability to separate self-serving behavior from organization-serving behavior (Galvin et al., 2015). Their objectives are often selfish and not necessarily aligned with those of shareholders. CEOs can use their firms as tools to fulfill their own personal needs and may choose actions that best suit their personal preferences (Thompson, 1967). If they use their authority to control corporate strategy and initiate actions that will advance their personal interests at the expense of the firm’s health, CEO narcissism can be detrimental for a company’s performance (Foster & Trimm, 2008).

Previous research has also found that companies led by narcissistic CEOs are more likely to engage in unethical accounting methods, corporate tax sheltering and the manipulation of financial measures, and have inflated CEO compensation packages (Amernic & Craig, 2010; Duchon & Drake, 2009; Olsen et al., 2014; Olsen & Stekelberg, 2016). CEO narcissism manifests in an increased propensity for managerial fraud, which is directly associated with the risk-taking and questionable behavior of such CEOs (Johnson et al., 2013; Rijsenbilt & Commandeur, 2013). All of the negative effects of CEO narcissism are only exacerbated by the blindness that narcissistic CEOs exhibit when it comes to signs of organizational distress (Ingersoll et al., 2019). Feedback to leaders is necessary.
to align performance with overall organizational objectives and missions (Sharma & Marandure, 2011). However, as mentioned, narcissistic CEOs are often unwilling to accept feedback, so they do not learn from mistakes and will make them again (Leary et al., 1997).

To sum up, narcissistic CEOs are expected to choose bold ‘high risk, high reward’ actions, leading to either big wins or big losses (Chatterjee & Hambrick, 2007; D’Aveni, 1994; Eisenhardt, 1989). A risky move is detrimental for firm performance when it does not work out, but can be highly beneficial when it does. Similarly, a significant investment in R&D is termed an overinvestment if later it does not generate the innovation it was intended to, but when it is successful and results in a first-mover advantage for the company, it positively influences firm performance. Hence, it is difficult to predict that firms led by narcissistic CEOs will *consistently* under- or overperform, because sometimes those risky decisions and bold moves can work out well. So even though I expect that having a narcissistic CEO *often* negatively affects firm performance, I do not predict a significant relationship that *always* holds between CEO narcissism and firm performance. Instead, I focus on the extremeness of the firm performance. The dramatic initiatives that narcissistic CEOs take tend to generate more extreme outcomes than more moderate actions would (Chatterjee & Hambrick, 2007). Finkelstein and Hambrick (1990) describe it as a big hit or a big miss: The decisions taken by narcissistic CEOs will either reap big benefits, for instance, from first-mover advantages, or suffer major losses, based on the misjudgment of the environment and situation (Finkelstein, 2003; Lieberman & Montgomery, 1988). Companies led by narcissistic CEOs often have strategies that are not aligned with the industry standard, so performance is likely to be extreme. Therefore, I predict the following:

*H1. The higher the level of CEO narcissism, the more extreme the firm’s performance.*

### 3.2 Gender

Findings about the effects of executive characteristics and behavior are often generalized to all CEOs, despite no distinction being made between men and women. Most studies focus on male CEOs – simply because most CEOs are men. But it is important to make a distinction because there are certain gender differences that may affect how CEO characteristics influence organizational outcomes.
In reviewing the concepts of gender, narcissism and firm performance, there are various aspects that this thesis aims to highlight. I will discuss how gender directly impacts narcissism, leadership and firm performance, drawing onto social role theory and role congruity theory. Thereafter, I examine how it may influence the narcissism-firm performance relationship, based on token theory, and subsequently develop a hypothesis for my research.

3.2.1 Gender and Narcissism

Social role theory can help explain gender differences in personality traits, including narcissism. At its core, social role theory is about societal gender stereotypes, also called gender role beliefs (Eagly & Wood, 2012). Because of the traditional gendered division of labor, men and women perform different activities and, hence, engage in different behaviors. These behaviors are assumed to reflect intrinsic dispositions (via a correspondence bias, see Eagly and Wood (2012) and Ross (1977)), giving rise to gender role beliefs. These gender stereotypes are maintained and reinforced through children learning what is ‘typically male’ and ‘typically female’ and later judging their own behavior against those standards (Eagly & Wood, 2012). Thereby, the gender stereotypes work as self-fulfilling prophecies: Societal expectations lead to behaviors that in turn confirm and reinforce those expectations.

In general, most gender stereotypes can be categorized into agentic and communal characteristics. Agentic characteristics, including assertiveness, competitiveness, dominance and the need for achievement, are consistent with the social role of men, while communal characteristics, including nurturance, friendliness, tenderness and selflessness, reflect the social role of women (Grijalva et al., 2015). While agentic characteristics seem to coincide with many manifestations of narcissism, communal characteristics tend to be negatively correlated with narcissism (Bradlee & Emmons, 1992). Hence, through the agentic characteristics, which are more reflective of men, narcissistic traits closely resemble masculine stereotypes. This leads to the prediction that men are more narcissistic than women.

This is in line with current thinking. While Freud (1914) originally believed women to be more narcissistic because of their preoccupation with their physical appearance, empirical research nowadays generally suggests the opposite. Among US college students of different age groups and cohorts, Grijalva et al. (2015) found men to be more narcissistic than women. Similar findings for
psychology students were obtained by Paulhus and Williams (2002), Tschanz et al. (1998) and Watson et al. (1987). The personality disorder NPD is also diagnosed more frequently in men than in women. The DSM-V reports 50-75% of diagnosed persons to be male (American Psychiatric Association, 2013), and the National Epidemiological Survey on Alcohol and Related Conditions found the prevalence of lifetime NPD to be higher for men than for women (7.7% vs. 4.8%) (Grant et al., 2008). Moreover, meta-analytic reviews demonstrate that men are up to 75% more likely to be diagnosed with NPD and score significantly higher on the NPI (Grijalva et al., 2015). Nevertheless, there are also studies that have not found a significant gender difference in narcissism, including Bizumic and Duckitt (2008), Furnham (2006) and Green et al. (2022).

3.2.2 Gender and Leadership

Gender has a direct influence on leader emergence, as women are considerably underrepresented in corporate leadership (Dezső et al., 2016). While in supervisory and middle management positions, women’s representation is approximately proportional to their representation in the workforce, they hold only few positions in the upper echelons. In the US, women make up 47% of the workforce and fill 40.9% of all management roles, but only 29.1% of CEOs are female (Catalyst, 2022). This is even more pronounced for S&P 500 companies: In 2022, only 30 S&P 500 firms had a female CEO, and 30% of board directors were women (Catalyst, 2022). This phenomenon is not only present in the corporate, but also the political realm. Kamila Harris, who holds the office since 2021, is the first female vice president in the US’ history, and there has never been a female president. Furthermore, only 27.5% of seats in the US Congress and 24% in the US Senate are occupied by women (Center for American Women and Politics, 2022). Hence, there is ample evidence that the selection rates for senior leadership positions differ between men and women.

There are various reasons why this is the case, with the two main explanations being status quo bias and gender role bias. Status quo bias suggests that in successful times, there is no perceived need for a change (Samuelson & Zeckhauser, 1988). As long as the company performs well, things should be done the way they have always been. Since the history of leadership is predominantly male for most companies, the selection rate for men into leadership positions is, hence, significantly higher than for women in times of success (Bruckmüller & Branscombe, 2010).
Gender role bias links back to social role theory. Gender stereotypes form beliefs about how men and women are and should behave, prescribing, for instance, confident and dominant behaviors to men, and warm and communal characteristics to women (Eagly & Karau, 2002; Fiske et al., 2007; Grijalva et al., 2015). Men are often affiliated with agentic characteristics, such as being confident and assertive, which in turn are seen as more suitable for leadership (Huddy & Terkildsen, 1993; Koenig et al., 2011; Rudman et al., 2012). Thus, there is a high compatibility between stereotypes about men and leaders, which ultimately leads to men being perceived as better suited for leadership (Badura et al., 2018). If women want to work their way up the corporate ladder, they need to find a way to defeat these gender stereotypes. The societal expectations they are confronted with for both gender roles and leadership positions are competing, hence, women face a so called ‘double bind’ (Eagly et al., 2007; Ingersoll et al., 2019). However, even when they find a way to exhibit the traits that are seen as requisite for leadership, they face backlash because their behavior violates the prescriptive gender stereotypes (Rudman, 1998). Backlash describes the situation in which women that act agentic are perceived as similarly competent, but significantly less likable and hirable compared to men who behave the same (Rudman et al., 2012). As explained above, women must act agentic to be judged qualified for leadership positions, but they risk penalties when showing this behavior (Heilman & Okimoto, 2007; Parks-Stamm et al., 2008). Brescoll and Uhlmann (2008) found that women are penalized for behaviors that men are rewarded for, such as public displays of anger. While men are seen as demanding and deserving in such situations, women are considered hysterical and ‘too emotional’. So women face a greater struggle in monitoring and controlling how much and which emotions to display (Brescoll, 2016). Essentially, they need to choose between being liked and being respected. This puts additional pressure on them and undermines their ability to obtain positions of status and power (Eagly & Karau, 2002; Rudman & Glick, 2008). Studies about women who successfully managed this double-bind and obtained leadership positions show that they often balance the competing societal expectations by strictly adhering to feminine expectations regarding appearance and interaction – almost as if they want to compensate for the ‘untypical’ behavior they need to show as leaders (Muhr, 2011).

This line of argumentation is consistent with role congruity theory (RCT) (Eagly & Karau, 2002). RCT builds on Schein’s (1973) ‘think manager – think male’ paradigm which states that successful leaders are perceived as having characteristics and traits that are closely aligned with the typical male stereotype. Therefore, the correlation with prototypical leader traits is significantly stronger for masculine than feminine traits (Koenig et al., 2011). This inconsistency between gender
roles for women and leadership roles can lead to prejudice against women, as the perception that women are less qualified for senior leadership positions is fueled by the incongruity of the stereotypes and ultimately leads to discrimination against women in leader emergence (Eagly & Karau, 2002; Gipson et al., 2017).

Not only is there a difference in selection rates of men and women into leadership positions, but research has also shown that women are often selected in particular circumstances. First, leader selection is context-specific in the sense that the proportion of women in leadership positions is dependent on the industry (Gipson et al., 2017). While women are overrepresented in service industries such as education and healthcare, they are underrepresented in more traditional industries like manufacturing or financial services (Bowles & McGinn, 2005; Oakley, 2000). Second, women’s chances of becoming leaders are greater in times of crisis and when the risk of failure is high, whereas men are more likely to be selected in prosperous times (Bruckmüller & Branscombe, 2010). This phenomenon was termed the ‘glass cliff’ by Ryan and Haslam (2005) who found that women were more likely to be appointed to senior leadership positions when the company had experienced poor performance in prior months. In times of success, the ‘think leader – think male’ paradigm prevails, but when companies are unsuccessful, a ‘think crisis – think female’ bias emerges. Through that, women are placed on top of a ‘glass cliff’: Because they were appointed in problematic organizational circumstances, such as a general financial downturn or a downturn in company performance, their appointments are more precarious (Ryan & Haslam, 2005). This leads to a higher likelihood of failure as well as greater risk and more criticism (Ryan et al., 2011). Thereby, it has negative implications for future career possibilities, because coming from an unsuccessful company limits the likelihood of being appointed to other leadership positions later (Ferris et al., 2003). There are two main explanations for this phenomenon. First, appointing a female CEO is a sign of change, since most companies’ leadership history is predominantly male, and a signal, especially to shareholders, that the company is heading in a new direction (Gipson et al., 2017; Ryan & Haslam, 2007). Second, women are often perceived as the better fit in these situations. In the context of crisis, stereotypes about what qualities a good leader needs to have are likely to change (Bruckmüller & Branscombe, 2010). More interpersonal skills are needed, and women’s collaborative leadership style and emotional sensitivity are seen as advantageous (Bruckmüller & Branscombe, 2010; Ingersoll et al., 2019).

When it comes to leadership styles, there is evidence that female CEOs lead firms differently than their male counterparts (Perryman et al., 2016). Women leaders are seen as more ethical, fair
and transparent (Ko, 2013). This also translates to the firms they lead, which have been shown to be more likely to implement policies and practices related to equity, fairness and transparency (Glass et al., 2016; Glass & Cook, 2016). Additionally, female leaders are described as less hierarchical and more cooperative and collaborative, and receive better ratings for motivating and inspiring others, as well as building relationships (Zenger & Folkman, 2012). They are more oriented toward enhancing each other’s self-worth (Rosener, 2011) and rated better at developing others than their male counterparts (Cavallo & Brienza, 2006). Watson and McNaughton (2007) have found that women are more risk-averse and lead with a long-term rather than short-term outlook.

3.2.3 Gender and Firm Performance

When directly relating CEO gender to firm performance, previous empirical studies provide ambiguous conclusions. One the one hand, research has shown that women may have a positive influence on a company’s financial performance. Jalbert et al. (2013) found for a sample of large US companies that firms led by female CEOs are valued higher in the market and provide a higher return on assets (ROA) and return on investment (ROI). Similarly, Peni (2014) found for a time frame from 2006 to 2010 that within S&P 500 firms, companies led by women tend to outperform those led by men, measured by both Tobin’s Q and ROA. For a sample of 2500 Danish companies, Smith et al. (2006) found that female CEOs positively influence gross profit, while the effect on operating income and net income after tax was positive but insignificant. All these studies explain their findings with arguments in line with the aspects of female leadership mentioned above. Women’s more cooperative and collaborative leadership style may be more productive, and female CEOs’ risk aversion could be an important contributing factor. On the other hand, studies focusing more on small- and medium-sized companies have not found strong evidence for a female leadership advantage (for instance, Davis et al. (2010), Du Rietz & Henrekson (2000)). Hence, the findings about the direct effect of the CEO’s gender on firm performance are inconclusive.

In examining the indirect impact that gender may have through its moderating effect on the narcissism-firm performance relationship, one must consider that women face constraints that their male counterparts do not – not only in their path to leadership, but even when having obtained that leadership position. Women in leadership roles generally have less influence on corporate practice compared to male leaders, for which token theory offers an explanation. Tokens are individuals that are part of a numerical minority (Kanter, 1977). These tokens enjoy lower status and prestige as well
as less influence compared to individuals that are part of the numerical majority. When it comes to corporate leadership positions, women are by far outnumbered (Glass & Cook, 2016). Hence, in the group of CEOs, this makes them the numerical minority, leading to a significantly higher visibility and subsequently constant scrutinization of their performance (Kanter, 1977). This puts such significant performance pressures on them that many female leaders respond by solely conforming to the company’s status quo (Nesbitt, 1997). Knowing that women are more likely to be blamed for a weak organizational performance and less likely to be praised for strong one, women may engage in such high levels of self-monitoring that they limit themselves in their ability to drive organizational change (Albanesi et al., 2015; Ingersoll et al., 2019). Additionally, women experience a lower social and professional status than men, which only exacerbates the pressures typically put on the numerical minority (Ingersoll et al., 2019). Hence, the combination of women being the numerical minority plus them enjoying lower social status makes it significantly harder for female leaders to influence the organizations they lead. Moreover, women token leaders often have only limited access to critical resources which restricts them in promoting organizational initiatives (Glass et al., 2016). Female CEOs report lower levels of organizational support (Konrad et al., 2010), less access to financial authority (R. A. Smith, 2005), and exclusion from social and professional networks, which could provide them with valuable and relevant information (Glass & Cook, 2016). Taken together, this makes female CEOs less powerful in introducing novel initiatives, constraints their strategic outlook, and subsequently they have less influence on corporate practice.

Token theory explains the constraints women face in leadership positions and how female CEOs may have less impact on their firms than male CEOs do. Irrespective of personality traits, women token leaders are less capable of promoting organizational change initiatives, have less influence over organizational outcomes and are, hence, more likely to maintain the firm’s status quo (Eagly et al., 2003; Fiske, 2002). This leads to the presumption that even at the same level of narcissism, women leaders cannot put their firms at the same risk than men do. They do not have the same resources to pursue high-risk initiatives and are more likely to be negatively evaluated and subsequently terminated when doing so. Knowing about this risk, women are not only less able but also less likely to choose the bold and risky actions that narcissistic leaders usually opt for. Therefore, I predict the following:

\[ H2. \text{ Gender moderates the effect of narcissism on performance extremeness such that for female CEOs the effect is weaker.} \]
3.3 Age

This section explores the current literature on the influence of age on narcissism and firm performance. Further, I hypothesize how age may affect the narcissism-firm performance relationship as a moderator.

3.3.1 Age and Narcissism

Little attention in research has been given to the relationship between age and narcissism. Many narcissism-related studies focus on students and early-middle-aged participants, as shown by Grijalva et al.’s (2015) meta-analysis. Examining 355 studies, they find the maximum age to be 55, which shows that barely any studies examine narcissism in later life. Furthermore, most studies are cross-sectional instead of longitudinal and collect data only at one point in time, hence, they do not provide the opportunity to observe changes in narcissism over a participant’s lifespan. Nevertheless, there are two predominant opinions in the literature as to whether narcissism changes with age. One suggests that narcissism decreases with age, while the other argues that narcissism is stable over one’s lifespan.

Some researchers find that a person’s degree of narcissism decreases with age. Foster et al. (2003) argue that narcissism changes across the lifespan due to cultural changes, ‘disorder burnout’, and the reality principle model. They speculate that as people age, some of the characteristics that are associated with narcissism should alleviate. Further, they argue that as people progress through life, they will encounter more opportunities for failure. Foster et al. (2003) believe that the more failure people experience, the less narcissistic they probably are, which establishes a negative relationship between narcissism and age. Their analyses show that younger people are more narcissistic than older people, however, the effect is rather small, with only 4% of the variance in narcissism being explained by age (Foster et al., 2003). In a study of the moderating effect of narcissism on the age-loneliness relation, Carter and Douglass (2018) also find older participants to have significantly lower levels of narcissism compared to middle-aged participants. Due to changes in authority, responsibility and self-perception that are associated with the aging process, older people experience a ‘narcissistic crisis’, leading to them being less narcissistic than they were in younger years (Carter & Douglass, 2018; Teising, 2008). In one of the, to date, longest longitudinal investigation of changes in narcissism, Wetzel et al. (2020) examine rank-order consistency and
mean-level changes over a 23-year period in overall narcissism and three of its facets, namely leadership, vanity and entitlement. They find mean-level decreases for all four variables, suggesting that one’s level of narcissism declines with age.

Within upper echelons research, narcissism is generally treated as stable. This is based on a large body of research that finds that personality is rather fixed after the age of 30 (Costa et al., 1980, 1986; Costa & McCrae, 1988). Also specifically looking at narcissism, psychological research suggests that a person’s degree of narcissism is relatively stable and enduring (Campbell et al., 2002; Cramer, 1998). In one of the few longitudinal studies on narcissism, Carlson and Gjerde (2009) report narcissism scores to increase significantly from age 14 to 18, but no significant change is recorded for later ages. Similarly, Grosz et al. (2019) studied one component of narcissism, namely narcissistic admiration, over a 10-year period for ages 19 to 29, and did not find a significant change in mean levels. Because of this assumed stability in narcissism, the narcissism score developed by Chatterjee and Hambrick (2007) and used by most other researchers within UET measures narcissism at one point in time (in the CEO’s second and third year of tenure), and uses this score for all subsequent years.

3.3.2 Age and Firm Performance

Even though there are inconclusive findings regarding the direct effect of age on narcissism, I find several arguments for the effect that age may have on firm performance and the narcissism-firm performance relationship. They revolve around the issues of the horizon problem, career concerns, risk preferences, and the development of contradictory personality traits.

While there is no literature on the moderating effect of age on the narcissism-firm performance relationship, previous research has considered how an executive’s age influences organizational outcomes. Management literature has identified two main age-related effects through which firm performance is influenced: the horizon problem and career concerns. The horizon problem states that as CEOs approach retirement, they are inclined to focus on the short-term consequences of their decisions (Bhabra & Zhang, 2016). They might take actions that positively influence firm performance in the near future but not necessarily firm value in the long run. Moreover, it was found that CEOs with a shorter career horizon are more likely to avoid risks (Matta & Beamish, 2008). They tend to spend less on R&D, engage in fewer acquisitions and reduce other discretionary expenditures.
Underlying reasons may be to lock in favorable post-retirement benefits and boost short-term earnings performance to maximize earnings-based compensation in the years before retirement (Bhabra & Zhang, 2016; Y. Zhang, 2010).

Around the topic of career concerns, there are diverging views. One strand of literature argues that younger CEOs are likely to be more risk averse. They have a large part of their career still ahead of them, hence, greater costs and benefits are associated with all decisions they make that may affect the long-term value of the company (Bhabra & Zhang, 2016). Therefore, they face greater career concerns than older executives close to retirement. Furthermore, they do not have acquired the reputation of a high-quality CEO yet, which is why they could be punished more harshly for poor firm performance than well-established executives, leading to them adopting more conservative investment policies (Serfling, 2014). The potential long-term benefits of good decisions and large career costs of bad decisions reduce agency costs for younger managers. Hence, career concerns incentivize young managers to do the right thing, thereby decreasing moral hazard and self-serving behavior (Bhabra & Zhang, 2016). However, a second strand of literature suggests that younger executives make bolder and riskier investments compared to older managers. One can argue that younger CEOs have a stronger desire to build their reputation, therefore, focusing on short-term goals (Hirshleifer, 1993). They want to signal the market that they are high quality managers with superior abilities, which is why they may pursue more aggressive investment strategies (Prendergast & Stole, 1996). Thus, there are differing views on how career concerns influence young managers’ actions.

The aging process of an individual leads to various physiological and psychological changes, including cognitive abilities, risk preferences, motivation, drive and confidence, which in turn may influence decision-making and leadership abilities (Bhabra & Zhang, 2016). Since extreme risk-taking is one of the ways in which narcissism influences firm performance, age may have a moderating effect on the relationship through this lever. Research has shown that risk preferences change throughout the course of life, such that CEOs’ risk-taking decreases with age. Serfling (2014) finds that older CEOs have less risky investment policies, expressed through more diversified acquisitions and less investments in R&D. He also documents a negative relationship between CEO age and stock return volatility. Similarly, Belenzon et al. (2019) find for a sample of closely-held firms that in a nine-year period, investments of CEOs older than 59 decline by 45% compared to the youngest CEOs in their sample. Bertrand and Schoar (2003) suggest that with age, executives become more conservative in their work, which may have an impact on firm performance in either direction. Hence, one can expect older CEOs to take less extreme decisions.
Lastly, some personality features that are likely to develop with age may reduce the effect that narcissism has on executive behavior and thereby firm performance. Prior research has shown that it is not unusual that a-priori contradictory personality traits coexist, and that their interaction can have implications for organizational outcomes (Owens et al., 2015; H. Zhang et al., 2017). Social psychology research suggests that older individuals are likely to develop personality features that can moderate the effect of narcissism on CEO behavior. Specifically, Ashton and Lee (2016) find that humility-modesty and conscientiousness increase with age and can reduce the exaggerated positive self-view connected with narcissism. Humble people are apt to evaluating themselves and others in perspective, acknowledging their mistakes, as well as seeking feedback and advice to correct mistakes (H. Zhang et al., 2017). Similarly, conscientious individuals are more likely to be self-controlled, more responsible to others, orderly and tend to follow rules (Roberts et al., 2009, 2014). They show better behavioral self-regulation, and excel in channeling thoughts, feelings and behaviors in goal-directed ways (Hoyle, 2010). Hence, the personality traits of humility and conscientiousness could potentially reduce the effect that narcissism has on executive behavior. For a given level of narcissism, an older, and hence humbler, CEO is expected to have a more centered view of themselves, which may reduce the propensity to engage in extreme actions. In the same vein, an older, and hence more conscientious, CEO should be better able to objectively evaluate their actions and control impulses to behave irrationally risky.

Based on the above, I predict the following:

\[ H3. \text{Age moderates the effect of narcissism on performance extremeness such that for older CEOs the effect is weaker.} \]

4 DATA AND METHODS

This section describes the data used in this study and the methods employed to perform the analyses. First, I describe the sample used in the study, followed by an overview of the conceptual model and the analyses to be performed. Thereafter, all variables are presented, and the models specifications of the study defined. Lastly, I explain the study’s methodology.
4.1 Sample

This study uses a sample of CEOs of companies from the S&P 500 for the years 2016 to 2021. Using the S&P 500 has multiple advantages. First, the index consists of the 500 largest (based on market capitalization) companies in the US for which executive and financial information is widely available. Second, the S&P 500 encompasses firms from a wide variety of industries, making the results of this study generally applicable to different companies and industries. Third, the US are one of the most individualistic countries in the world, which is why it can be expected that narcissism plays a significant role in US companies (Hofstede Insights, 2022). And lastly, most previous studies, including the influential paper by Chatterjee and Hambrick (2007), which uses variables very similar to this study, also use samples of US companies, which allows the readers to compare the results of this thesis with previous findings. Due to time restrictions and the level of effort needed to manually collect data for the narcissism measure, I chose to focus on the six-year time frame from 2016 to 2021, hoping to extend previous research by using more recent data.²

I started by identifying all companies that were part of the S&P 500 in the time frame.³ Thereafter, I excluded all financial firms (Standard Industrial Classification (SIC) codes 6000 to 6999) from the list since these companies are usually examined within industry. This is because there are significant differences in the nature and composition of their financial statements, as well as restrictions regarding the level of executive compensation, which would have an influence on the narcissism measure used in this study. Then, the CEO for every firm-year was identified. Following Chatterjee and Hambrick’s (2007) model, only observations in which the CEO has four or more years of tenure in their position with the given company at the time of observation were included in the sample. This allows for the measurement of narcissistic personality tendencies in years two and three of each CEO’s tenure.

After imposing the various data restrictions and filters, as well as deleting all observations in which data was missing for the dependent or independent variables, the final sample includes 830 unique firm-year observations, with 263 unique companies and 274 unique CEOs. Compared to the

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³ As of July 2020, Standard and Poor’s indices constituent name data became licensed content and is hence not available anymore in databases like Compustat. To create a list of all companies in the S&P 500 from 2016 to 2021, I took the S&P 500 overview from December 31, 2021, and adjusted this list based on a list of changes to the index between January 1, 2016, and December 31, 2021. I compared this manually created list of companies with end-of-year overviews of the S&P 500 from 2016 to 2020 to verify the completeness of the list of changes.
samples of Chatterjee and Hambrick (2007) and Olsen et al. (2014), which contained 352 and 1,118 firm-year observations, respectively, the sample size is representative for this stream of research.\(^4\)

### 4.2 Conceptual Model

Based on the hypotheses, Figure 1 shows the conceptual model for this study. As can be seen in the conceptual model, I am testing a double, simple moderation model. In this model, there is a linear relationship between the independent variable, CEO narcissism, and the dependent variable, performance extremeness. Moderating variables are then added to the model, namely CEO gender and CEO age in this study. The moderating variables are expected to alter the strength of the relationship between the independent and dependent variable. Through the moderating effect, the causal relationship is often weakened or strengthened. In a regression analysis, an interaction term between the independent and moderating variable is added to account for the moderation effect (Cohan et al., 2003). In a moderation model, the coefficient of the independent variable measures the simple effect it has on the dependent variable if the moderating variable equals zero, and the coefficient of the interaction term measures the moderating effect on the causal relationship between the independent and dependent variables.

**Figure 1**

Conceptual Model

\[ \text{CEO Gender (male: 0, female: 1)} \quad \text{CEO Age} \]

\[ H2 - \quad H3 - \]

\[ H1 + \]

\[ \text{Level of CEO Narcissism} \quad \text{Firm Performance Extremeness} \]

\(^4\) Ingersoll et al. (2019) mention that their sample size of 5,939 firm-year observations is exceptionally large for this research stream.
4.3 Variables

4.3.1 Dependent Variable

The dependent variable used in this study is performance extremeness. In line with Chatterjee and Hambrick (2007), performance extremeness is measured based on a common measure of firm performance: ROA, calculated as net income divided by total assets. ROA is one of the most widely used accounting-based measures to assess a company’s performance (Aliabadi et al., 2013). Also within research investigating CEO-effects it is very popular (Rijsenbilt, 2011). Paul (1992) argues that when it comes to executives’ value addition, ROA is the best informative accounting measure. For each firm-year observation, the difference between the company’s ROA and the industry average ROA was calculated. I used the Fama-French 12-industry classification system (see Appendix 1) to allocate the companies in the sample to industry groups based on their SIC code. As I am only interested in the deviations from central performance, I used the absolute difference between firm and industry ROA and disregarded directionality. The values were winsorized at the 1st and 99th percentile to mitigate the influence of outliers. Data on company ROA and industry average ROA was accessed through the CompuStat database.

4.3.2 Independent Variable

The independent variable in this study is CEO narcissism. In psychology, the most popular measure for narcissism is the NPI. Developed by Raskin and Hall (1979) and based on the DSM, the 54-item questionnaire is designed to measure individual differences in narcissism as a personality trait. It is thereby a self-report inventory of narcissism, requiring the object’s participation (Emmons, 1984). This works well in a psychological, diagnostic context; however, in archival business research, the NPI is not a feasible method for data collection. It requires skills and access to top executives that only very few scholars have (Chatterjee & Hambrick, 2007). Furthermore, narcissism is a sensitive topic, hence, questionnaires would yield low response rates and provided data is likely to be distorted due to participants being influenced by social desirability bias (Barry et al., 2017). Therefore, unobtrusive measures like the CEO narcissism index by Chatterjee and Hambrick (2007) provide a suitable alternative in this area of research. Indeed, in research on CEO narcissism, it has become the most frequently used method (Cragun et al., 2020). The CEO narcissism index is a composite measure of several indicators of narcissism that can be observed in firm reports and publicly available
documents. Chatterjee and Hambrick’s (2007) original index includes five components: (1) the size of the CEO’s photograph in the company’s annual report; (2) the CEO’s prominence in the company’s press releases; (3) the CEO’s use of first-person singular pronouns in interviews; (4) the CEO’s relative cash compensation to the next-highest paid executive; and (5) the CEO’s relative non-cash compensation to the next-highest paid executive. Later, the first-person pronoun component was dropped, since it was found to be an unreliable indicator after the Sarbanes Oxley Act of 2002 (Chatterjee & Hambrick, 2011; Cragun et al., 2020). Other researchers use varying combinations of the original components.

For the purpose of this study, I constructed an index in line with Chatterjee and Hambrick (2007), but included only three of the original five factors: the prominence of the CEO’s photograph in annual reports, the relative cash pay and the relative non-cash pay. These are the same three components that, for instance, Ingersoll et al. (2019) and Olsen et al. (2014) have used. The first component is the prominence of the CEO’s photograph in the company’s annual report. A firm’s annual report is an opportunity for the CEO to not only report on the company but also to showcase themselves. As mentioned previously, narcissistic individuals are characterized by a strong need for affirmation and recognition, as well as an exaggerated sense of self-importance (American Psychiatric Association, 2013). CEOs generally have great control over how they are portrayed in the annual report, which is why it is to be expected that highly narcissistic CEOs will seek significant visibility in their companies’ annual reports (Chatterjee & Hambrick, 2007). Therefore, the prominence of a CEO photograph is considered to be an appropriate unobtrusive measure for CEO narcissism. Not all annual reports include a CEO photograph, and when they do, its composition and size vary (Olsen et al., 2014). Hence, the prominence of CEO photographs is coded as follows, based on the method used by Olsen et al. (2014) that slightly adjusts Chatterjee and Hambrick’s (2007) original rating: 1 for no CEO photograph; 2 for a photograph in which the CEO is pictured with others; 3 for a photograph in which the CEO is pictured alone, that occupies less than half of a page; 4 for a photograph in which the CEO is pictured alone, that occupies at least half a page but less than a full page; and 5 for a photograph in which the CEO is pictured alone, that occupies a full page in the annual report. All annual reports were gathered from annualreports.com and the companies’ websites. Companies that only filed a Form 10-K without a letter to shareholders, on which the CEO photograph is generally placed, were counted as missing data.

The second and third component of the CEO narcissism index I used are measures of relative pay. CEOs exert a noticeable influence over their own remuneration, and compensation can be seen
as an important signal of power (Hambrick & D’Aveni, 1992). Previous literature reveals this classical principal-agent problem regarding CEO compensation (Grossman & Hart, 1983; Jensen & Meckling, 1976; Jensen & Murphy, 1990). Narcissistic CEOs, who see themselves as ‘special’ and deserving of the highest compensation, are therefore expected to have a higher relative pay compared to less narcissistic CEOs (Rijsenbilt & Commandeur, 2013). Prior research has found CEO pay to be a reliable indicator for CEO narcissism. In companies with highly narcissistic CEOs, both CEO pay and the disparity between the compensation of the CEO and the rest of the executive team are greater than in firms with less narcissistic CEOs (O’Reilly et al., 2014). Relative cash pay was measured as the CEO’s cash compensation, comprised of salary and bonus, divided by the cash compensation of the second-highest paid executive in the company. Similarly, relative non-cash pay was calculated by dividing the CEO’s non-cash compensation, i.e., total compensation minus cash compensation, by that of the next highest paid executive. All compensation data was retrieved from the ExecuComp database.

All three measures of CEO narcissism were collected for the second and third year of tenure, and then averaged over those two years. The first year of tenure was omitted because of anomalies associated with CEO turnover and succession (Chatterjee & Hambrick, 2007). Because of the measurement in years two and three, the narcissism measure is invariant, which is in line with the stream of literature arguing that narcissism is a relatively stable personality trait. The lagged design ensures that narcissism is measured temporarily prior to the measurement of firm performance, since only observations in which the CEO’s tenure is at least four years are included in the sample. It thereby removes any recursive or circular relationships between narcissism and the dependent variable. In line with prior research, I standardized the three measures to maintain equal weighting and computed their average to create the CEO narcissism index used to measure CEO narcissism in this study (Chatterjee & Hambrick, 2007).

4.3.3 Moderators

This study introduces CEO gender and CEO age as moderating variables. The CEO’s gender was extracted from the ExecuComp dataset available through WRDS. I created a dummy variable for CEO gender that takes the value 1 for female and 0 for male. The moderation effect of gender is measured through an interaction term, which was created by multiplying the standardized variables of CEO narcissism and CEO gender.
The CEO’s age is also available in the ExecuComp dataset. Similar to gender, the multiplication of the standardized CEO narcissism and CEO age measures created an interaction term which measures the moderating effect of age in this study.

4.3.4 Control Variables

I control for potentially influencing factors on the CEO-, firm- and industry-level.

**CEO controls.** On the CEO-level, I control for CEO tenure. CEO tenure measures how long the CEO has been in their position on the 31st of December of the respective year. It is included as a control variable because tenure can influence the risk-taking behavior of the CEO (Simsek, 2007). Miller (1991) found that tenure is positively related to risk awareness, which is supported by Barker and Mueller (2002) who showed that CEO tenure is negatively associated with a company’s R&D expenses. The percentage of stock owned by the CEO is included to control for the CEO’s structural power (Finkelstein, 1992). In line with Chatterjee and Hambrick (2007), the calendar year in which the CEO’s tenure started is included as a continuous variable to control for overall trends. In addition to their moderating effects, CEO gender and age are included as control variables in all models. Data for the CEO controls was extracted from the ExecuComp database.

**Firm controls.** On the firm-level, I control for firm size, defined as the total number of employees of the company, and firm age, measured from the year the company was founded. This is because large and old firms may face restraints due to bureaucratic momentum (Chatterjee & Hambrick, 2007). Furthermore, larger companies have a higher visibility and accountability toward shareholders, which may affect strategic decisions (Arthur & Cook, 2009). The data for the firm controls was extracted from the CompuStat database.

**Industry controls.** Finally, the model is controlled for industry-specific effects by adding industry dummies. The dummy variables are created based on the industry groups in the Fama-French 12-industry classification system. Furthermore, calendar-year dummies are included to control for overall trends.
4.4 Model Specifications

To answer the research questions and test the hypotheses, the following multivariate models are proposed:

\[
PERFEXT_{i,t} = \beta_0 + \beta_1 NARIND_i + \beta_2 FEM_i + \beta_3 CAGE_i + \beta_4 \ln TEN_{i,t} + \beta_5 \ln SHA_{i,t} + \beta_6 \ln EMP_{i,t} + \beta_9 FAE_{i,t} + \epsilon_i \quad (1)
\]

\[
PERFEXT_{i,t} = \beta_0 + \beta_1 NARIND_i + \beta_2 NARIND_i \cdot FEM_i + \beta_3 FEM_i + \beta_4 CAGE_{i,t} + \beta_5 \ln TEN_{i,t} + \beta_6 \ln SHA_{i,t} + \beta_7 \ln EMP_{i,t} + \beta_9 FAE_{i,t} + \epsilon_i \quad (2)
\]

\[
PERFEXT_{i,t} = \beta_0 + \beta_1 NARIND_i + \beta_2 NARIND_i \cdot CAGE_{i,t} + \beta_3 FEM_i + \beta_4 CAGE_{i,t} + \beta_5 \ln TEN_{i,t} + \beta_6 \ln SHA_{i,t} + \beta_7 \ln EMP_{i,t} + \beta_9 FAE_{i,t} + \epsilon_i \quad (3)
\]

where

- \( PERFEXT_{i,t} \) is the performance extremeness of company \( i \) at time \( t \)
- \( NARIND_i \) refers to the CEO narcissism index score of company \( i \)'s CEO
- \( FEM_i \) is a dummy variable indicating if company \( i \)'s CEO is female
- \( CAGE_{i,t} \) refers to the age of company \( i \)'s CEO at time \( t \)
- \( TEN_{i,t} \) is the tenure of company \( i \)'s CEO at time \( t \)
- \( SHA_{i,t} \) is the percentage of shares held by company \( i \)'s CEO at time \( t \)
- \( START_i \) refers to the calendar year in which company \( i \)'s CEO started their tenure
- \( EMP_{i,t} \) is the number of employees in company \( i \) at time \( t \)
- \( FAGE_{i,t} \) refers to company \( i \)'s age at time \( t \)

Equation (1) aims to test Hypothesis 1 and answer whether CEO narcissism has an effect on performance extremeness. Equation (2) includes the interaction term between CEO narcissism and CEO gender to explore the moderating effect of gender, thereby, testing Hypothesis 2. The interaction term between CEO narcissism and CEO age is entered in Equation (3) to test Hypothesis 3. In all models, all control variables are included.
4.5 Methodology

This study used a multivariate empirical model based on a panel dataset. The analyses were conducted in Stata. Panel data has advantages over using cross-sectional or time-series data. For instance, panel data models use a combination of cross-sectional and time-series data which enables the researcher to estimate more accurate models. Furthermore, using specific regression models for panel data allows researchers to control for individual unobserved heterogeneity, also known as omitted variable bias (Hsiao, 2003).

Panel data can be analyzed using three main regression models: the pooled regression model, the fixed effects (FE) regression model, and the random effects (RE) regression model (Greene, 2011). The pooled regression model is used when there is a different sample for each period in the panel data (Woolridge, 2010). This is not the case here. Therefore, this study should employ either a FE or a RE model to analyze the panel dataset.

Various factors affect the performance of a firm and hence its extremeness. Including all these factors in a regression model may be challenging. A FE model can control for time-constant unobserved heterogeneity, i.e., omitted variable bias, by allowing the unobserved individual effects to be correlated with the variables included in the regression. This is useful for, for instance, firm and industry attributes that are otherwise hard to control for (Greene, 2011). However, even though the FE model is often seen as the ‘golden standard’, it may not always be the most efficient model to use (Schurer & Yong, 2012). If the independent variable, in this case CEO narcissism, has little variation over time within the same firm, the FE model may not be the most suitable (Adams et al., 2005). When executive characteristics that have relatively low within-variation are included in the model, the FE model may fail to detect significant effects of these variables even though they might be present (Zhou, 2001). Furthermore, FE models are problematic when there is a large number of unique panels (in this study, CEOs) but a small number of years for which they are observed (Chatterjee & Hambrick, 2011). In this sample, the number of CEOs is 274 with an average number of observations of 3.03.

An alternative to the FE model is the RE model. This model uses both within and between individual variation from the panel dataset (Schurer & Yong, 2012). Therefore, it does provide estimates for time-invariant variables, including the CEO narcissism index and gender. Bell et al. (2019) argue that in most research settings, a well-specified RE model provides everything a FE model can and even more.
A general multiple linear regression model for individual $I = 1, \ldots, N$ observed at several time periods $t = 1, \ldots, T$ can be described as follows:

$$y_{it} = \alpha + x_{it}'\beta + z_i'\gamma + \mu_i + \epsilon_{it}$$ (4)

where $y_{it}$ is the dependent variable (in this case, $PERFEXT_{it}$), $x_{it}'$ is a vector of time-varying explanatory variables (in this case, $CAGE_{i,t}, TEN_{i,t}, SHA_{i,t}, EMP_{i,t}$ and $FAGE_{i,t}$), and $z_i'$ is a vector of time-invariant explanatory variables excluding the constant (in this case, $NARIND_i$, $FEM_i$ and $START_i$). $\alpha$ is the intercept, $\beta$ and $\gamma$ are vectors of parameters, $\mu_i$ is an individual-specific effect, and $\epsilon_{it}$ is an idiosyncratic error term. The idiosyncratic error term $\epsilon_{it}$ is assumed to be uncorrelated with the explanatory variables. To test whether the individual-specific effects $\mu_i$ are correlated with the regressors, i.e., if the explanatory variables are endogenous, I performed a Hausman specification test (Hausman, 1978). The test confirms whether a FE or RE is more suitable, by testing whether the obtained estimates from the FE and RE models produce significantly different coefficients. The null hypothesis of the Hausman specification test states that the individual-specific errors are not correlated with the regressors, and that the RE model is the preferred model. The alternative hypothesis states that the individual-specific errors are correlated with the regressors, and that a FE model is preferred. For this study, the chi2 statistic of the Hausman specification test equals 13.36, with $p = 0.2706 > 0.05$, which confirms that a RE model should be used. The use of a RE model is in line with previous studies examining the effect of CEO narcissism, including Chatterjee and Hambrick (2007, 2011), Ingersoll et al. (2019) and Olsen et al. (2014).

5 RESULTS

This section describes the results obtained from the descriptive statistics and regression models as described in the previous section. First, an overview of the descriptive statistics and correlations between the variables is given. Second, I present the results from the regression models to test this study’s hypotheses. Lastly, several robustness tests are conducted.

5.1 Descriptive Statistics and Correlations

Table 1 presents the descriptive statistics for each of the variables used in this study, reporting the mean, median, minimum and maximum values, standard deviation, skewness, and kurtosis for all
firm-year observations in the sample. Furthermore, the descriptive statistics are reported separately for the male and female samples.

**Table 1**

**Summary Statistics**

### Panel A: Full sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Dev.</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERFEXT</td>
<td>830</td>
<td>0.153</td>
<td>0.107</td>
<td>0.003</td>
<td>0.644</td>
<td>0.154</td>
<td>1.723</td>
<td>2.350</td>
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<tr>
<td>NARIND</td>
<td>830</td>
<td>0</td>
<td>0.054</td>
<td>-2.150</td>
<td>2.961</td>
<td>0.688</td>
<td>0.148</td>
<td>1.355</td>
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<tr>
<td>FEM</td>
<td>830</td>
<td>0.050</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0.219</td>
<td>4.108</td>
<td>14.912</td>
</tr>
<tr>
<td>CAGE</td>
<td>830</td>
<td>59.060</td>
<td>59</td>
<td>45</td>
<td>77</td>
<td>5.358</td>
<td>0.237</td>
<td>0.603</td>
</tr>
<tr>
<td>TEN</td>
<td>830</td>
<td>8.829</td>
<td>7.341</td>
<td>4</td>
<td>29.271</td>
<td>4.435</td>
<td>1.405</td>
<td>1.999</td>
</tr>
<tr>
<td>SHA</td>
<td>830</td>
<td>0.687</td>
<td>0.196</td>
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<td>14.902</td>
<td>1.873</td>
<td>5.521</td>
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</tr>
<tr>
<td>EMP</td>
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<td>23,200</td>
<td>468</td>
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<td>157,200,343</td>
<td>10.055</td>
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<td>212</td>
<td>44.200</td>
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### Panel B: Samples by gender

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<th>Variable</th>
<th>Male sample</th>
<th>Female sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>PERFEXT</td>
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<td>FEM</td>
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</tr>
<tr>
<td>CAGE</td>
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<tr>
<td>FAGE</td>
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<td>72.350</td>
</tr>
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</table>

**Table 2**

**Correlation Matrix**

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<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2)</td>
<td>-0.010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td>-0.063***</td>
<td>0.111***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td>0.011</td>
<td>0.026</td>
<td>0.003</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5)</td>
<td>-0.012</td>
<td>-0.101***</td>
<td>-0.132***</td>
<td>0.365***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6)</td>
<td>-0.080**</td>
<td>-0.052</td>
<td>-0.060*</td>
<td>0.142***</td>
<td>0.430***</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7)</td>
<td>-0.004</td>
<td>-0.093***</td>
<td>0.047</td>
<td>0.042</td>
<td>-0.014</td>
<td>-0.006</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(8)</td>
<td>-0.112***</td>
<td>0.145***</td>
<td>0.066*</td>
<td>0.093***</td>
<td>-0.043</td>
<td>0.024</td>
<td>0.031</td>
<td>1</td>
</tr>
</tbody>
</table>

*** p < 0.01, ** p < 0.05, * p < 0.1
The mean value for performance extremeness shows that the ROA of companies in the sample is on average 15.25 percentage points away from the industry average ROA. While some firm-year observations are almost in line with the industry average ROA (0.28 percentage points difference), other observations report a difference to the industry average ROA of up to 64.35 percentage points. The mean value for CEO narcissism lies at 0, while the median is 0.05. All observations lie in the range between -2.15 and 2.96, where a lower value indicates a lower level of narcissism. The average CEO is 59.06 years old, has a tenure of 8.83 years and holds 0.69% of company shares. The minimum value for tenure of four years is explained by the decision to only include CEOs from their fourth year of tenure onward in the sample. The mean value for firm age is 73.02 years, and firm size is on average 62,787 employees. Taking into account that this study samples companies that are part of the S&P 500, i.e., those companies with the largest market capitalization in the US, the large firm size seems logical when comparing it to, for instance, findings of Ingersoll et al. (2019), who found a smaller mean firm size of 28,900 employees for a sample of S&P 1500 companies.

Looking at the descriptive statistics by gender, it must be noted that the female sample is significantly smaller than the one for male CEOs (42 vs. 788 observations), thereby limiting the generalizability of the results. However, it demonstrates how women are considerably underrepresented in executive roles. One can see that the average CEO narcissism index score is higher for female than for male CEOs (female: 0.33; male: -0.02). This seems contradictory to the dominating view in literature that expects men to be more narcissistic than women. Furthermore, on average, men have a longer tenure (female: 6.30 years; male: 8.96 years) and hold a higher percentage of shares (female: 0.20%; male: 0.71%). Women seem to lead larger firms than their male colleagues, with the mean firm size being 94,907 employees for female CEOs and 61,075 employees for male CEOs.

Table 2 displays the correlation matrix for the variables included in the models. Correlation coefficients higher than 0.8 (absolute value) signal multicollinearity (Berry & Feldman, 1985). Since this is not the case for any of the variables used, no actions to control for multicollinearity have to be taken. There is no significant correlation between performance extremeness and narcissism, raising doubts that there will be a significant relationship between the two in the regression analyses. The correlation between narcissism and CEO gender is positive and significant, creating support for the different means shown in Panel B of Table 1. It indicates that the female CEOs in the sample are more narcissistic than the male ones. Furthermore, CEO gender is negatively and significantly
correlated with tenure and percentage of shares held, as supported by the lower values for the female sample in Table 1.

5.2 Findings

Table 3 shows the main results of the panel data regressions with random effects to test the three hypotheses. The findings are presented below. All coefficients are presented ceteris paribus. A discussion of the findings in relation to the hypotheses of the study is provided in the next section.

Table 3

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO narcissism index (NARIND)</td>
<td>-0.0030 (0.0074)</td>
<td>-0.0040 (0.0076)</td>
<td>0.0116 (0.0598)</td>
</tr>
<tr>
<td><strong>Moderating variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender as moderator (NARIND*FEM)</td>
<td>0.0195 (0.0328)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age as moderator (NARIND*CAGE)</td>
<td></td>
<td>-0.0002 (0.0010)</td>
<td></td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO gender (FEM)</td>
<td>0.0037 (0.0223)</td>
<td>-0.0006 (0.0235)</td>
<td>0.0035 (0.0224)</td>
</tr>
<tr>
<td>CEO age (CAGE)</td>
<td>0.0011 (0.0010)</td>
<td>0.0011 (0.0010)</td>
<td>0.0011 (0.0010)</td>
</tr>
<tr>
<td>Tenure (TEN)</td>
<td>0.0151 (0.0220)</td>
<td>0.0151 (0.0220)</td>
<td>0.0155 (0.0221)</td>
</tr>
<tr>
<td>Percentage of shares held (SHA)</td>
<td>-0.0009 (0.0015)</td>
<td>-0.0009 (0.0015)</td>
<td>-0.0009 (0.0015)</td>
</tr>
<tr>
<td>Tenure start year (START)</td>
<td>0.0026 (0.0026)</td>
<td>0.0026 (0.0027)</td>
<td>0.0026 (0.0027)</td>
</tr>
<tr>
<td>Firm size (EMP)</td>
<td>-0.0060 (0.0042)</td>
<td>-0.0060 (0.0042)</td>
<td>-0.0060 (0.0042)</td>
</tr>
<tr>
<td>Firm age (FAGE)</td>
<td>0.0000 (0.0001)</td>
<td>0.0000 (0.0001)</td>
<td>0.0000 (0.0001)</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>-5.1572 (5.4495)</td>
<td>-5.1537 (5.4462)</td>
<td>-5.2646 (5.4672)</td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>829</td>
<td>829</td>
<td>829</td>
</tr>
<tr>
<td><strong>Overall R²</strong></td>
<td>0.7399</td>
<td>0.7400</td>
<td>0.7394</td>
</tr>
</tbody>
</table>

Standard errors in parentheses reported under the coefficients

*** p < 0.01, ** p < 0.05, * p < 0.1
Hypothesis 1 predicts that a higher level of CEO narcissism leads to a more extreme firm performance. The findings of this study suggest no support for this hypothesis. Specifically, Model 1 in Table 3 shows that the coefficient for the CEO narcissism measure is slightly negative at \(-0.0030\) and insignificant (\(p=0.689\)). Based on Hypothesis 1, a positive coefficient would have been expected. Due to its insignificance and closeness to zero, not too much importance should be ascribed to the negative sign of the coefficient found in the analysis. Hence, Model 1 shows that higher levels of CEO narcissism do not lead to a more extreme firm performance. Furthermore, no support was found for the control variables, including CEO gender and CEO age. CEO gender has a coefficient of \(0.0037\) (\(p=0.867\)), not in line with the prediction that women are less powerful in shaping firm initiatives and strategies and therefore show less extreme firm performance. CEO age has a coefficient of \(0.0011\) (\(p=0.261\)), again contrary to the view in literature that older CEOs engage in less risky behaviors and take less extreme decisions. Overall, the \(R^2\) of the model is 73.99%, showing that 73.99% of the variance in the dependent variable is explained by the factors in the model.

Hypothesis 2 predicts a moderating effect of CEO gender such that the relationship between CEO narcissism and performance extremeness is weakened for female CEOs. This is not supported by the results of the regression analysis. Model 2 in Table 3 shows a negative and insignificant coefficient for both CEO narcissism (\(\beta=-0.004, p=0.598\)) and CEO gender (\(\beta=-0.006, p=0.980\)). The interaction term between CEO narcissism and CEO gender is positive at \(0.0200\) and insignificant (\(p=0.552\)). This contradicts Hypothesis 2, based on which a positive coefficient for CEO narcissism and a negative coefficient for the interaction term would have been expected. Model 2 instead shows that CEO gender does not have a moderating effect on the relationship between CEO narcissism and performance extremeness. Similar to Model 1, no support is found for the control variables added to the model. Only some of the industry- and year-dummies are shown to be significant. Nevertheless, the overall \(R^2\) of Model 2 is relatively high at 74.00%.

Finally, Hypothesis 3 predicts a moderating effect of CEO age such that the relationship between CEO narcissism and performance extremeness is weaker for older CEOs. The findings do not support this hypothesis. Model 3 in Table 3 shows positive and insignificant coefficients for CEO narcissism (\(\beta=0.0116, p=0.846\)) and CEO age (\(\beta=0.0011, p=0.261\)). While the coefficient sign of CEO narcissism is in line with the initial prediction that higher levels of narcissism lead to a more extreme firm performance, the insignificance prohibits the interpretation of this effect. The interaction term between CEO narcissism and CEO age is negative (\(\beta=-0.0002\)) and insignificant (\(p=0.806\)).
While the negative sign of the coefficient would support the hypothesis that increasing age leads to a weakening of the effect of CEO narcissism on performance extremeness, the insignificance determines that it cannot be interpreted as support for Hypothesis 3. The model shows no moderating effect of CEO age on the relationship between CEO narcissism and performance extremeness. The overall $R^2$ of the model is similar to the previous two models with 73.94%.

In sum, the results do not support any of the three hypotheses. Findings instead demonstrate that there seems to be no significant relationship between CEO narcissism and performance extremeness. Additionally, the results suggest that both CEO gender and CEO age do not have a moderating effect on the relationship predicted between CEO narcissism and the extremeness of the company’s performance.

### 5.3 Robustness Checks

Several robustness checks are performed to check whether the models have structural validity. By adding, removing or changing variables, it can be examined how certain coefficients behave when the model is modified. Table 4 shows an overview of the models employed in the robustness tests to highlight the changes to the original models. The model specifications for all models can be found in Appendix 2.

<table>
<thead>
<tr>
<th>Model</th>
<th>Dependent variable</th>
<th>Independent variable(s)</th>
<th>Moderating variable(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>Performance extremeness (</td>
<td>\text{Company ROA} - \text{Industry mean ROA}</td>
<td>)</td>
</tr>
<tr>
<td>Model 2</td>
<td>Performance extremeness (</td>
<td>\text{Company ROA} - \text{Industry mean ROA}</td>
<td>)</td>
</tr>
<tr>
<td>Model 3</td>
<td>Performance extremeness (</td>
<td>\text{Company ROA} - \text{Industry mean ROA}</td>
<td>)</td>
</tr>
<tr>
<td>Model 4</td>
<td>Performance extremeness (</td>
<td>\text{Company ROA} - \text{Industry median ROA}</td>
<td>)</td>
</tr>
<tr>
<td>Model 5</td>
<td>Performance extremeness (</td>
<td>\text{Company ROA} - \text{Industry median ROA}</td>
<td>)</td>
</tr>
<tr>
<td>Model 6</td>
<td>Performance extremeness (</td>
<td>\text{Company ROA} - \text{Industry median ROA}</td>
<td>)</td>
</tr>
</tbody>
</table>
### Table 4 (cont.)
Overview of All Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Dependent variable</th>
<th>Independent variable(s)</th>
<th>Moderating variable(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 7</td>
<td>Performance extremeness (($Company ROA - Sample industry average ROA$))</td>
<td>Narcissism index (NARIND)</td>
<td></td>
</tr>
<tr>
<td>Model 8</td>
<td>Performance extremeness (($Company ROA - Sample industry average ROA$))</td>
<td>Narcissism index (NARIND)</td>
<td>Gender (NARIND*FEM)</td>
</tr>
<tr>
<td>Model 9</td>
<td>Performance extremeness (($Company ROA - Sample industry average ROA$))</td>
<td>Narcissism index (NARIND)</td>
<td>Age (NARIND*CAGE)</td>
</tr>
<tr>
<td>Model 10</td>
<td>Performance extremeness (($Company ROA - Industry mean ROA$))</td>
<td>Binary narcissism measure (NARBIN)</td>
<td></td>
</tr>
<tr>
<td>Model 11</td>
<td>Performance extremeness (($Company ROA - Industry mean ROA$))</td>
<td>Binary narcissism measure (NARBIN)</td>
<td>Gender (NARBIN*FEM)</td>
</tr>
<tr>
<td>Model 12</td>
<td>Performance extremeness (($Company ROA - Industry mean ROA$))</td>
<td>Binary narcissism measure (NARBIN)</td>
<td>Age (NARBIN*CAGE)</td>
</tr>
<tr>
<td>Model 13</td>
<td>Performance extremeness (($Company ROA - Industry mean ROA$))</td>
<td>Photo score (PHOT)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relative cash pay (CASH)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relative non-cash pay (NCASH)</td>
<td></td>
</tr>
<tr>
<td>Model 14</td>
<td>Performance extremeness (($Company ROA - Industry mean ROA$))</td>
<td>Photo score (PHOT)</td>
<td>Gender (PHOT*FEM;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relative cash pay (CASH)</td>
<td>CASH*FEM;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relative non-cash pay (NCASH)</td>
<td>NCASH*FEM)</td>
</tr>
<tr>
<td>Model 15</td>
<td>Performance extremeness (($Company ROA - Industry mean ROA$))</td>
<td>Photo score (PHOT)</td>
<td>Age (PHOT*CAGE;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relative cash pay (CASH)</td>
<td>CASH*CAGE;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relative non-cash pay (NCASH)</td>
<td>NCASH*CAGE)</td>
</tr>
</tbody>
</table>

Notes: All models include all control variables. Changes to the initial models (Models 1-3) are highlighted by italics.

### 5.3.1 Different Measures for Performance Extremeness

The main models in the analyses for which results are reported in Table 3 use the absolute difference between the company’s ROA and the industry average ROA as the dependent variable. Industry average ROA was extracted from WRDS as the mean value for each industry based on the Fama-French 12-industry classification system. To check the robustness of the results, I alter the measure of performance extremeness used in the initial models by substituting the industry average ROA. In a first robustness check, I use the absolute difference between the company’s ROA and the median (instead of mean) value for industry average ROAs provided by WRDS. In a second check, I...
calculate performance extremeness as the absolute difference between the company’s ROA and the industry average ROA calculated only for the companies included in the sample.

When using the industry median ROA to calculate performance extremeness, the general findings of Models 1 to 3 are confirmed. Results can be seen in Table 5. Model 4 is comparable to Model 1, Model 5 to Model 2 and Model 6 to Model 3; the only difference between Models 4 to 6 and Models 1 to 3 is that the measure of performance extremeness uses the industry median ROA instead of the industry mean ROA (see Table 4). The regression results show that in all three models, the coefficient for CEO narcissism stays insignificant. The coefficient sign is comparable to Models 1 to 3. CEO gender and CEO age also stay insignificant in all three models. The moderating

### Table 5
Summary of Regression Results (Models 4-6)

<table>
<thead>
<tr>
<th></th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO narcissism index</td>
<td>-0.0061</td>
<td>-0.0072</td>
<td>0.0274</td>
</tr>
<tr>
<td>(NARIND)</td>
<td>(0.0069)</td>
<td>(0.0071)</td>
<td>(0.0557)</td>
</tr>
<tr>
<td><strong>Moderating variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender as moderator</td>
<td>0.0204</td>
<td></td>
<td>-0.0006</td>
</tr>
<tr>
<td>(NARIND*FEM)</td>
<td></td>
<td></td>
<td>(0.0009)</td>
</tr>
<tr>
<td>Age as moderator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(NARIND*CAGE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO gender</td>
<td>0.0038</td>
<td>-0.0007</td>
<td>0.0032</td>
</tr>
<tr>
<td>(FEM)</td>
<td>(0.0209)</td>
<td>(0.0220)</td>
<td>(0.0209)</td>
</tr>
<tr>
<td>CEO age</td>
<td>0.0005</td>
<td>0.0005</td>
<td>0.0005</td>
</tr>
<tr>
<td>(CAGE)</td>
<td>(0.0009)</td>
<td>(0.0009)</td>
<td>(0.0009)</td>
</tr>
<tr>
<td>Tenure</td>
<td>0.0321</td>
<td>0.0321</td>
<td>0.0330</td>
</tr>
<tr>
<td>(TEN)</td>
<td>(0.0204)</td>
<td>(0.0204)</td>
<td>(0.0204)</td>
</tr>
<tr>
<td>Percentage of shares held</td>
<td>-0.0005</td>
<td>-0.0005</td>
<td>-0.0005</td>
</tr>
<tr>
<td>(SHA)</td>
<td>(0.0014)</td>
<td>(0.0014)</td>
<td>(0.0014)</td>
</tr>
<tr>
<td>Tenure start year</td>
<td>0.0040</td>
<td>0.0040</td>
<td>0.0041</td>
</tr>
<tr>
<td>(START)</td>
<td>(0.0025)</td>
<td>(0.0025)</td>
<td>(0.0025)</td>
</tr>
<tr>
<td>Firm size</td>
<td>-0.0095**</td>
<td>-0.0095**</td>
<td>-0.0094**</td>
</tr>
<tr>
<td>(EMP)</td>
<td>(0.0039)</td>
<td>(0.0039)</td>
<td>(0.0039)</td>
</tr>
<tr>
<td>Firm age</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>(FAGE)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Constant</td>
<td>-7.9314</td>
<td>-7.9308</td>
<td>-8.1792</td>
</tr>
<tr>
<td></td>
<td>(5.0567)</td>
<td>(5.0594)</td>
<td>(5.0755)</td>
</tr>
<tr>
<td>Observations</td>
<td>829</td>
<td>829</td>
<td>829</td>
</tr>
<tr>
<td>Overall R²</td>
<td>0.7209</td>
<td>0.7210</td>
<td>0.7200</td>
</tr>
</tbody>
</table>

Standard errors in parentheses reported under the coefficients

*** p < 0.01, ** p < 0.05, * p < 0.1
effect of CEO gender in Model 5 is positive (β=0.0204) and insignificant (p=0.506), comparable to findings for Model 2. Similarly, the interaction term between CEO narcissism and CEO age remains negative (β=-0.0006) and insignificant (p=0.544) in Model 6 as compared to Model 3. The overall R² is slightly lower for the models in the robustness check. The only difference in findings is that for Models 4 to 6, firm size becomes a significant predictor of performance extremeness, with a significant coefficient of approximately β=-0.01 in all three models.

As a second robustness check, I substitute the industry mean ROA by an industry average computed using only the companies in the sample. Since the sample includes only very large companies, the industry average values obtained through WRDS may be biased by all the smaller companies in the respective industries. Therefore, Models 7 to 9 differ compared to Models 1 to 3 in that they use a sample industry average ROA when computing the measure of performance extremeness instead of the industry mean ROA provided by WRDS (see Table 4). It must be noted that for some industries, the number of companies in the sample based on which the average was calculated is rather small (see Appendix 1), thereby limiting the reliability of the results obtained in this robustness test.

The regression results as presented in Table 6 differ slightly from the ones for the original models. Model 7 shows that the coefficient for CEO narcissism is still negative (β=-0.0062) but with a lower p-value (p=0.125), making the coefficient almost significant on the 10%-level. The coefficient for CEO gender (β=-0.0034, p=0.780) stays insignificant, while CEO age (β=0.0011, p=0.045) becomes a significant predictor of performance extremeness. When including CEO gender as a moderator in Model 8, the robustness test confirms the initial results. The coefficient for the interaction term between CEO narcissism and CEO gender is positive (β=0.0028) and insignificant (p=0.873), similar to Model 2. Testing Hypothesis 3 with Model 9 results in slightly different findings compared to the initial regression in Model 3. The coefficient for CEO narcissism is positive (β=0.0529) and insignificant (p=0.137), but the interaction term between CEO narcissism and CEO age is significant (p=0.094) with a negative coefficient of β=-0.0010. CEO age is also a significant predictor (β=0.0011, p=0.047). The negative sign of the interaction term’s coefficient is in line with the predicted weaker effect for older CEOs. However, it must be noted that the coefficient for CEO narcissism itself is still insignificant.
### Table 6
Summary of Regression Results (Models 7-9)

<table>
<thead>
<tr>
<th></th>
<th>Model 7</th>
<th>Model 8</th>
<th>Model 9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO narcissism index</td>
<td>-0.0062 (0.0040)</td>
<td>-0.0064 (0.0042)</td>
<td>0.0529 (0.0356)</td>
</tr>
<tr>
<td>(NARIND)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Moderating variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender as moderator</td>
<td>0.0028 (0.0176)</td>
<td></td>
<td>-0.0010** (0.0006)</td>
</tr>
<tr>
<td>(NARIND*FEM)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age as moderator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(NARIND*CAGE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO gender</td>
<td>-0.0034 (0.0120)</td>
<td>-0.0040 (0.0127)</td>
<td>-0.0045 (0.0120)</td>
</tr>
<tr>
<td>(FEM)</td>
<td>(0.0144)</td>
<td>(0.0144)</td>
<td>(0.0144)</td>
</tr>
<tr>
<td>CEO age</td>
<td>0.0011** (0.0005)</td>
<td>0.0011** (0.0005)</td>
<td>0.0011** (0.0005)</td>
</tr>
<tr>
<td>(CAGE)</td>
<td>(0.0144)</td>
<td>(0.0144)</td>
<td>(0.0144)</td>
</tr>
<tr>
<td>Tenure</td>
<td>0.0411*** (0.0144)</td>
<td>0.0411*** (0.0144)</td>
<td>0.0427*** (0.0144)</td>
</tr>
<tr>
<td>(TEN)</td>
<td>(0.0010)</td>
<td>(0.0010)</td>
<td>(0.0010)</td>
</tr>
<tr>
<td>Percentage of shares held</td>
<td>-0.0008 (0.0010)</td>
<td>-0.0009 (0.0010)</td>
<td>-0.0008 (0.0010)</td>
</tr>
<tr>
<td>(SHA)</td>
<td>(0.0017)</td>
<td>(0.0017)</td>
<td>(0.0017)</td>
</tr>
<tr>
<td>Tenure start year</td>
<td>0.0044*** (0.0017)</td>
<td>0.0044*** (0.0017)</td>
<td>0.0046*** (0.0017)</td>
</tr>
<tr>
<td>(START)</td>
<td>(0.0017)</td>
<td>(0.0017)</td>
<td>(0.0017)</td>
</tr>
<tr>
<td>Firm size</td>
<td>-0.0120*** (0.0023)</td>
<td>-0.0120*** (0.0023)</td>
<td>-0.0118*** (0.0023)</td>
</tr>
<tr>
<td>(EMP)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Firm age</td>
<td>-0.0000 (0.0001)</td>
<td>-0.0000 (0.0001)</td>
<td>-0.0000 (0.0001)</td>
</tr>
<tr>
<td>(FAGE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-8.8536*** (3.4126)</td>
<td>-8.8557** (3.4162)</td>
<td>-9.2534*** (3.4157)</td>
</tr>
<tr>
<td>Observations</td>
<td>829</td>
<td>829</td>
<td>829</td>
</tr>
<tr>
<td>Overall R²</td>
<td>0.2237</td>
<td>0.2239</td>
<td>0.2283</td>
</tr>
</tbody>
</table>

Standard errors in parentheses reported under the coefficients

*** p < 0.01, ** p < 0.05, * p < 0.1

Compared to the initial models, the control variables tenure, tenure start year and firm size become significant predictors of performance extremeness in Models 7 to 9. However, the overall R² of these models are 22.37%, 22.39% and 22.83%, respectively, and thereby substantially lower than in Models 1 to 3.

In sum, the robustness checks altering the dependent variable mostly confirm the results obtained in the initial analyses, showing that CEO narcissism does not have a significant effect on performance extremeness.
5.3.2 Different Measures for Narcissism

The main models in the analyses use a composite index score to measure CEO narcissism. As explained before, the CEO narcissism index is calculated in line with previous research, based on the original index proposed by Chatterjee and Hambrick (2007). The following two robustness tests alter this measure, which is used as the independent variable in Models 1 to 3, and introduce first, a binary narcissism measure, and second, the indicators which the index score consists of separately as independent variables in the regression.

As outlined before, narcissism cannot only be viewed as a personality dimension, but is, especially in psychology, also treated as a categorical disease, i.e., a condition one either has or does not have. Because of this, several researchers examining the influence of CEO narcissism perform robustness tests in which they introduce a binary measure of narcissism (for instance, Aabo et al. (2022), Olsen et al. (2014)). The measure takes on the value 1 for observations with a narcissism score higher than the median, and 0 otherwise. This way, the binary measure represents a threshold point of evaluation instead of a continuous scale. Table 7 presents the regression results for Models 10 to 12, which only differ to Models 1 to 3 in that they use the binary narcissism measure (NARBIN) instead of the composite index (see Table 4). Model 10, which does not include any moderating variables, shows similar results to Model 1. The coefficient for CEO narcissism is negative ($\beta=-0.0073$) and insignificant ($p=0.440$), thereby not providing any support for Hypothesis 1. The control variables are not significant either, and the overall $R^2$ of Model 10 is very similar to that of Model 1 (73.97% and 73.99%, respectively). Similar findings to the original models are also reported for Models 11 and 12. In Model 11, the coefficients for the CEO narcissism measure ($\beta=-0.0080$, $p=0.406$) and the interaction term between CEO narcissism and CEO gender ($\beta=-0.0167$, $p=0.709$) are negative and insignificant. The results for Model 12 also report insignificant coefficients for CEO narcissism ($\beta=0.0062$, $p=0.942$) and the moderating effect of CEO age ($\beta=-0.0002$, $p=0.874$). These values are again comparable with the values obtained from Models 2 and 3. Hence, using a binary measure of narcissism instead of the narcissism index initially used confirms the robustness of the results obtained in the main models, and thus finds no support for any of the three hypotheses.
Table 7
Summary of Regression Results (Models 10-12)

<table>
<thead>
<tr>
<th></th>
<th>Model 10</th>
<th>Model 11</th>
<th>Model 12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Binary narcissism measure</td>
<td>-0.0073</td>
<td>-0.0080</td>
<td>0.0062</td>
</tr>
<tr>
<td>(NARBIN)</td>
<td>(0.0094)</td>
<td>(0.0096)</td>
<td>(0.0850)</td>
</tr>
<tr>
<td><strong>Moderating variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender as moderator</td>
<td>-0.0167</td>
<td></td>
<td>-0.0002</td>
</tr>
<tr>
<td>(NARBIN*FEM)</td>
<td>(0.0447)</td>
<td></td>
<td>(0.0014)</td>
</tr>
<tr>
<td>Age as moderator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(NARBIN*CAGE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO gender</td>
<td>0.0037</td>
<td>0.0105</td>
<td>0.0035</td>
</tr>
<tr>
<td>(FEM)</td>
<td>(0.0222)</td>
<td>(0.0287)</td>
<td>(0.0223)</td>
</tr>
<tr>
<td>CEO age</td>
<td>0.0011</td>
<td>0.0011</td>
<td>0.0012</td>
</tr>
<tr>
<td>(CAGE)</td>
<td>(0.0010)</td>
<td>(0.0010)</td>
<td>(0.0012)</td>
</tr>
<tr>
<td>Tenure</td>
<td>0.0159</td>
<td>0.0158</td>
<td>0.0160</td>
</tr>
<tr>
<td>(TEN)</td>
<td>(0.0220)</td>
<td>(0.0220)</td>
<td>(0.0221)</td>
</tr>
<tr>
<td>Percentage of shares held</td>
<td>-0.0009</td>
<td>-0.0009</td>
<td>-0.0009</td>
</tr>
<tr>
<td>(SHA)</td>
<td>(0.0015)</td>
<td>(0.0015)</td>
<td>(0.0015)</td>
</tr>
<tr>
<td>Tenure start year</td>
<td>0.0027</td>
<td>0.0027</td>
<td>0.0027</td>
</tr>
<tr>
<td>(START)</td>
<td>(0.0027)</td>
<td>(0.0027)</td>
<td>(0.0027)</td>
</tr>
<tr>
<td>Firm size</td>
<td>-0.0060</td>
<td>-0.0061</td>
<td>-0.0059</td>
</tr>
<tr>
<td>(EMP)</td>
<td>(0.0042)</td>
<td>(0.0042)</td>
<td>(0.0042)</td>
</tr>
<tr>
<td>Firm age</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>(FAGE)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Constant</td>
<td>-5.3232</td>
<td>-5.3026</td>
<td>-5.3841</td>
</tr>
<tr>
<td></td>
<td>(5.4479)</td>
<td>(5.4522)</td>
<td>(5.4648)</td>
</tr>
<tr>
<td>Observations</td>
<td>829</td>
<td>829</td>
<td>829</td>
</tr>
<tr>
<td>Overall R²</td>
<td>0.7397</td>
<td>0.7395</td>
<td>0.7396</td>
</tr>
</tbody>
</table>

Standard errors in parentheses reported under the coefficients
*** p < 0.01, ** p < 0.05, * p < 0.1

The last robustness check is performed by regressing the three components which the narcissism measure is made of separately on performance extremeness. As described above, all analyses contradict the initial hypothesis that CEO narcissism leads to a more extreme firm performance. One could think that this is because this study’s measure of narcissism does not appropriately measure the concept and therefore leads to insignificant results when regressing it on performance extremeness. Even though the data collection and composition of the CEO narcissism index score is in line with previous research, this robustness test examines the individual components in more detail. Tables 8 and 9 show the descriptive statistics of the three indicators, namely the score for the prominence of the CEO’s photo in the annual report (PHOT), as well as the relative cash pay (CASH) and relative non-cash pay (NCASH), and a correlation matrix for the three variables.
In line with the coding, the scores for the CEO’s photo size vary between 1 and 5, with a mean value of 2.45 and a median value of 3. Table 10 shows the frequency distribution of the photo scores, which were averaged over the second and third year of tenure. The relative cash pay ranges from 0 to 3.79, showing that CEOs in the sample earned up to 3.79 times as much as the second-highest paid executive. This is even more extreme for the relative non-cash pay, with CEOs earning as much as 9.12 times the next-best paid executive’s non-cash compensation. On average, the CEOs in the sample earn 1.48 times as much in cash pay and 2.35 as much in non-cash pay compared to the second-best paid executive in their companies.
The correlation matrix shows that all three components of CEO narcissism are positively and significantly correlated with each other. While at the first glance, the correlations may seem rather small, they are in line with, for instance, Olsen et al.’s (2014) findings. However, when performing reliability analyses on the three components, results show that they should not be summed into one variable. Reliability describes the ability of an instrument to measure consistently (Tavakol & Dennick, 2011). The most widely used objective measure of reliability is Cronbach’s alpha (Bonett & Wright, 2015). Developed by Lee Cronbach in 1951, it measures the internal consistency of a scale or test, expressed as a number between 0 and 1 (Cronbach, 1951). Internal consistency is concerned with the extent to which several items measure the same construct or concept (Tavakol & Dennick, 2011). The results of the reliability analysis on the three components I used to measure narcissism show that the Cronbach’s alpha for the standardized components is 0.444, which is below the threshold of 0.6 necessary to allow variables to be summed into one (Hair et al., 2010). Even if one of the items was deleted, the threshold of 0.6 would not be reached. Because of that, this last robustness check regresses the three items separately on performance extremeness instead of using the composite index measure.

Table 11 shows the results for Models 13 to 15, which differ from Models 1 to 3 in that they use the three components separately instead of the narcissism index, which also changes the interaction terms (see Table 4). In Model 13, the coefficients for the photo score (β=0.0043, p=0.399) and relative cash pay (β=0.0132, p=0.236) are positive and insignificant. For both measures, a higher value implies a higher level of narcissism, so the coefficient signs are in line with the predicted positive relationship between CEO narcissism and performance extremeness, but like in the initial models, the effects are not significant. However, the results show a significant influence of relative non-cash pay (β=-0.0097, p=0.017). This effect is contradictory to the prediction of a positive relationship, because it suggests that a higher relative non-cash pay leads to a lower performance extremeness. More specifically, it indicates that for every increase in the relative non-cash pay by 1, the extremeness of the firm performance, measured by the absolute difference between company ROA and industry average ROA, decreases by 0.97 percentage points. The different signs and significances of the coefficients for the three indicators of narcissism may explain why the composite narcissism index is an insignificant predictor of performance extremeness.

Table 11 shows the results for Models 13 to 15, which differ from Models 1 to 3 in that they use the three components separately instead of the narcissism index, which also changes the interaction terms (see Table 4). In Model 13, the coefficients for the photo score (β=0.0043, p=0.399) and relative cash pay (β=0.0132, p=0.236) are positive and insignificant. For both measures, a higher value implies a higher level of narcissism, so the coefficient signs are in line with the predicted positive relationship between CEO narcissism and performance extremeness, but like in the initial models, the effects are not significant. However, the results show a significant influence of relative non-cash pay (β=-0.0097, p=0.017). This effect is contradictory to the prediction of a positive relationship, because it suggests that a higher relative non-cash pay leads to a lower performance extremeness. More specifically, it indicates that for every increase in the relative non-cash pay by 1, the extremeness of the firm performance, measured by the absolute difference between company ROA and industry average ROA, decreases by 0.97 percentage points. The different signs and significances of the coefficients for the three indicators of narcissism may explain why the composite narcissism index is an insignificant predictor of performance extremeness.

---

5 Most other studies do not report correlations for the individual indicators.
<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Model 13</th>
<th>Model 14</th>
<th>Model 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo score</td>
<td>0.0043</td>
<td>0.0032</td>
<td>-0.0352</td>
</tr>
<tr>
<td>(NARIND)</td>
<td>(0.0051)</td>
<td>(0.0052)</td>
<td>(0.0444)</td>
</tr>
<tr>
<td>Relative cash pay</td>
<td>0.0132</td>
<td>0.0193</td>
<td>0.0115</td>
</tr>
<tr>
<td>(CASH)</td>
<td>(0.0111)</td>
<td>(0.0118)</td>
<td>(0.1041)</td>
</tr>
<tr>
<td>Relative non-cash pay</td>
<td>-0.0097**</td>
<td>-0.0129***</td>
<td>0.0243</td>
</tr>
<tr>
<td>(NCASH)</td>
<td>(0.0041)</td>
<td>(0.0042)</td>
<td>(0.0385)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Moderating variables</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender as moderator</td>
<td>-0.0093</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(PHOT*FEM)</td>
<td>(0.0290)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender as moderator</td>
<td>-0.0536</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(CASH*FEM)</td>
<td>(0.0385)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender as moderator</td>
<td>0.0335**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(NCASH*FEM)</td>
<td>(0.0146)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control variables</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CEO gender</td>
<td>0.0057</td>
<td>0.0236</td>
<td>0.0047</td>
</tr>
<tr>
<td>(FEM)</td>
<td>(0.0221)</td>
<td>(0.1137)</td>
<td>(0.0223)</td>
</tr>
<tr>
<td>CEO age</td>
<td>0.0011</td>
<td>0.0012</td>
<td>0.0010</td>
</tr>
<tr>
<td>(CAGE)</td>
<td>(0.0010)</td>
<td>(0.0010)</td>
<td>(0.0027)</td>
</tr>
<tr>
<td>Tenure</td>
<td>0.0111</td>
<td>0.0115</td>
<td>0.0105</td>
</tr>
<tr>
<td>(TEN)</td>
<td>(0.0220)</td>
<td>(0.0220)</td>
<td>(0.0221)</td>
</tr>
<tr>
<td>Percentage of shares held</td>
<td>-0.0008</td>
<td>-0.0005</td>
<td>-0.0007</td>
</tr>
<tr>
<td>(SHA)</td>
<td>(0.0015)</td>
<td>(0.0015)</td>
<td>(0.0015)</td>
</tr>
<tr>
<td>Tenure start year</td>
<td>0.0023</td>
<td>0.0026</td>
<td>0.0024</td>
</tr>
<tr>
<td>(START)</td>
<td>(0.0027)</td>
<td>(0.0027)</td>
<td>(0.0027)</td>
</tr>
<tr>
<td>Firm size</td>
<td>-0.0062</td>
<td>-0.0052</td>
<td>-0.0058</td>
</tr>
<tr>
<td>(EMP)</td>
<td>(0.0042)</td>
<td>(0.0042)</td>
<td>(0.0042)</td>
</tr>
<tr>
<td>Firm age</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>(FAGE)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.8100</td>
<td>-5.1577</td>
<td>-4.8046</td>
</tr>
<tr>
<td></td>
<td>(5.4246)</td>
<td>(5.4166)</td>
<td>(5.4633)</td>
</tr>
</tbody>
</table>

| Observations         | 829          | 829     | 829     |
| Overall R²           | 0.7458       | 0.7540  | 0.7457  |

Standard errors in parentheses reported under the coefficients

*** p < 0.01, ** p < 0.05, * p < 0.1

Model 14 introduces the moderating effect of CEO gender. Similar to Model 2, interaction terms for each one of the components are added to the model. The photo score is positive and
insignificant ($\beta=0.0032$, $p=0.539$) like in Model 13, similar to the coefficient for relative cash pay ($\beta=0.0193$, $p=0.101$). However, the p-value for relative cash pay is very close to 0.1, making it almost significant at the 10%-level. Relative non-cash pay is again a negative and significant ($\beta=-0.0129$, $p=0.002$) predictor of performance extremeness, demonstrating that every 1-unit increase in relative non-cash pay leads to a 1.29 percentage points decrease in performance extremeness. When looking at the moderating effects, the interaction terms of the photo score ($\beta=-0.0093$, $p=0.749$) and relative cash pay ($\beta=-0.0536$, $p=0.164$) are negative, which is in line with the weakening effect predicted in Hypothesis 2, but insignificant. However, CEO gender has a significant effect on the negative relationship between relative non-cash pay and performance extremeness, such that the effect is weaker for female CEOs ($\beta=0.0335$, $p=0.022$). To be precise, the results suggest that for each 1-unit increase in CEO narcissism (measured by relative non-cash pay), performance extremeness decreases by 3.35 percentage points less for women than for men. Finally, Model 15 shows the results of regressing the three components as well as the interaction terms with CEO age on performance extremeness. The coefficients for all components as well as the interaction terms are negative and insignificant. This is in line with the results obtained from the initial Model 3. Models 13 to 15 all have slightly higher overall $R^2$ compared to the respective initial model.

In sum, the robustness checks altering the narcissism measure mostly confirm the results obtained in the initial analyses. However, looking at the components of the narcissism measure in more detail reveals that the internal consistency is not high enough to allow the creation of a composite index. Regressing the indicators separately on performance extremeness shows a significant effect of only relative non-cash pay, and this effect is negative as opposed to the positive relationship predicted in Hypothesis 1. Significance was also found for the moderating effect of CEO gender on this relationship between relative non-cash pay and performance extremeness, such that the relationship is weakened for female CEOs, which provides at least partial support for Hypothesis 2.

6 DISCUSSION

Contrary to the hypotheses, this study found no support for a relationship between CEO narcissism and performance extremeness, as well as the moderating influence of CEO gender and age. In the following, I will discuss the findings and present possible explanations for the results.
6.1 Narcissism and Performance Extremeness

Despite its sound theoretical foundation and derivation, Hypothesis 1, which predicted a positive relationship between CEO narcissism and performance extremeness, was not supported by the findings of this study. While there are many studies examining the relationship between CEO narcissism and firm performance (in absolute terms), only very few authors have looked at the effect that CEO narcissism has on performance extremeness. Table 12 provides an overview of the five studies that examine the effect on performance extremeness (or a similar concept), which I can compare the results of my study to. The insignificance of the relationship in my analysis can have multiple reasons. These can be grouped into issues regarding the sample and time frame selection, the measures used for performance extremeness and narcissism, variables not included in the analysis, and the analysis itself.

6.1.1 Sample Selection

By using a sample of companies from the S&P 500, I include only the largest firms of each industry in my study, while covering multiple industries. This is in contrast to all other studies mentioned above that examine the effect of CEO narcissism on performance extremeness.

Firms are selected for the S&P 500 based on their market capitalization but are also large in size when it comes to, for instance, the number of employees. The smallest number of employees observed in the sample is 468, which is considerably higher than the usual cut-off value of 250 employees used to distinguish large firms (Fernández et al., 2019). Hence, my sample includes only large firms. All other studies mentioned above, however, use firms of all sizes, mostly in one industry, thus, also small- and medium-sized firms. Chatterjee and Hambrick (2007), for instance, do find a positive relationship between CEO narcissism and performance extremeness, which might be because of their different sample selection. Fernández et al. (2019) find that there are differences in ROA based on firm size. In examining small, medium and large firms, they determine that there exists a certain relationship between organizational size and profitability, with medium-sized firms generally having the highest returns. If firms have different ROAs based on their belonging to different firm size groups, this likely means that the difference between company ROA and industry average ROA, which is calculated over all firms of all sizes, is likely to differ per firm size group. When medium-sized firms generally have higher ROAs, and hence possibly a greater difference to
the industry average, more performance extremeness could be displayed by firms of this size. By including only large firms in my sample, there may be less variation in performance extremeness than Chatterjee and Hambrick (2007) observed in their study, which could be one reason why they found a significant relationship between CEO narcissism and performance extremeness and I did not.

### Table 12
Overview of Main Studies Examining CEO Narcissism and Performance Extremeness / Variance

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample</th>
<th>Dependent variable</th>
<th>Independent variable</th>
<th>Key findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chatterjee and Hambrick (2007)</td>
<td>105 computer hardware and software firms; 1992-2004</td>
<td>Firm performance extremeness (absolute difference between company ROA and industry average ROA)</td>
<td>Narcissism index (5 components: prominence of CEO’s photo in annual report, CEO’s prominence in press releases, use of first-person singular pronouns, relative cash pay, relative non-cash pay)</td>
<td>Linear relationship; higher levels of CEO narcissism lead to greater performance extremeness</td>
</tr>
<tr>
<td>Wales et al. (2013)</td>
<td>173 high-technology manufacturing firms in mid-western US; 2006-2010</td>
<td>Firm performance variance in sales (difference between standard deviation of sales for each firm over the 5-year period and median standard deviation of sales at the industry-level)</td>
<td>NPI-16 (16-item questionnaire distributed to CEOs)</td>
<td>Partial mediation effect of entrepreneurial orientation on the relationship between CEO narcissism and firm performance variance; CEO narcissism alone is not sufficient to explain firm performance variance</td>
</tr>
<tr>
<td>Aabo and Eriksen (2018)</td>
<td>475 US manufacturing firms; 2010-2014</td>
<td>Stock return volatility (annualized standard deviation of daily stock returns); ROA volatility (standard deviation over prior 3 years) used in robustness test</td>
<td>LinkedIn measure (6 indicators)</td>
<td>Inverse U-shape relationship; moderate degrees of CEO narcissism, as compared to very low or very high levels, are associated with an increase in corporate risk-taking; moderate support for a non-linear relationship between CEO narcissism and ROA volatility, no support for a linear relationship</td>
</tr>
<tr>
<td>Uppal (2020)</td>
<td>217 Indian automobile and automobile ancillary firms; 2010-2015</td>
<td>Firm performance variance in ROA (difference between standard deviation of ROA over 6-year period for each firm and median standard deviation of ROA at the industry-level)</td>
<td>NPI-16 (16-item questionnaire distributed to CEOs)</td>
<td>Curvilinear relationship between CEO narcissism and performance variance; relation between CEO narcissism and firm performance variance is positive for low to moderate levels of CEO narcissism and tapers off at higher levels of narcissism</td>
</tr>
<tr>
<td>Lee et al. (2022)</td>
<td>149 South Korean multinational enterprises; 2006-2016</td>
<td>Global performance variance (absolute difference between company ROA and industry average ROA)</td>
<td>Narcissism index (3 components: prominence of CEO’s photo in annual report, CEO’s prominence in press releases, use of first-person singular pronouns)</td>
<td>Full mediation model (FDI risk-taking as mediator); CEO narcissism itself has no direct effect on global performance variance</td>
</tr>
</tbody>
</table>
Additionally, my sample differs to Aabo and Eriksen (2018), Chatterjee and Hambrick (2007), Uppal (2020) and Wales et al. (2013) in that I do not focus on a single industry. This could have caused the different results of my study. For instance, industries can be separated in high- and low-discretion industries. While in high-discretion environments (industries such as computer programming or engineering/scientific instruments) CEO characteristics and actions are more predictive of organizational outcomes, managerial actions become less important in low-discretion industries (for instance, petroleum and natural gas production), where organizational and environmental factors have significant influence on organizational outcomes (Hambrick & Abrahamson, 1995; Rijsenbilt, 2011). Maccoby (2003) further asserts that CEO narcissism has a greater effect in highly dynamic industries that call for strategic boldness. Hence, Chatterjee and Hambrick’s (2007) results for the computer software and hardware industries may only be generalized to other industries that are as high in discretion as the ones they looked at. They acknowledge themselves that low-discretion settings may yield very different results (Chatterjee & Hambrick, 2007). Hence, including all industries, both low and high in discretion and dynamics, as well as other relevant factors that may differ between industries, in my sample might be another explanation as to why no significant effect was found here.

6.1.2 Time Frame

This thesis also uses a more recent time frame compared to most other studies, which could be another reason for the insignificant results. There might be generational changes in how narcissism is viewed but also in the effects narcissism can have.

Several studies have found generational differences in narcissism, with every generation being more narcissistic than the previous one (Stinson et al., 2008; Twenge, 2006, 2011; Twenge & Foster, 2008). While it has not been explored yet, one may think that this also influences how narcissism is viewed and accepted. In the context of this study, it could mean that nowadays, narcissistic CEOs can more easily act out their narcissistic tendencies and, for instance, influence organizational outcomes with it because when younger generations are more narcissistic themselves, they may have a higher tolerance for others behaving in narcissistic ways. This would mean that at the same level of narcissism, several years ago it was more difficult for a narcissistic CEO to influence firm performance with actions caused by their narcissistic traits than it is for a narcissistic CEO today. Potentially, only CEOs with a particularly high level of narcissism acted on their narcissistic
tendencies in the past, while CEOs demonstrating low to medium levels of narcissism were less able to do so. Therefore, there might have been a bigger difference between the actions of non/-less narcissistic CEOs and highly narcissistic CEOs. With today’s greater acceptance of narcissistic tendencies, the effects may be less distinct between different levels of CEO narcissism. By using more recent data than other studies, especially compared to Chatterjee and Hambrick (2007) whose data is from a time period approximately 20 years before mine, I might have more difficulties proving a significant relationship because the general societal conditions around how narcissism is viewed and accepted may have changed. This could be another potential reason why my findings differ.

6.1.3 Measure of Performance Extremeness

The dependent variable used in this study may be another cause for the different results this study found as compared to Chatterjee and Hambrick’s (2007) initial study, which reports a positive and significant relationship between CEO narcissism and performance extremeness.

First, the time frame used in this thesis is relatively short, covering only six years. In contrast, Chatterjee and Hambrick (2007) use 13 years of data. Firm performance is a noisy measure in itself and ROA easily manipulated, and the effect this may have on results is exacerbated through my shorter time frame. Furthermore, narcissism can have long-term impacts on financial results that may not be covered by looking at only a small number of years.

Second, my measure of performance extremeness is calculated by subtracting the industry average ROA from each companies’ ROA. The data for the industry averages was extracted from a database through WRDS. Chatterjee and Hambrick (2007) and Lee et al. (2022), however, who use the same approach to calculate performance extremeness, calculate the industry averages themselves. By focusing on all companies of one industry, it is easier for them to use the data they have to calculate ROA average values for their whole sample. This was not an option for me, as I concentrated on the S&P 500 and therefore a small set of companies from various industries. I did conduct several robustness tests with alternatives for the industry average ROA I used to calculate performance extremeness. When using a similar approach to Chatterjee and Hambrick (2007) and Lee et al. (2022) and calculating the average ROA by industry of all companies included in the sample, the coefficient for the narcissism index becomes almost significant at the 10%-level. However, the models using the industry average ROA calculated only from companies in the sample have a significantly lower
explanatory power than the main models. Since my sample spans multiple industries, the number of companies included to calculate each industry’s average ROA is lower than ten for some of the industries (see Appendix 1), limiting the reliability of the results. Thus, using the industry average ROA provided through WRDS may be another reason why my results differ to Chatterjee and Hambrick’s (2007) original study.

Third, some of the studies mentioned in Table 12 (Aabo & Eriksen, 2018; Uppal, 2020; Wales et al., 2013) use a different approach to calculate performance extremeness. Instead of taking the absolute value between company ROA and industry average ROA, they calculate the standard deviation of firm and industry ROA and use the difference between the two as a measure for performance extremeness. By following Chatterjee and Hambrick’s (2007) approach, I was hoping to be able to directly compare my results to theirs. However, this may be one of the reasons why I obtain different results compared to the researchers who measured the dependent variable differently.

6.1.4 Measure of Narcissism

The independent variable used in this study may be another reason for the insignificant results I obtained. The CEO narcissism index I used may not measure the concept of narcissism as well as expected.

One of the robustness tests revealed that the three indicators through which I aimed to measure CEO narcissism might not measure the same concept. The reliability analysis showed that the Cronbach’s alpha was below the threshold that allows the creation of a sum variable, which is why Models 13 to 15 regressed the indicators separately on performance extremeness. The results revealed that the three components I used have different effects, both in coefficient signs and significance. While the photo score and relative cash pay have a positive (as predicted) but insignificant coefficient, relative non-cash pay is significantly and negatively related to performance extremeness. The difference in signs and significances may be an explanation for why the CEO narcissism index used in the main models does not have a significant effect on performance extremeness. However, the insufficient reliability of my narcissism measure is not an exception. Van Scotter (2020) conducted an analysis of all published studies using a variation of the narcissism index introduced by Chatterjee and Hambrick (2007) and found that out of the 43 studies reviewed, only six report a sufficient Cronbach’s alpha. Many studies justify their measure of narcissism merely by citing Chatterjee and
Hambrick (2007), but most of them obtain alphas of lower than 0.58 (Van Scotter, 2020). Hence, previous studies already suggest that these indicators are most likely not reliably linked to CEO narcissism.

Furthermore, narcissism may change over time. In line with Chatterjee and Hambrick (2007), I used an invariant measure for CEO narcissism. However, as I described before, there is a stream of literature arguing that narcissism changes with age (Carter & Douglass, 2018; Foster et al., 2003; Teising, 2008). This study did not explicitly analyze the effect that age may have on CEO narcissism, but if there is a relationship between the variables, it could be another reason as to why the analyses using the invariant narcissism measure did not find any support for the hypotheses.

Lastly, narcissism is not a straightforward concept with clear effects. As I outlined before, there are several dimensions of narcissism that have been identified, including grandiose vs. vulnerable narcissism (Wink, 1991). Other authors differentiate, for instance, between productive vs. destructive narcissism (Maccoby, 2004). This study does not distinguish between the different dimensions, but it is reasonable to believe that they influence how narcissism affects performance extremeness. High levels of narcissism in one of the constructs may lead to a greater performance extremeness, while this may not be the case for CEOs scoring high on the opposite construct. Even though I mention that this study focuses on grandiose narcissism and the measure used is more indicative of grandiose than vulnerable narcissism, there may be additional dimensions of narcissism that were disregarded. By not fully differentiating between dimensions, the narcissism measure used in this study cannot capture all distinct effects, which could be another reason for the insignificant results I obtained.

6.1.5 Variables Not Included

Another explanation for the insignificant results found in my study could be that certain important variables that influence performance extremeness were not included. Chatterjee and Hambrick (2007) conclude that CEO narcissism may be selectively beneficial or harmful, depending on contextual conditions. These contextual factors may include, but are not limited to, country, industry, company culture and predecessor style. Excluding these factors might distort the results obtained. Even though the control variables used in this study are inspired by previous research, it
could be that other factors were omitted, which ultimately may have led to the insignificance of CEO narcissism in this study.

6.1.6 Analysis

Further reasons as to why the findings of this study do not support the hypotheses concern the analyses performed. I used a linear regression model to regress CEO narcissism on performance extremeness. However, other authors have found a full mediation model instead of a direct effect of CEO narcissism on performance extremeness or discovered non-linear relationships instead.

Lee et al. (2022) examine how CEO narcissism influences global performance variance, measured in the same way as performance extremeness in this study. For a sample of South Korean multinational enterprises in the period 2006 to 2016 they find support for a full mediation model. CEO narcissism is insignificant when regressed directly on performance variance, but the results show that FDI risk-taking is an important mediator of the relationship. Similarly, Wales et al. (2013) test whether entrepreneurial orientation mediates the relationship between CEO narcissism and firm performance variance. They find support for a partial mediation effect of entrepreneurial orientation and conclude that CEO narcissism alone is not sufficient to explain the variance in firm performance. Hence, not including any mediators in my model may be one of the reasons why I did not find a significant relationship between CEO narcissism and performance extremeness.

Furthermore, several other studies have found non-linear relationships as opposed to the linear relationship I predicted. Aabo and Eriksen (2018) regress CEO narcissism, measured by an unobtrusive measure which was created using LinkedIn profiling, on ROA volatility and find no support for a linear relationship. However, their models show support for a non-linear relationship, in line with the inverse U-shape relationship they find between CEO narcissism and stock return volatility. They explain this relationship with the paradoxical nature of narcissistic personality in which self-esteem is high but needs constant confirmation and self-admiration. The findings show that moderate levels of CEO narcissism, as opposed to very high or very low levels, are associated with significantly higher levels of corporate risk-taking. Applying this to my study could mean that performance extremeness should be expected to be particularly high for CEOs with moderate levels of narcissism, while being lower for CEOs with low or high levels of narcissism. The linear regression used in my analyses could not have found this relationship, which might explain why the results for
the linear relationship are insignificant. As another example, Uppal (2020) examines the relationship between CEO narcissism and firm performance variance in a moderation model with CEO duality and top management team and board member agreeableness as moderators. His findings reveal a significant curvilinear relationship between CEO narcissism and performance variance. The relationship is positive for low to moderate levels of CEO narcissism and tends to taper off at higher levels of narcissism (Uppal, 2020).

These arguments offer possible explanations for the insignificant results of my study that do not support the hypotheses developed based on existing literature. It could be one of these reasons or any combination of them that caused me to not find CEO narcissism to have an effect on performance extremeness.

6.2 Moderating Effect of CEO Gender

Hypothesis 2 predicted a moderating effect of CEO gender, such that the relationship between CEO narcissism and performance extremeness was weaker for female CEOs. The findings of this study do not support this hypothesis. While the limited number of observations for the female sample restricts the overall reliability of the results, another potential reason for this study’s findings could be changing societal beliefs and organizational mechanisms that allow women to be more influential in their companies nowadays.

As mentioned above, one of the aspects that differentiates my study from others is the recency of the data. With the passing of time, many societal values and beliefs change, and over the past few decades, the image of women, both in society as a whole and the business context specifically, has changed immensely. My main argumentation as to why I predicted the effect of CEO narcissism to be weaker for female CEOs rests on the assumption that it is more difficult for women leaders to initiate strategic actions and change within their companies, mostly because of their lower social and professional rank as well as their token status. However, how women are perceived and accepted in society and treated in the organizational world has changed, especially in recent years. It is not expected anymore that women leave the work to men and stick to the upkeeping of the home and upbringing of the children. In most countries, including the US, it has become the norm for women to work, to be promoted, and to eventually rise to executive positions within their work environment. While women are still a numerical minority in executive roles, their share has increased significantly.
Previous research suggests that the increase of women in leadership roles can reduce the salience of gender stereotypes (Ely, 1995; Ely & Thomas, 2001; Ingersoll et al., 2019). This means that women are not as inferior to their male colleagues anymore and are better accepted in their roles, also because of the general change in views in society. This limits the token pressures women face and in turn enables them to more successfully promote organizational change. If women are more able to initiate strategic actions – risky or not – than I predicted, there should not be a significant difference between male and female CEOs when it comes to the effect of CEO narcissism on performance extremeness. This is confirmed by the findings of my study, which show that CEO gender is not a significant moderator in the relationship. The observations in my sample are very recent. Even though the restriction that all CEOs included in the sample must have a tenure of four or more years at the time of observation limits the number of female CEOs observed, the share of females in executive roles has strongly increased over the past few years (Grant Thornton, 2022). Hence, it can be assumed that in the years observed, 2016 to 2021, there were already quite a few women on the board of directors and in the top management teams. Their presence might have enabled the female CEOs included in the sample to more successfully promote strategic actions. Therefore, they were not as limited in the way in which their levels of narcissism may have influenced firm performance, and thus performance extremeness. Hence, the changing views of women in general as well as women in leadership positions may offer an explanation why CEO gender was shown not to be a significant moderator in the relationship between CEO narcissism and performance extremeness.

### 6.3 Moderating Effect of CEO Age

Hypothesis 3 predicted a moderating effect of CEO age, such that the relationship between CEO narcissism and performance extremeness was weaker for older CEOs. Generally, it was difficult to make predictions based on previous research since most studies concerning narcissism focus on students and early-middle-aged participants. Grijalva et al. (2015) conducted a meta-analysis of studies concerning narcissism and found the maximum age in the 355 studies examined to be 55 years. The sample of this study, however, includes CEOs aged 45 to 77. The median age of 59 years shows that more than half of the subjects in this study are older than the individuals examined in previous narcissism research, indicating that it is difficult to make inferences for my study based on previous findings. Nevertheless, I used existing literature to formulate Hypothesis 3, for which my analyses found no support. A potential explanation could be that the changes related to older age that
I predicted to influence the effects of CEO narcissism do not apply in the same way to people in executive positions.

The arguments based on which I predicted CEO age to moderate the relationship between CEO narcissism and performance extremeness mainly revolved around changing risk preferences and the development of contradictory personality traits in older age. Carter and Douglass (2018) refer to a ‘narcissistic crisis’ that older people experience, based on the loss of power, responsibility and authority. While this may be the case for most people, circumstances are different for CEOs. Since the role of the CEO is the epitome of power, responsibility and authority, it is very likely that CEOs do not experience any decline in narcissism with older age. They may fall into this ‘narcissistic crisis’ once they leave their position, but as long as they are the CEO, they should not feel any loss. Similarly, other age-related effects may not be as prominent in CEOs. If risk-taking does not decrease as strongly with age for CEOs than it does for others, there might not be a moderating effect of age on the narcissism-performance extremeness relation. Likewise, the development of traits such as humility and conscientiousness may be hindered by the properties of the CEO position. Research has shown that the core population of organizational leaders in the US are not characterized as particularly humble (Petrenko et al., 2019). As mentioned before, narcissists often self-select into leadership positions because they provide ample opportunities for narcissists to act out their narcissistic tendencies. One could therefore expect that for CEOs, such counteracting traits do not develop as naturally and easily as they do for others in older age, because they continue to rely heavily on their narcissistic traits. If narcissistic CEOs do not develop such traits that influence the effect narcissism has on, for instance, organizational outcomes, the relationship between CEO narcissism and performance extremeness will not weaken with increasing CEO age. This could explain why my findings do not support Hypothesis 3.

7 CONCLUSION

In recent years, the upper echelon literature extended its focus beyond executive demographics and increasingly analyzed underlying personality traits as potential predictors of strategic choices and firm performance. One of the personality traits that researchers identified to affect a CEO’s beliefs and actions is narcissism. This study investigated the potential effect of CEO narcissism on firm performance extremeness and the moderating influence of CEO gender and age. It intended to answer the following research questions:
RQ1. How does the degree of CEO narcissism influence firm performance?

RQ2. How does the CEO’s gender influence the relationship between CEO narcissism and firm performance?

RQ3. How does the CEO’s age influence the relationship between CEO narcissism and firm performance?

Narcissism can be seen not only as a disorder but also as a personality dimension, which is what this study focuses on. Narcissists are characterized by an exaggerated sense of self-importance, combined with the need for excessive admiration and a certain sense of entitlement (American Psychiatric Association, 2013). In leadership positions, some narcissism can be of advantage, because narcissistic leaders are known to be charismatic and good at convincing others of their ideas (Goncalo et al., 2010a; Maccoby, 2004). Nevertheless, they are more well-known as dominant leaders who behave selfishly and are not willing to accept feedback (American Psychiatric Association, 2013; Kets De Vries & Miller, 1985). There is inconclusive evidence as to how narcissism directly affects firm performance, with findings showing both above and below average performances. This is caused mainly by the extreme risk-taking that narcissistic CEOs display when it comes to strategic decisions and investments, including R&D and M&A expenditures (Chatterjee & Hambrick, 2011; Ham et al., 2018; Rijsenbilt & Commandeur, 2013). The risk-taking translates into ‘high risk, high reward’ actions that lead to either big wins or big losses, which is why this thesis hypothesized a positive relationship between CEO narcissism and performance extremeness instead of firm performance per se. By testing this hypothesis, I aimed to answer RQ1 and determine the effect of CEO narcissism on performance extremeness. The findings show no support for the hypothesis. Several robustness tests with different variables to measure performance extremeness and narcissism confirm the findings. While these results are in contrast with, for instance, Chatterjee and Hambrick (2007), who do find evidence for a positive relationship between the variables, my findings could be caused by several differences in the approach, including the sample itself, the measures used and the analyses performed. Therefore, my answer to RQ1 is that CEO narcissism does not affect firm performance when looking at performance extremeness specifically.

To further add to existing literature, this thesis also addressed the moderating influence of CEO gender. Social role theory explains why men are seen as better suited for leadership roles and how women have to exert considerable effort defeating these stereotypes when climbing the corporate ladder (Badura et al., 2018; Eagly et al., 2007; Ingersoll et al., 2019). Token theory illustrates that
because of the lower social and professional status women enjoy, combined with being a numerical minority when it comes to executives, female CEOs are generally less able than their male colleagues to promote organizational actions and achieve strategic change (Ingersoll et al., 2019; Kanter, 1977). The constraints they face in leadership positions led me to hypothesize that even at the same level of narcissism, female CEOs are less able to translate these narcissistic tendencies into risky strategic initiatives that eventually lead to a high performance extremeness. Therefore, Hypothesis 2 predicted a moderating effect of CEO gender such that the relationship between CEO narcissism and performance extremeness was weaker for female CEOs. The subsequent analyses did not find any support for this prediction. This might be based on the fact that societal views and beliefs have changed in recent years which led to more women in executive roles, including board appointments and top management teams. This reduces the token pressures women experience and in turn enhances their ability to promote organizational actions, thereby decreasing the difference between male and female CEOs in how their narcissism affects firm performance. Therefore, the answer to RQ2 is that CEO gender does not influence the relationship between CEO narcissism and performance extremeness.

As a second moderator, CEO age was investigated in this thesis. While there is contradicting literature on the direct effect of age on narcissism, no previous studies have analyzed the moderating effect of CEO age on the relationship between CEO narcissism and performance extremeness. With age, risk preferences change, such that older individuals generally behave more risk averse (Bertrand & Schoar, 2003; Serfling, 2014). Furthermore, social psychology research has shown that older people develop traits like humility and conscientiousness that act as a counter-effect to narcissism (Ashton & Lee, 2016). Therefore, I predicted CEO age to moderate the relationship between CEO narcissism and performance extremeness such that it is weaker for older CEOs. The analyses I performed showed no support for this hypothesis, which could be explained by the particular properties of the CEO position. Many of the changes to narcissism I predicted are linked to the ‘narcissistic crisis’ older people often experience, caused by a loss of power, responsibility and authority. Individuals occupying an executive role will not experience such a loss, and because of the possibility to continuously reinforce their narcissistic traits, it is unlikely that counter-acting traits will develop in the same way as they do for older people that are in a different position. This could explain why the answer for RQ3 is that there is no moderating effect of CEO age on the relationship between CEO narcissism and performance extremeness.
7.1 Main Contributions

While not providing any support for the hypothesized relationships, this study still has important theoretical and practical implications.

7.1.1 Theoretical Contributions

This thesis contributes to the growing literature on the association between managerial traits and corporate decision-making by showing how executive characteristics and personality traits may influence organizational outcomes. It extends the upper echelons literature by providing new insights into narcissism as a CEO characteristic.

Furthermore, this study focuses on performance extremeness instead of absolute firm performance and thus provides new insights into the relationship between CEO narcissism and firm performance. Only very few authors have examined performance extremeness, most prominently Chatterjee and Hambrick (2007). My findings contradict their results, thereby questioning the generalizability of their findings and directing attention to other factors that might influence the relationship. My study extends Chatterjee and Hambrick (2007) by broadening the sample to 274 CEOs from different industries instead of 111 CEOs from solely the computer industry. The larger sample size increases the generalizability of the findings, and the contradicting results highlight the importance of contextual factors. Chatterjee and Hambrick’s (2007) focus on a single high-discretion industry versus mine on companies from all industries might have been an important contributing factor for the difference in findings.

Moreover, my study extends current literature by introducing CEO gender and age as potential moderators on the relationship between CEO narcissism and firm performance. While other researchers only very recently have begun to introduce gender as a moderator (Ingersoll et al., 2019), the potential moderating effect of age has not yet been examined. I thereby provide novel findings that may encourage others to further analyze this relationship.

Lastly, my findings shed doubt on the use of the narcissism index introduced by Chatterjee and Hambrick (2007). The insufficient internal consistency of the index components is often overlooked or ignored by researchers, with many justifying their use of the index solely with a reference to Chatterjee and Hambrick (2007). My reliability analyses show that at least in this study, the use of a composite index is advised against because it cannot be proven that the indicators measure
the same construct of narcissism. This is in line with Van Scotter (2020) who investigated the use of the narcissism index in previous studies and comes to the conclusion that in most studies, the composite index used did not reliably measure the concept of CEO narcissism. My results therefore support these findings and follow Van Scotter’s (2020) recommendations to report reliability data and carefully consider the use of a composite index.

7.1.2 Practical Contributions

The practical contributions of this study lie in the usefulness of the results to managers and supervisory board members, especially when faced with the decision to hire a new CEO. Previous literature has advised against hiring narcissistic CEO because of the potential negative impact on firm performance. This study shows that negative firm performance is not necessarily to be expected, and by reviewing both the dark and bright sides of CEO narcissism, it suggests that to a certain extent, CEO narcissism can also benefit organizations. Therefore, this research can help managers make more informed hiring decisions.

With the increase of the share of women in leadership positions, companies are becoming more aware of the differences between male and female executives. This study helps to shed light on how these differences actually affect organizational outcomes and enables both executives and related managers to shape organizational mechanisms properly to achieve the intended outcomes.

Furthermore, the results can be of use to investors, banks and other creditors. These parties are interested in a company’s performance and risk profile, and consequently the CEO’s risk-taking behavior. By showing that a CEO’s level of narcissism does not influence the extremeness of the company’s performance, the study suggests that they need to be less concerned about this particular personality trait of the CEO when making investment decisions.

7.2 Limitations and Avenues for Further Research

While this study makes important contributions to the understanding of the impact of CEO personality and characteristics on organizational outcomes, the empirical results should be interpreted within the limitations of the study. Many of the limitations can be seen as opportunities for future research.
First, this study uses a sample of companies from the S&P 500, thereby restricting the scope to large firms from the US. This limits the generalizability of the findings. It is unclear whether CEO narcissism has the same effect in other countries or firms, including small- and medium-sized, non-profit and governmental organizations. Furthermore, the sample size is relatively small. Future research could broaden the sample to achieve more generalizable results. Even though I already included multiple industries in my sample, future studies could examine different countries or firm sizes and types to analyze effects that are not looked at in this thesis.

Additionally, the share of female CEOs in this sample is very small, which limits the reliability of the results obtained. The share of women in executive positions has been increasing steadily in recent years and is expected to do so even more in the future. If future research continues to use more recent data, more reliable findings can be achieved.

Another limitation lies in the use of the CEO narcissism index as a measure for CEO narcissism. It is an unobtrusive measure with only partial and indirect proxies for CEO narcissism. It is possible that these indicators are also influenced by characteristics other than narcissism, and there might be differences in how well the individual indicators measure the concept of narcissism. Cragun et al. (2020) and Van Scotter (2020) provide detailed discussions of the limitations of the index. Thus, the CEO narcissism index warrants additional refinement and validation. Future research can also make use of other measures of narcissism, including different unobtrusive measures introduced in previous studies (for instance, Aabo and Eriksen (2018), Ham et al. (2018), Rijsenbilt (2011)) and direct measures like the NPI. Self-reports have their own set of limitations, but by looking at correlations with unobtrusive measures and using different measurements, it might be possible to measure narcissism more accurately.

This study hypothesized and investigated a linear relationship between CEO narcissism and firm performance. As mentioned in the discussion, it could be possible that there exists a non-linear relationship that the models employed here could not find. Hence, future research could apply non-linear models to further examine the potential effects of CEO narcissism.

Moreover, I use statistical remedies to address endogeneity and causality issues as suggested in the literature, including CEO-level and firm-level control variables, industry and year fixed effects and time-lagged variables. But statistical remedies only provide a partial solution because establishing cause and effect is challenging in all non-experimental research (Harvey, 2017; Reeb et al., 2012). I use a set of robustness tests to mitigate endogeneity concerns, but I must acknowledge that
endogeneity concerns cannot be entirely ruled out. Future research could include potential antecedents of CEO narcissism, such as historical risk profiles of the firm and industry or board characteristics, to help shed further light on the causalities. Including context-specific factors to allow for direct comparisons across countries and industries could also help to highlight context-specific mechanisms of CEO narcissism, which would further support the establishment of causality.

Lastly, this study investigates CEO narcissism in isolation. It is likely that narcissism is related to other personality traits, and fully disentangling the effects proves difficult. The use of archival data exacerbates this limitation because it gives no opportunity to further analyze the psychological properties of the CEOs studied, which only primary psychological data would offer. Future research could adopt a more general approach to managerial traits and characteristics in order to uncover additional effects and interrelations between personality traits.
REFERENCES


APPENDICES

Appendix 1: Fama-French 12-Industry Classification

Classification based on SIC codes:

1 NoDur Consumer Nondurables -- Food, Tobacco, Textiles, Apparel, Leather, Toys
   0100-0999
   2000-2399
   2700-2749
   2770-2799
   3100-3199
   3900-3989

2 Durbl Consumer Durables -- Cars, TVs, Furniture, Household Appliances
   2500-2519
   2590-2599
   3630-3659
   3710-3711
   3714-3714
   3716-3716
   3750-3751
   3792-3792
   3900-3939
   3990-3999

3 Manuf Manufacturing -- Machinery, Trucks, Planes, Off Furn, Paper, Com Printing
   2520-2589
   2600-2699
   2750-2769
   3000-3099
   3200-3569
   3580-3629
   3700-3709
   3712-3713
   3715-3715
   3717-3749
   3752-3791
   3793-3799
   3830-3839
   3860-3899

4 Enrgy Oil, Gas, and Coal Extraction and Products
   1200-1399
   2900-2999

5 Chems Chemicals and Allied Products
   2800-2829
   2840-2899

6 BusEq Business Equipment -- Computers, Software, and Electronic Equipment
   3570-3579
   3660-3692
   3694-3699
   3810-3829
   7370-7379

7 Telem Telephone and Television Transmission
   4800-4899

8 Utils Utilities
   4900-4949
9 Shops Wholesale, Retail, and Some Services (Laundries, Repair Shops)
   5000-5999
   7200-7299
   7600-7699

10 Hlth Healthcare, Medical Equipment, and Drugs
   2830-2839
   3693-3693
   3840-3859
   8000-8099

11 Money Finance
   6000-6999

12 Other Other -- Mines, Constr, BldMt, Trans, Hotels, Bus Serv, Entertainment

Source: French (2022)

Allocation of companies included in this study’s sample:

<table>
<thead>
<tr>
<th>Industry</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Nondurables</td>
<td>17</td>
</tr>
<tr>
<td>Consumer Durables</td>
<td>7</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>30</td>
</tr>
<tr>
<td>Oil, Gas, and Coal Extraction and Products</td>
<td>17</td>
</tr>
<tr>
<td>Chemicals and Allied Products</td>
<td>15</td>
</tr>
<tr>
<td>Business Equipment</td>
<td>50</td>
</tr>
<tr>
<td>Telephone and Television Transmission</td>
<td>5</td>
</tr>
<tr>
<td>Utilities</td>
<td>22</td>
</tr>
<tr>
<td>Wholesale, Retail, and Some Services (Laundries, Repair Shops)</td>
<td>37</td>
</tr>
<tr>
<td>Healthcare, Medical Equipment, and Drugs</td>
<td>22</td>
</tr>
<tr>
<td>Finance</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>41</td>
</tr>
</tbody>
</table>
Appendix 2: Model Specifications for Robustness Checks

Models 4-6:

\[
\text{PERFEXT}(\text{median})_{i,t} = \beta_0 + \beta_1 \text{NARIND}_i + \beta_2 \text{FEM}_i + \beta_3 \text{CAGE}_{i,t} + \beta_4 \ln \text{TEN}_{i,t} + \beta_5 \ln \text{SHA}_{i,t} + \beta_6 \text{START}_i + \beta_7 \ln \text{EMP}_{i,t} + \beta_8 \text{FAGE}_{i,t} + \epsilon_i
\]  

(5)

\[
\text{PERFEXT}(\text{median})_{i,t} = \beta_0 + \beta_1 \text{NARIND}_i + \beta_2 \text{NARIND}_i \times \text{FEM}_i + \beta_3 \text{FEM}_i + \beta_4 \text{CAGE}_{i,t} + \beta_5 \ln \text{TEN}_{i,t} + \beta_6 \ln \text{SHA}_{i,t} + \beta_7 \text{START}_i + \beta_8 \ln \text{EMP}_{i,t} + \beta_9 \text{FAGE}_{i,t} + \epsilon_i
\]  

(6)

\[
\text{PERFEXT}(\text{median})_{i,t} = \beta_0 + \beta_1 \text{NARIND}_i + \beta_2 \text{NARIND}_i \times \text{CAGE}_{i,t} + \beta_3 \text{FEM}_i + \beta_4 \text{CAGE}_{i,t} + \beta_5 \ln \text{TEN}_{i,t} + \beta_6 \ln \text{SHA}_{i,t} + \beta_7 \text{START}_i + \beta_8 \ln \text{EMP}_{i,t} + \beta_9 \text{FAGE}_{i,t} + \epsilon_i
\]  

(7)

Models 7-9:

\[
\text{PERFEXT}(\text{sample})_{i,t} = \beta_0 + \beta_1 \text{NARIND}_i + \beta_2 \text{FEM}_i + \beta_3 \text{CAGE}_{i,t} + \beta_4 \ln \text{TEN}_{i,t} + \beta_5 \ln \text{SHA}_{i,t} + \beta_6 \text{START}_i + \beta_7 \ln \text{EMP}_{i,t} + \beta_8 \text{FAGE}_{i,t} + \epsilon_i
\]  

(8)

\[
\text{PERFEXT}(\text{sample})_{i,t} = \beta_0 + \beta_1 \text{NARIND}_i + \beta_2 \text{NARIND}_i \times \text{FEM}_i + \beta_3 \text{FEM}_i + \beta_4 \text{CAGE}_{i,t} + \beta_5 \ln \text{TEN}_{i,t} + \beta_6 \ln \text{SHA}_{i,t} + \beta_7 \text{START}_i + \beta_8 \ln \text{EMP}_{i,t} + \beta_9 \text{FAGE}_{i,t} + \epsilon_i
\]  

(9)

\[
\text{PERFEXT}(\text{sample})_{i,t} = \beta_0 + \beta_1 \text{NARIND}_i + \beta_2 \text{NARIND}_i \times \text{CAGE}_{i,t} + \beta_3 \text{FEM}_i + \beta_4 \text{CAGE}_{i,t} + \beta_5 \ln \text{TEN}_{i,t} + \beta_6 \ln \text{SHA}_{i,t} + \beta_7 \text{START}_i + \beta_8 \ln \text{EMP}_{i,t} + \beta_9 \text{FAGE}_{i,t} + \epsilon_i
\]  

(10)
Models 10-12:

\[ \text{PERFEXT}_{i,t} = \beta_0 + \beta_1 \text{NARBIN}_i + \beta_2 \text{FEM}_i + \beta_3 \text{CAGE}_{i,t} + \beta_4 \ln \text{TEN}_{i,t} \]
+ \( \beta_5 \ln \text{SHA}_{i,t} + \beta_6 \text{START}_i + \beta_7 \ln \text{EMP}_{i,t} + \beta_8 \text{FAGE}_{i,t} + \epsilon_i \)  \tag{11}

\[ \text{PERFEXT}_{i,t} = \beta_0 + \beta_1 \text{NARIND}_i + \beta_2 \text{NARBIN}_i \times \text{FEM}_i + \beta_3 \text{FEM}_i \]
+ \( \beta_4 \text{CAGE}_{i,t} + \beta_5 \ln \text{TEN}_{i,t} + \beta_6 \ln \text{SHA}_{i,t} + \beta_7 \text{START}_i \)
+ \( \beta_8 \ln \text{EMP}_{i,t} + \beta_9 \text{FAGE}_{i,t} + \epsilon_i \)  \tag{12}

\[ \text{PERFEXT}_{i,t} = \beta_0 + \beta_1 \text{NARIND}_i + \beta_2 \text{NARBIN}_i \times \text{CAGE}_{i,t} + \beta_3 \text{FEM}_i \]
+ \( \beta_4 \text{CAGE}_{i,t} + \beta_5 \ln \text{TEN}_{i,t} + \beta_6 \ln \text{SHA}_{i,t} + \beta_7 \text{START}_i \)
+ \( \beta_8 \ln \text{EMP}_{i,t} + \beta_9 \text{FAGE}_{i,t} + \epsilon_i \)  \tag{13}

Models 13-15:

\[ \text{PERFEXT}_{i,t} = \beta_0 + \beta_1 \text{PHOT}_i + \beta_2 \text{CASH}_i + \beta_3 \text{NCASH}_i + \beta_4 \text{FEM}_i \]
+ \( \beta_5 \text{CAGE}_{i,t} + \beta_6 \ln \text{TEN}_{i,t} + \beta_7 \ln \text{SHA}_{i,t} + \beta_8 \text{START}_i \)
+ \( \beta_9 \ln \text{EMP}_{i,t} + \beta_{10} \text{FAGE}_{i,t} + \epsilon_i \)  \tag{14}

\[ \text{PERFEXT}_{i,t} = \beta_0 + \beta_1 \text{PHOT}_i + \beta_2 \text{CASH}_i + \beta_3 \text{NCASH}_i + \beta_4 \text{PHOT}_i \times \text{FEM}_i \]
+ \( \beta_5 \text{CASH}_i \times \text{FEM}_i + \beta_6 \text{NCASH}_i \times \text{FEM}_i + \beta_7 \text{FEM}_i \)
+ \( \beta_8 \text{CAGE}_{i,t} + \beta_9 \ln \text{TEN}_{i,t} + \beta_{10} \ln \text{SHA}_{i,t} + \beta_{11} \text{START}_i \)
+ \( \beta_{12} \ln \text{EMP}_{i,t} + \beta_{13} \text{FAGE}_{i,t} + \epsilon_i \)  \tag{15}

\[ \text{PERFEXT}_{i,t} = \beta_0 + \beta_1 \text{PHOT}_i + \beta_2 \text{CASH}_i + \beta_3 \text{NCASH}_i + \beta_4 \text{PHOT}_i \times \text{CAGE}_{i,t} \]
+ \( \beta_5 \text{CASH}_i \times \text{CAGE}_{i,t} + \beta_6 \text{NCASH}_i \times \text{CAGE}_{i,t} + \beta_7 \text{FEM}_i \)
+ \( \beta_8 \text{CAGE}_{i,t} + \beta_9 \ln \text{TEN}_{i,t} + \beta_{10} \ln \text{SHA}_{i,t} + \beta_{11} \text{START}_i \)
+ \( \beta_{12} \ln \text{EMP}_{i,t} + \beta_{13} \text{FAGE}_{i,t} + \epsilon_i \)  \tag{16}