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Erasmus School of Economics

ME, MYSELF, AND THE C-SUITE:
CEO NARCISSISM AND EMPIRE-BUILDING TENDENCIES

MASTER THESIS ACCOUNTING & FINANCE
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Student name: D. Paschalidis
Student ID number: 617209

Supervisor: Prof. Dr. M.H.R. Erkens
Second assessor: Prof. Dr. W. Cao

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Abstract

This study examines the effect of CEO narcissism on excessive acquisition activity (i.e., empire-building). Through textual analysis of earnings call events held in 2020 and a novel way of measuring narcissism, I assign narcissism scores to CEOs and other C-suite officers of 667, mainly U.S. incorporated firms. I operationalize empire-building in terms of relative acquisition size within industries, and I find no marginal effect on the empire-building propensity, neither from the CEOs' nor from the other C-suite officers' narcissism. However, I find a significant joint effect: when above-average narcissistic CEOs interact with below-average narcissistic C-suite officers, the empire-building tendency increases, whereas when the C-suite's aggregate narcissism level is above-average, the tendency diminishes. Results are robust to different industry segregation and to categorical narcissism measurement scale.

Keywords: Big Five; CEO; Empire-building; LIWC; M&A; Narcissism; Textual Analysis

I. Introduction

It has been said that "*narcissism lies at the heart of leadership*" (Kets de Vries, 2004, p.188; Kernberg, 1975; Kohut, 2009) and "*for anyone who hopes to rise to the top of an organization a solid dose of narcissism is a prerequisite*" (Kets de Vries, 2004, p.188). Narcissism is a multifaceted personality trait that prior research has shown it influences CEO strategic decision-making and organizational outcomes (Chatterjee and Hambrick, 2007; Rijsenbilt and Commandeur, 2013; Aktas et al., 2016; Capalbo et al., 2018). Therefore, understanding in depth the impact of this specific personality trait in firm decisions is crucial in understanding the behavior of companies.

Corporate acquisitions are critical strategic decisions that, in contrast to organic growth, offer a faster and more predictable business expansion; for example, well-established clientele, in-place supply chains, ready-to-use establishments, etc. However, this type of investment tends to intensify the inherent conflicts of interest between managers and shareholders (Jensen and Meckling, 1976) because it is well recognized that managers do not always make shareholder value-maximizing acquisitions. Sub-optimal acquisitions are characterized as excessive or irrational, resulting from the so-called *"empire-building"* tendencies (Jensen, 1986). CEOs might act in this way because increasing firm size or diversifying operations could serve their private interests at the expense of shareholder returns.

Prior research has covered an extensive array of organizational implications deriving from CEO narcissism, but to the best of my knowledge, there is no comprehensive study examining the relation between CEO narcissism and empire-building. Narcissistic individuals perceive life as a series of contests (Wallace and Baumeister, 2002) and therefore may exhibit a higher tendency for competing (Carter et al., 2015), while they also require a steady stream of admiration and applause at frequent intervals (Buss and Chiodo, 1991). Acquisitions can serve both these aspects, as they are usually highly covered by media and provide a competitive setting. Hence, I hypothesize that narcissism has a positive influence on the empire-building propensity, while I also examine the moderating effect of the other C-suite executives' narcissism on the CEO narcissism–empire-building relation.

To operationalize empire-building, I scale each firm's acquisition cash flows by the firm's market value and then compare that relative metric to the respective industry's mean/median value; the CEOs of firms with above industry "norms" are classified as empire-builders. On other hand, to operationalize narcissism I employ a textual analysis algorithm that extracts the parts of the questions-and-answers (hereinafter Q&A) sessions of earnings call events. Focusing solely on the Q&A allows for reduced social desirability bias, as the capacity of public-relation minders to sanitize responses in these sessions is restricted. Further, I create a novel unobtrusive narcissism measurement by utilizing previous studies on the association between narcissism and the Big Five personality traits, as well as the association between the Big Five and semantic word categories of the Linguistic Inquiry and Word Count (LIWC). My narcissism measurement seems to successfully pass the test of being firm-independent and is in line with expectations of narcissism being time-invariant in the mid-term.

Apart from CEO narcissism, I also measure the aggregate narcissism level of the other C-suite executives that were present in the earnings call Q&A sessions. My results show that there is no marginal effect on empire-building, neither from the CEOs' nor from the other C-

suite officers' narcissism. Yet, there seems to be a significant *joint effect* – significant interaction term. Firms that employ *above*-average narcissistic CEOs but *below*-average narcissistic C-suite officers could expect an increase in the empire-building tendency, whereas those employing *above*-average narcissistic CEOs and *above*-average narcissistic C-suite officers could expect a tendency decrease. The magnitude of the tendency change though remains dependent on other firm and CEO characteristics. A plausible explanation is that narcissistic non-CEO executives undermine big acquisitions because they expect to feel sidelined by the attention, publicity, or applause that the CEO receives from such a big event. Results are robust to different industry segregation and to binary narcissism score.

This study contributes to the CEO narcissism and managerial literature in several ways. First, I provide a novel way of unobtrusively measuring narcissism via textual analysis. My narcissism score exhibits sufficient reliability (Cronbach's alpha 0.89), while also seems to be time-invariant and firm-independent. Second, my findings can benefit existing major shareholders by introducing to them an additional level of CEO (personality) screening. Knowing that narcissistic managers display a higher empire-building tendency – when other executives are relatively less narcissistic – can act on their next nomination decision. Finally, potential investors can benefit as well. It might be much harder for this outsider group to observe or monitor CEOs' narcissism levels, however, the results of this study could be incorporated into their asset allocation decisions.

The rest of this study is organized as follows. Section II presents the background on the upper echelons theory, the Big Five, the LIWC, narcissism *per se*, the implications of CEO narcissism on organizational outcomes, and develops my hypotheses. Section III discusses the sample selection process, the construction of the narcissism measurement, and the dependent and control variables. Section IV presents the main results, discusses the findings, and conducts additional tests. Section V concludes.

II. Literature Review & Hypothesis Development

I start by briefly presenting the theoretical framework and empirical results that provide the basis for understanding why CEOs play a central role in an organization, while the upper echelons theory is elucidated to help explain why personality characteristics matter when it comes to strategic decisions and organizational outcomes. Next, I explore the psychology literature domain to get insights into personality traits and comprehend the narcissism construct. Finally, I touch upon the association between narcissism and competitiveness and I review extant research on CEO narcissism and its effects on organizational outcomes.[1] My hypotheses formulation follows as a corollary.

2.1 CEO "Centrality"

Many researchers argue that the chief executive officer's position is unique to a company and that the CEO is the most powerful organizational member in the modern corporation

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[1] For a comprehensive literature review table, see Appendix B.

(Pearce and Robinson, 1987; Harrison et al., 1988). The uniqueness and gravity of this position are posed by Norburn (1989, p.2) who calls the CEO *"primus inter pares – THE corporate leader"*, while Finkelstein (1992, p.506) states that the CEO is *"the most powerful member of the firm's dominant coalition"*.[2] Under the prism of structural power, which is the power that incorporates the CEO's hierarchical authority on the formal organizational structure – probably the most common out of all CEO powers – CEOs have the supremacy to control (to a degree) the behavior of their subordinates; that is, the top management team (Finkelstein, 1992). Even board-of-director members are prone to respond to CEO influence because of their perception of the CEO's right to guide decision-making owing to his hierarchical position (Pearce and Robinson, 1987). Empirical results show significant market reactions to CEO successions (Beatty and Zajac, 1987; Davidson et al., 1990), while Crossland and Hambrick (2007) provide evidence that a substantial proportion of variance in firm performance (as measured by return on assets, net margins, sales growth, and market-to-book ratio) is attributable to CEOs.

2.2 Why Personality Matters – The Upper Echelons Perspective

Businesses, corporations, and the economy as a whole represent a setting of enormous complexity in which a decision maker's cognitive capability of optimal choices being made on a techno-economic basis is limited. Because the decision-maker (i.e., the CEO) cannot comprehend every environmental and organizational stimulus, the individual deploys a cognitive and value-based "filter" (Hambrick and Mason, 1984). This allows the manager to perceptualize a situation and make strategic choices within the so-called *bounded rationality* (Simon, 1957). This cognitive and value-based filter is the first, and presumably the most significant cogwheel of the managerial decision-making machinery. A piece of machinery that combines cognition, perception, values, and personality and processes selective stimuli to produce strategic decisions.

Typically, personality refers to an individual's tendency to think, feel, and act in certain consistent ways. Observable characteristics such as age, education, and socioeconomic roots, as well as non-observable ones – for example, psychological traits such as Machiavellianism, narcissism, and psychopathy – can shape one's personality and therefore take a hold on decisions, acts, and outcomes. The upper echelons theory states that organizational outcomes, such as strategic choices and performance levels, are partially predicted by managerial background characteristics (observable and non) that are related to certain behaviors (Hambrick and Mason, 1984). In this direction, empirical results provide evidence that the CEO's personality is closely related to the strategic decision-making process (Henderson et al., 2006; Hambrick, 2007) and that this relation affects the company's performance – as measured by sales growth, return on investment, and return on assets (Peterson et al., 2003).

However, merely making decisions is one part, while implementing them in an unobstructed and efficient way is another. Here, some may say that power can potentially serve as a catalyst for the implementation of decisions. Apart from structural power, Finkelstein defines three more dimensions of the top manager's power (ownership power, expert power,

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[2] But such may not <u>always</u> be the case (Mintzberg, 1983).

and prestige power) but he acknowledges their overall generalizability shortfall due to the lack of their social-psychological origin and admits that factors such as personality can serve as a source of power as well: *"power may emanate from a manager's personality"* (Finkelstein, 1992, p.510). Hence, personality seems to play a vital role throughout the lifespan of a decision: from inception to execution.

2.3 The "Big Five" Personality Traits

Researchers spent years before pinning down character traits that explain variation in people's behavior. Allport and Odbert's (1936) psycholexical study of English language personality descriptors laid the empirical and conceptual groundwork from which a five-factor model (often termed the "Big Five") eventually emerged. It is a suggested taxonomy for personality traits; a simple and robust way of understanding fundamental personality differences (Goldberg, 1990; McCrae and John, 1992). Admittedly, an individual's personality cannot be observed easily, but psychologists do agree on five basic dimensions, namely: *Neuroticism*, *Extraversion*, *Openness*, *Agreeableness*, and *Conscientiousness*. They are found consistently by different research methods and have been recognized as stable (between genders and among certain age ranges) and cross-culture generalizable (McCrae and Costa, 1997; Costa and McCrae, 1998). Different blends of those five elements lead to different behaviors.

Peterson et al. (2003, p.979) characterize the five-factor model as *"the current orthodoxy in personality assessment"* and predict and find that CEO personality acts on top management team (TMT) group dynamics and that TMT group dynamics are related to organizational performance. By leveraging the big five framework as well, Judge et. al (2002) investigate the relation between personality and leadership. They show that four out of five factors (E, O, A, C) have predictive capacity for leadership *emergence*, while two out of five (E, O) can predict leadership *effectiveness*, with *Extraversion* being the most consistent overall correlate of leadership.

2.4 Inferring Personality Traits – The Linguistic Analysis Approach

The words people use can unveil important facets of their psychological background. The roots of modern text analysis go back to the earliest days of psychology when Freud wrote about slips of the tongue, whereby a person's hidden intentions would reveal themselves in apparent linguistic mistakes (Freud, 1901). Webb et al. (1966) urge the social scientist community to use physical traces (evidence people leave behind them in their physical environment), non-participant observation, documentary sources, and the written and spoken words of subjects as ways to learn about their preferences, perceptions, and personalities. Such unobtrusive measures eliminate problems of reactivity, demand characteristics, and researchers' expectations that can weaken other methods. Recent studies have found systematic associations between personality and differences in individuals' word use (Mehl et al., 2006; Fast and Funder, 2008; Hirsch and Peterson, 2009). Such studies have typically focused on broad associations between major personality domains and aggregate word categories.

The Linguistic Inquiry and Word Count (LIWC) is a computerized text analysis method that counts words in psychologically meaningful categories. It utilizes almost 6,400 words and

word stems, which constitute more than 70 linguistic categories (Pennebaker et al., 2015). Undoubtedly, the rise of computational power, the Internet, and new sophisticated statistical methods have paved the way for machine learning, and much more sophisticated and accurate textual analysis algorithms have emerged (e.g., n-grams, RNN, LSTM, Transformers). Nevertheless, the LIWC yields just slightly subordinated results (Schwartz et al., 2013; Cutler and Kulis, 2018) while at the same time remains one of the most straightforward, understandable, and easily-applied linguistic analysis methods.

Using the LIWC2001 tool, Yarkoni (2010) analyzes a sample of 576 blogs and measures the bloggers' Big Five dimensions of personality with the 50-item IPIP (International Personality Item Pool) representation of the NEO-FFI (Goldberg et al., 2006). He finds 145 statistically significant correlations at p<0.05 between LIWC categories and the Big Five personality traits, out of which 49 are statistically significant at p<0.001. For my research, I use the correlations at p<0.001 between LIWC categories and those personality traits that are found to be correlated with narcissism (see next section).[3]

2.5 The Narcissism Construct

Narcissus was a handsome, proud, and emotionally detached character from Greek mythology who was punished by the goddess Nemesis to fall in love with himself for he scorned every girl that had fallen in love with him. One day, as he was hunting deer, he saw his image reflecting upon a pond and fell in love with it. Eventually, when he tried to hug his reflection, he fell into the water and drowned.[4]

The term *narcissism* debuted in 1898 when it was introduced into clinical psychology by Ellis (1898) to denote a psychological attitude and was expanded upon by renowned psychoanalytic theorists like Freud (Freud, 1914), while Kernberg (1967) and Kohut (1968) carried on to empirically investigate this increasingly observed phenomenon. The phycological concept of narcissism was coined as Narcissistic Personality Disorder (NPD)[5] by the Diagnostic Manual of Mental Disorders, Third Edition (DSM-III; APA, 1980) and according to its latest edition it is defined as *"a pervasive pattern of grandiosity (in fantasy or behavior), need for admiration, and lack of empathy, beginning by early adulthood and present in a variety of contexts […]"* Prevalence estimates for NPD range from 0% to 6.2% in community samples and of those diagnosed with NPD, 50%–75% are males (DSM-V; APA, 2013, p.669:671).

In contrast to pathological narcissism, the notion of sub-clinical or normal narcissism emerges as the manifestation of NPD to a lesser degree (Raskin and Hall, 1981; Paulhus and Williams, 2002). This implies a categorical measurement by which individuals can be relegated to either clinical or sub-clinical narcissism. Conversely, under the assumption that abnormality is continuous with normality, researchers have shown that narcissism can be seen as a personality dimension on which individuals can score from low to high (Emmons, 1987; Raskin and Terry, 1988).

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[3] The correlations table is presented in Appendix C.
[4] The moral of the story is that absolute self-love can be destructive.
[5] Also known as clinical or pathological narcissism.

Based on the criteria that define the NPD in the DSM-III of the American Psychiatric Association, Raskin and Hall (1979) developed the Narcissistic Personality Inventory (NPI) to measure individual differences in narcissism. This well-validated measurement (Raskin and Terry, 1988) is used by Paulhus and Williams (2002) who study a sample of 245 psychology undergraduate students and measure their narcissism levels (as measured by the 40-item NPI; a standard measure for narcissism)[6], as well as their Big Five personality traits (as measured by the 44-item BFI; a self-report scale that is designed to measure the Big Five personality traits).[7] Their results show significant correlation at 5% between narcissism and *Extraversion* (**0.42**); narcissism and *Agreeableness* (**-0.36**); and narcissism and *Openness* (**0.38**).[8] Under the assumption that narcissists make good leaders or are more likely to emerge as a leader, these results are consistent with that of Judge et al. (2002). My research draws heavily on the above figures and I utilize them to infer narcissism levels of CEOs.

2.6 Competitiveness and Narcissism: Two Closely Related Traits

We encounter competition in day-to-day life. It can directly manifest itself – for example, in sports, exams, or business – or it can be seen in broader social situations where individuals compete for status, power, and prestige. Competitiveness refers to the desire to win in interpersonal situations and can be regarded as the variable that measures individual differences both in personal and professional life. Houston et al. (1997) examine 92 amateur and 155 professional tennis players and their analysis shows that the professionals scored substantially higher than the amateur tennis players on interpersonal measures of competitiveness and that competitiveness remains stable across career stages.[9] Despite being heuristic, their study can imply two things: first, highly competitive individuals are more likely to rank higher within a domain, and second, competitiveness is not affected by environmental factors such as prolonged exposure to the intensely competitive social environment. In an attempt to link narcissism to competitiveness, Luchner et al. (2011) study 324 psychology undergraduates and find a significant association between these two constructs. These results are in line with Carter et al. (2015) who find that narcissism accounts for over 38% of the competitiveness variance.

Narcissists are predisposed to see life as a series of contests (Wallace and Baumeister, 2002) and thus may be more adept at competing. The corporate environment and its hierarchical composition resemble an ongoing contest with the position of the CEO yielding the highest intra-organizational prize, while inter-organizationally, the prize gets bigger by outperforming competitors or beating expectations. Monetary rewards aside, a narcissist requires a steady stream of self-image reinforcement and applause at frequent intervals (Buss and Chiodo, 1991). To obtain such applause, narcissists must regularly undertake challenging or bold tasks that are highly visible to a respected audience (Wallace and Baumeister, 2002). Either from their implied competitive nature, or their desire to garner admiration, or their

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[6] A sample questionnaire is presented in Appendix D.

[7] Its validity is well-established (John and Srivastava, 1999). A sample questionnaire is presented in Appendix E.

[8] Cronbach's alpha for Narcissism, E, A, C, N, and O is .84, .87, .81, .81, .86, and .80, respectively; indicating good consistency.

[9] Smither and Houston (1992) developed the Competitiveness Index: a 20-item, self-report instrument designed to measure the desire to win in interpersonal situations. Research indicates high internal consistency; alpha = .90 (Houston et al., 1992).

perceived self-enhancement opportunity, narcissists are highly motivated to outperform, and the corporate setting provides them with the intrinsic pleasure of competing and the extrinsic reward of status and money (Wallace and Baumeister, 2002). Therefore, a considerable proportion of chief executive positions is expected to be occupied by narcissistic individuals (Rosenthal and Pittinsky, 2006; Brunell et al., 2008).

2.7 Literature on CEO Narcissism

Since 2007, when Chatterjee and Hambrick (2007) came up with the first non-NPI proxy for CEO narcissism, there has been a fast-growing population of studies on this specific executive's personality dimension and its influence on a wide spectrum of organizational outcomes. Because the NPI methodology is somewhat difficult to deploy (imagine having to contact more than one hundred CEOs, not to mention persuading them to fill out the questionnaire) and is also susceptible to social desirability bias,[10] their pioneering, unobtrusive narcissism score index paved the way for this literature stream. The authors combined elements such as the CEO's prominence in annual reports and press releases, use of first-person singular pronouns, and relative cash and non-cash compensation into an index, theoretically ranging from -5 to 5. Cragun et al. (2020) identify 42 articles in which CEO narcissism measurement is attempted and 29 of them make use of either Chatterjee and Hambrick's (2007) original index or a reduced form of it (e.g., 4 papers use only the first-person singular pronoun relative to the total use of first-person plural pronouns), whereas the rest rely on psychometric self-reports (NPI), third-party assessments, or signature size.

Firm performance is the first thing one would think of when relating CEO narcissism to organizational outcomes. Chatterjee and Hambrick (2007) examine 111 CEOs in the computer software and hardware industry from 1992 to 2004 and find that CEO narcissism is positively correlated to performance extremeness and fluctuation, as measured by ROA and TSR deviations from average industry stock returns, and ROA and TSR fluctuation year over year, respectively. Reina et al. (2014) survey 97 CEOs (from the computer software and hardware industry as well) to measure their narcissism and organizational identification, and also survey the CFOs of the same companies to identify the TMT behavioral integration.[11] Their results indicate that CEO narcissism is detrimental to firm performance when the CEOs' self-identity is not intertwined with that of their organization. On the other hand, when narcissistic CEOs define themselves in terms of the attributes of their organization, their narcissism is beneficial to TMT behavioral integration and ultimately to firm performance.

CEO narcissism is also found to be related to questionable behavior. For example, Rijsenbilt and Commandeur (2013) study the S&P500 CEOs, who had at least 3 years of tenure, from 1992 to 2008 and show that narcissism is associated with the likelihood of fraud (SEC's accusations of intentionally misstating financial statements), while Capalbo et al. (2018) provide the first empirical evidence of the association between CEO narcissism and earnings manipulation. Their narcissism proxy is the relative use of first-person singular pronouns to

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[10] *"Social desirability reflects the tendency on behalf of the subjects to deny socially undesirable traits and to claim socially desirable ones, and the tendency to say things which place the speaker in a favorable light"* (Nederhof, 1985, p.264). It is one of the most common sources of bias affecting the validity of experimental and survey research findings.

[11] To measure narcissism, the authors use the NPI-16; a shortened version of the 40-item NPI.

first-person plural pronouns and is derived from transcripts of conference calls. The authors find that firms with more narcissistic CEOs engage in higher levels of accruals management to inflate earnings. Increased corporate social responsibility (CSR) could also be regarded as questionable behavior, since it may be enacted for purely self-interest reasons – to attract attention or for image reinforcement (Cragun et al., 2020). Petrenko et al. (2016) find that CEO narcissism has a positive effect on CSR, whereas the impact of CSR on organizational performance diminishes as narcissism levels increase. Their sample consists of all S&P500 firms from 1997 to 2012 with some filtering (e.g., excluding heavily regulated industries, omitting interim CEOs, etc.) and narcissism is measured against third-party video rating.

Under the lens of the agency theory and risk-taking behavior, Buyl et al. (2019) use a sample of 92 CEOs in the banking industry from 2006 to 2014 and a combination of Chatterjee and Hambrick's (2007) and Rijsenbilt and Commandeur's (2013) narcissism measurement and they find that before the 2008 financial crisis, CEO narcissism positively affected the riskiness of banks' policies. Further, they find that banks that were led by more narcissistic CEOs experienced a slower recovery to pre-shock performance levels. From the operational riskiness perspective, Kashmiri et al. (2017) analyze 395 large public U.S. firms in the period 2006-2010 and document that firms led by narcissistic CEOs are more likely to encounter product-harm crises, led by product safety concerns, but they are also likely to exhibit a higher rate of innovation and product introduction.

With a sample of 146 mergers and acquisitions (M&A) deals in the U.S., completed from 2002 to 2006 and 1,780 CEO interview transcripts, Aktas et al. (2016) hypothesize and find that acquiring CEOs' narcissism, measured by the relative first-person pronoun usage, is associated with initiating deals and faster negotiation; more narcissistic target CEOs obtain higher bid premiums; and that a high narcissism level on both sides of the deal is associated with a lower probability of deal completion. Regarding acquisition intensity, Chatterjee and Hambrick (2007) provide evidence of a positive association between CEO narcissism and the number and size of acquisitions.

To the best of my knowledge, there is no comprehensive study examining the relation between CEO narcissism and excessive acquisition activity. Acquisitions are not only among the largest and most readily observable forms of corporate investment but can also be regarded as the quickest and least uncertain way of growing a business. This type of investment though, tends to intensify the inherent conflicts of interest between managers and shareholders (Jensen and Meckling, 1976). It is well acknowledged that managers do not always make shareholder value-maximizing acquisitions, leading to the so-called *"empire-building"* tendencies that lead to excessive or irrational acquisition activity (Jensen, 1986). Managers might act in this way because increasing firm size or diversifying operations could serve their private interests in various ways. Incentives for the establishment of empires presumably reflect the executives' hunger for power and compensation, factors inextricably linked to status and prestige.

The empire-building concept represents the suboptimal decisions where a CEO grows a firm beyond its optimal size, which in turn leads to a decrease in operating performance and reduces firm value (Jensen, 1986). Several studies have documented value destruction for the acquiring firms, especially when they are cash-rich or under weak corporate governance (Hafford, 1999; Moeller et al., 2004; Moeller et al., 2005; Masulis et al., 2007; Hafford et al., 2012). Notwithstanding the potential importance of empire-building for shareholders, limited

research exists on the role of CEO narcissism in augmenting empire-building behavior and thus a locus for contribution has been identified.

Narcissists are inclined to perceive life as a series of contests (Wallace and Baumeister, 2002) and therefore may be more favorably disposed to competing (Carter et al., 2015). In addition, narcissists require a steady stream of admiration and applause at frequent intervals (Buss and Chiodo, 1991), and to obtain such applause they must regularly undertake challenging or bold tasks that are highly visible (Wallace and Baumeister, 2002). An acquisition is not only a highly media-covered event, but it can also offer a layer of competition that narcissists would crave to be a part of. Either from their desire for attention and applause or to satisfy their competing nature and grandiosity, I expect narcissism in CEOs to drive investment decisions towards excessive M&A activity and I formulate my hypotheses as follows:

Hypothesis 1 *The more narcissistic a CEO is, the higher the tendency towards empire-building.*

As a follow-up to Hypothesis 1, I examine the non-directional hypothesis of the other C-suite members' narcissism acting as a moderating factor to the relation formulated in Hypothesis 1.

Hypothesis 2 *There is no effect of the other C-suite members' narcissism on the relation between the CEO's narcissism and empire-building.*

FIGURE 1: LIBBY BOXES
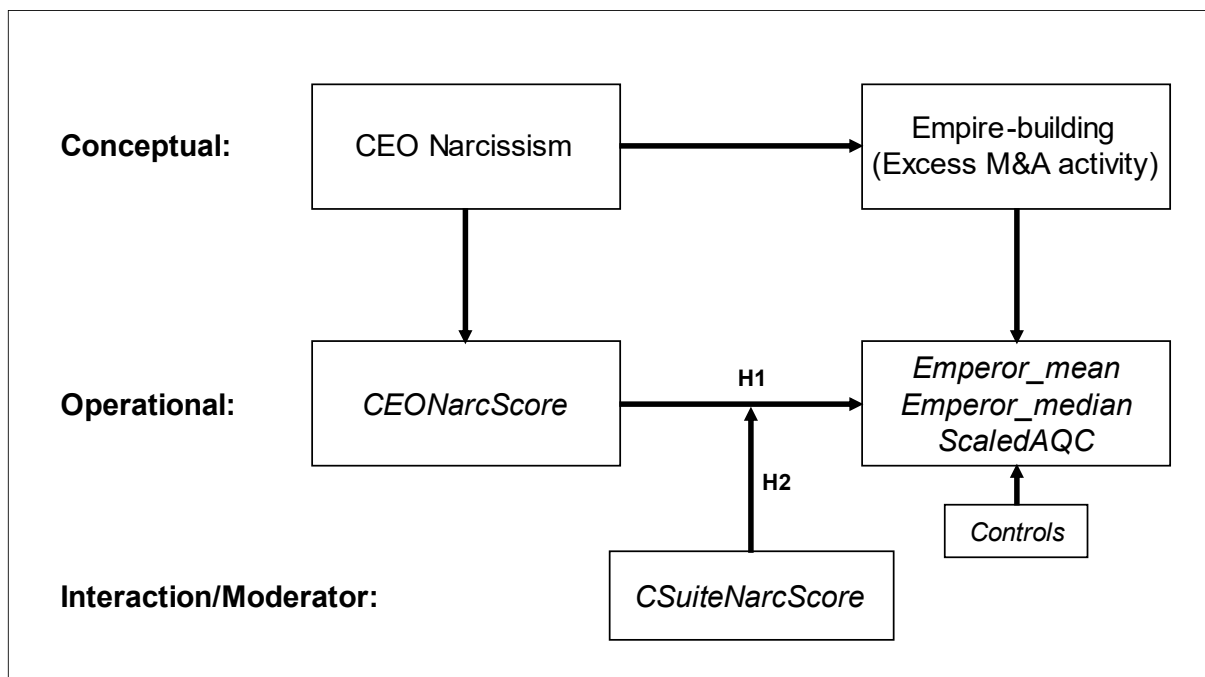
III. Research Design

This section lays out a detailed rundown of the sample selection process, the method applied to link narcissism to linguistic analysis, as well as a description of the variables used in the research. Moreover, I run checks for the validity of my narcissism measurement via selective visualizations, tests, and statistics, and I present the sample's industry distribution along with key statistics. Lastly, I explain control variables and the reasons for including them.

3.1 Data

I initiate the research process with the linguistic analysis of 8,885 unique transcripts of corporate events such as earnings calls, sales calls, special calls, investor days, and other conferences provided by Refinitiv and Thomson Reuters, accounting for more than 100,000 pages. The majority of these events' structure consists of a presentation part and a Q&A part. The textual analysis algorithm parsed these transcripts and managed to fetch 4,703 events (9,406 pieces of text) where both the CEO and other C-suite members (hereinafter the C-suite) actively take part in the Q&A session. I regard all the executives except for the CEO as a unity when identifying their parts regardless of their number, relative contribution, or differences in participation in multiple events.[12] Not following this practice would have made the research process much more complex, or even impossible, especially when different (in terms of seat name) C-suite executives are present at multiple events.

I choose the Q&A sessions, and not the formal speeches during the presentation, because the capacity of public-relation minders to sanitize responses in these sessions is restricted; this potentially leads to less social desirability bias within the Narcissism Score. To avoid attenuation bias from measurement errors, I require CEOs and C-suite members to have spoken at least 100 words,[13] leading to 4,254 observations (8,508 text files in total) on which the Narcissism Score is computed. The data is then aggregated at firm-CEO level and the average Narcissism Score is taken for each CEO being present in more than one event, thus contracting the number of observations to 2,834; firms with CEOs that changed after the first half of 2020 (CEO tenure<0.5 years) are dropped.

To keep sample consistency, I only keep the *earnings call events* (82%) and *events held in 2020* (97%), and then match the financial data from Compustat and CEO-specific data from ExecuComp. Missing values, as well as firms with negative shareholders' equity are dropped because these observations would have a negative market-to-book value ratio (a control variable), which is counter-intuitive. Consistent with prior empirical studies (see Petrenko et al., 2016 and Capalbo et al., 2018), I exclude firms in the banking and insurance industry.[14] Firms in highly regulated industries such as financials are subject to rules of their regulatory environment that limits their discretion on acquisition outlays (e.g., The Bank Merger Act).[15]

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[12] The average number of C-suite officers without the CEO in the sample is 2.2.

[13] For example, if a CEO says a single word during the Q&A session, that observation qualifies to be present in the dataset, but the consequent process of estimating narcissism (see next section: Narcissism Measurement) would yield a score of (or very close to) zero.

[14] 4-digit SIC codes greater than or equal to 6000 and less than or equal to 6411.

[15] Section 18(c) of the Federal Deposit Insurance Act, Pub. L. No. 797; 64 Stat. 892, enacted September 21, 1950.

TABLE 1: SAMPLE SELECTION

	Number of observations	Unique firms	Unique CEOs
Initial sample of transcripts	**8,885**	**4,030**	**4,176**
(-) Transcripts without ticker or analysts	(1,322)	(0)	(0)
(-) Transcripts with: no CEO; more than one CEO; non-English speaking CEO; non-English letters in firm's name; no Q&A session	(2,860)	(845)	(970)
Data with CEO and C-Suite Q&A text	**4,703**	**3,185**	**3,206**
(-) CEO or C-Suite speaks less than 100 words in Q&A session	(449)	(250)	(253)
Data to compute Narcissism Score	**4,254**	**2,935**	**2,953**
(-) Non earnings calls or events not held in 2020	(865)	(368)	(363)
Event-firm-CEO level	**3,389**	**2,567**	**2,590**
(-) Grouping observation on firm-CEO level	(451)	(0)	(0)
Firm-CEO level	**2,938**	**2,567**	**2,590**
(-) Firms that changed CEO after the first half of 2020	(104)	(82)	(114)
Final data from textual analysis	**2,834**	**2,485**	**2,476**
(-) No Compustat overlap	(1,173)	(824)	(819)
(-) No ExecuComp overlap	(828)	(828)	(824)
Merged dataset	**833**	**833**	**833**
(-) Observations with missing values or negative SEQ	(51)	(51)	(51)
(-) Banks and insurance firms	(115)	(115)	(115)
Final sample	**667**	**667**	**667**
(-) Firms with non-positive AQC	(390)	(390)	(390)
Reduced sample	**277**	**277**	**277**

Table shows the number of observations, unique firms, and unique CEOs at each stage of the sample selection process. Figures in bold are the numbers of observations at every stage, while the numbers in parentheses are the lost observations due to data wrangling, filtering, grouping, missing values, or unmatched data points. *SEQ* is the shareholders' equity (book value of equity) and *AQC* is the acquisition cash flows.

The final dataset consists of 667 observations with firms spread across all the 12 Fama&French industries (FF-12 codification) with the vast majority (95%) being incorporated in the United States. Because the data is cross-sectional and acquisitions are not a regular phenomenon, a conditional subsample of 277 observations is formed; the condition applied is that the cash flow statement line item "*Acquisitions, net of cash acquired, and other*" should be greater than zero. This allows the hypotheses testing on a sample of firms that all have acquisition cash-outflows. Table 1 provides a granular view over the sample selection process.

On the textual analysis side, the average CEO's and C-suite's spoken words during the whole duration of an event are 5,197 and 4,042 respectively, while the average CEO's and C-suite's words during the Q&A session are 2,980 and 1,795, respectively. The CEO proportion of the Q&A words to the own total amount of words is 56%, on average, and for the C-suite this figure goes down to 41%. Additionally, CEOs on average speak almost twice (1.86) the C-suites' words during the whole event, while this number goes up to 3.65 when only the Q&A

TABLE 2: DESCRIPTIVE STATISTICS – TEXTUAL ANALYSIS

Statistic	N	Mean	S.D.	Min	25th Pctl	Median	75th Pctl	Max
CEO Total Words	667	5,197	3,076	217	3,053	4,496	6,505	26,578
CEO Q&A Words	667	2,980	2,027	103	1,591	2,564	3,903	17,588
CEO Q&A to Total Prop.	667	0.560	0.171	0.063	0.452	0.570	0.678	1.000
C-Suite Total Words	667	4,042	2,817	193	2,168	3,303	5,159	26,565
C-Suite Q&A Words	667	1,795	1,676	100	675	1,365	2,389	15,169
C-Suite Q&A to Total Prop.	667	0.411	0.183	0.048	0.278	0.399	0.530	1.000
CEO to C-Suite Total Prop.	667	1.861	3.247	0.072	0.860	1.390	2.109	65.166
CEO to C-Suite Q&A Prop.	667	3.649	5.423	0.019	1.059	2.021	4.053	65.166

Table shows number of observations (N), mean (Mean), standard deviation (S.D.), minimum (Min), 25th percentile (25th Pctl), median (Median), 75th percentile (75th Pctl), and maximum (Max) of the textual analysis conducted upon earnings announcement calls held in 2020. CEO Total Words is the sum of the CEO spoken words during both the main presentation and the Q&A session of an event. CEO Q&A Words is the sum of the CEO spoken words during only the Q&A session of an event. CEO Q&A to Total Prop. is the proportion of the CEO Q&A spoken words to the total amount of the CEO spoken words. Same logic applies to the C-Suite Total Words, C-Suite Q&A Words, and C-Suite Q&A to Total Prop., respectively. CEO to C-Suite Total Prop. is the proportion of the CEO spoken words to the aggregate spoken words of the rest C-Suite members during both the main presentation and the Q&A session. CEO to C-Suite Q&A Prop. is the proportion of the CEO spoken words to the aggregate spoken words of the rest C-Suite members during the Q&A session.

sessions are taken into consideration. For the reduced sample, the figures are very close or vary slightly upwards. Table 2 presents in detail all the numbers for the full sample.

3.2 Narcissism Measurement

In an attempt to capture narcissism, Raskin and Hall (1979) created the Narcissistic Personality Inventory (NPI) – a questionnaire with forced-choice questions – and since then this has become one of the most widely utilized personality measures for non-clinical levels of narcissism. Paulhus and Williams (2002) study a sample of 245 psychology undergraduate students and document significant correlations at 5% between the NPI measurement and three out of the Big Five personality traits: *Extraversion* (**0.42**); *Openness* (**0.38**); and *Agreeableness* (**-0.36**), as measured by the Big Five Index (BFI). Yarkoni (2010) analyzes a sample of 576 blogs using the LIWC2001 software and finds significant correlations at 0.1% between *Extraversion*, *Openness*, and *Agreeableness* and 32 LIWC2001 word categories. These three studies form the chain-link via which I unobtrusively link LIWC categories to narcissism.

The total 8,508 pieces of text, accounting for more than 13.6 million words, that were extracted from the Q&A sessions, are passed to the LIWC2001 software[16] which returns scores on the 66 semantic word categories that Yarkoni (2010) finds correlations with all the Big Five traits.[17] These scores represent the proportion of words belonging to a specific category ("bag

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[16] The LIWC app needs to be downloaded from the official site and it is operatable on a paid license. Once there is a license on hand, the user can provide text documents for analysis. Its latest version is the LIWC-22, but I use the LIWC2001 to follow Yarkoni's (2010) results; word categories change in later versions.

[17] For an overview of the categories, see Appendix C.

of words") to the total amount of words provided. To compute the Narcissism Score, I keep the 32 word categories that Paulhus and Williams (2002) find significant correlation with *Extraversion*, *Openness*, and *Agreeableness* (traits correlating with narcissism) and apply a vector of weights to them. This weighting vector is calculated by simply multiplying the [32×3] matrix of Yarkoni (2010) correlations with the $p = [.42 \quad .38 \quad -.36]$ vector of Paulhus and Williams (2002) correlations. The relations are illustrated with Equations (1) and (2).

$$\boldsymbol{Y} \times p' = w \tag{1}$$
$$\text{[32×3] [3×1] = [32×1]}$$

$$\boldsymbol{L} \times w = s \tag{2}$$
$$\text{[4254×32] [32×1] = [4254×1]}$$

where,
$\boldsymbol{Y}$ is Yarkoni's (2010) matrix,
p is the Paulhus and Williams' (2002) vector,
w is the weights vector,
$\boldsymbol{L}$ is the LIWC score matrix, and
s is the Narcissism Score vector

Taking into consideration the criticism of Van Scotten (2020) about the unreliability of unobtrusive archival narcissism measurements, I calculate Cronbach's alpha for both the CEO and the C-suite element weighted LIWC scores. By keeping all 32 categories, the Cronbach's alpha is 0.03 and 0.02, respectively, with both values ranking "unacceptable". In an attempt to maximize Cronbach's alpha, I tried different category combinations, and I ended up with three categories (*We*; *Self*; and *Other References*) for the CEO narcissism measurement (*CEONarcScore*) and four categories (*We*; *Self*; *Other References*; and *Motion*) for the C-suite narcissism measurement (*CSuiteNarcScore*). This elimination process increased the alphas from 0.03 to 0.89 and from 0.02 to 0.77 for the CEO and the C-suite narcissism measurements, respectively, moving up their ranks from both "unacceptable" to "good" and "acceptable", respectively. Additionally, I conducted a principal component analysis (PCA) to check whether these particular categories measure the same latent variable and to what degree. Not surprisingly, the common categories present double-digit factor loading within the dimension with the highest Eigenvalue (~4.5) in both cases, meaning that they not only measure the same latent variable, but also account for a high proportion of its variance. An exception occurs with the fourth category of the *CSuiteNarcScore* where the factor loading drops to 0.77, but still remaining well above the rule of thumb cut-off value of 0.03 (=1/# of Variables = 1/32).[18]

In the pre-merged dataset, 32 firms changed their CEO. To check whether narcissism is a firm-driven phenomenon in this sample, I identify the absolute differences between these 32 CEO pairs and the results are shown in Figure 2. The red dashed line stands at the standard deviation intercept and it is clear that more than half of the CEO pairs have an absolute difference above one standard deviation. Assuming population independence, untabulated

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[18] For details, see Appendix F.

hypothesis testing of difference in *CEONarcScore* means between the two groups shows statistical significance at 5% (t-stat −2.05; df 62), meaning that most probably personality differences do exist between departing and incoming CEOs, thus my Narcissism Score is unlikely to be driven by firm-wise characteristics.

FIGURE 2: NARCSCORE DIFFERENCES OF DEPARTING-SUCCESSIVE CEOS
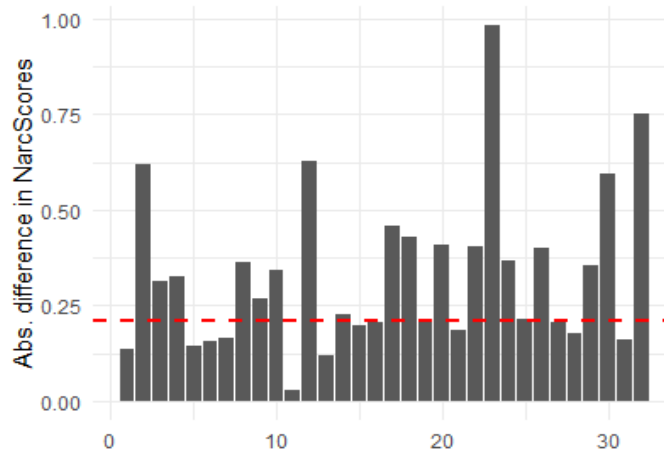
Unfortunately, there are no exceptionally different firms with the same CEO to check whether a single CEO's narcissism remains the same across different firms. For example, James A. Brock is the CEO of Consol Energy Inc. and Consol Coal Resources LP. The two firms have a parent-subsidiary relationship leading to no meaningful comparison. Nevertheless, I conduct a substitute check regarding the time-invariance of those CEOs' *NarcScore* that have observations during multiple events. Figure 3 shows six CEOs that have *NarcScore* observations from at least four events. Their mean and median coefficient of variation are 7.8% and 7.3%, respectively. This provides evidence that *NarcScore* remains relatively stable, enhancing the coherence and validity of this variable, especially since it is in line with the notion that narcissism shows high levels of relative stability in the mid-term (Wetzel et al., 2020).

FIGURE 3: NARCSCORE TIME-INVARIANCE
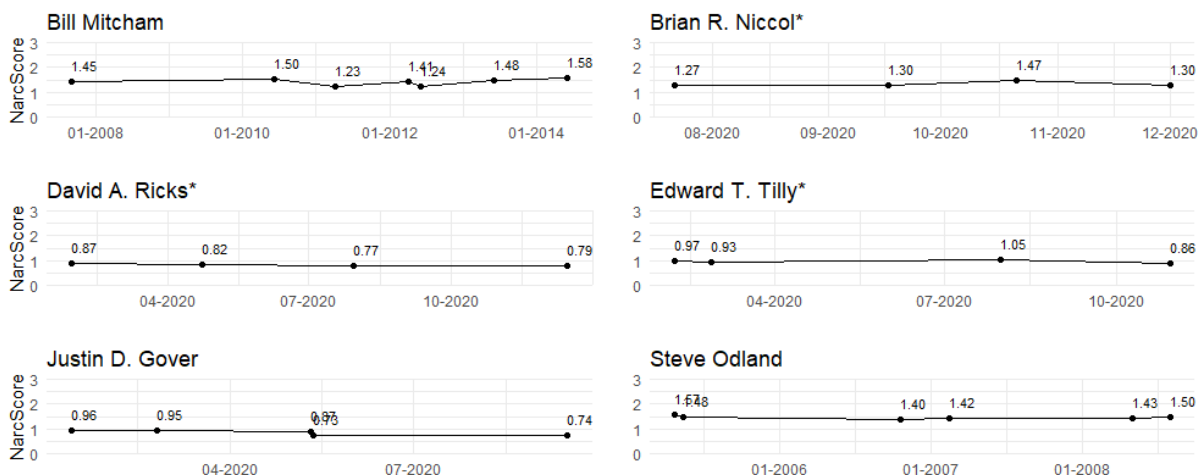
*CEOs that remain in the final sample.

3.3 Dependent Variables

Empire-building is the construct that represents excessive or irrational acquisition activity (Jensen, 1986), and managers who fall for it tend to grow the firm beyond its optimal size. Because the optimal size of a company is hard, or even impossible to observe, I operationalize empire-building by focusing on the relative size of the acquisitions made within industries. First, I scale each firm's acquisition cash flows with the firm's market value, creating the *ScaledAQC* (=*AQC*/*MKVALT*), and then I define the binary variable *Emperor_mean* which turns into 1 when a firm's *ScaledAQC* is *greater* than the mean value of that firm's industry *ScaledAQC*, and 0 otherwise (the industries are defined by the 3-digit SIC codes). For this classification to be effective, it is assumed that on average there is a high level of "acquisition rationality" within industries. If this assumption does not hold, it means that there is no "solid" benchmark against which empire-builders ("irrational acquirers") can be compared to. For the sake of transparency and completeness, I create a similar variable (*Emperor_median*) which takes into account the median, instead of the mean value of the firm's industry *ScaledAQC*. In the full sample, the *Emperor_median* approach does a poor job classifying empire-builders because almost 60% of the observations have zero, or negative *AQC* values, meaning that the likelihood of the benchmark being equal to zero is high (e.g., a CEO that made an acquisition of $1 will be classified as empire-builder). I also include as a dependent variable the *ScaledAQC per se*.

Table 3 illustrates the industry distribution, as well as the average *CEONarcScore*, *Emperor_mean*, *Emperor_median*, and *ScaledAQC* per industry. The per industry average *CEONarcScore* does not seem to deviate a lot from the overall *CEONarcScore* mean of 1.24. In most cases, the *Emperor_median* classifies a higher proportion as empire-builders than the *Emperor_mean*, and this is something to be expected since more than half the *ScaledAQC* observations in the full sample are zeros. Considerable variance from the overall mean of 1.8% is shown within the per industry average *ScaledAQC*, with Energy representing the highest at 2.79%, whereas Business Equipment shows the lowest at 0.26%.

3.4 Control Variables

Following Capalbo et al. (2018) and Marquez-Illescas et al. (2019), I control for firm profitability with return on assets (*ROA*), firm growth as proxied by the ratio of market-to-book value of equity (*MVBV*), and firm size with the natural logarithm of total assets (*LogAT*). Highly profitable firms or firms with high growth expectations may pose an attraction for narcissistic managers, while these firms are also expected (to a degree) to do relatively large acquisitions, rendering uncertain whether it is narcissism that drives acquisition activity. Size may as well attract narcissistic CEOs, but its relation with the acquisition magnitude is not apparent *prima facie*. Large firms usually have easier access to credit, especially through bond markets. By being able to borrow at the lower cost of debt that bond issues offer (compared to bank loans that are the main debt financing tool of smaller firms) the capacity of larger firms upon relatively large acquisitions increases. Hafford (1999) documents value destruction for the acquiring firms, especially when they are cash-rich. Therefore, I also control for "cash-richness" with the proportion of cash to total assets (*PropCH=CH/AT*). The rationale behind

TABLE 3: INDUSTRY DISTRIBUTION

FF-12	Industry	n	Avg. CEONarcScore	Avg. Emperor_mean	Avg. Emperor_median	Avg. ScaledAQC
1	Consumer Non-Durables	33	1.21	23%	43%	2.67%
2	Consumer Durables	23	1.23	42%	29%	1.80%
3	Manufacturing	90	1.25	35%	39%	1.43%
4	Energy	29	1.29	30%	30%	2.79%
5	Chemicals	24	1.27	7%	7%	1.10%
6	Business Equipment	120	1.18	9%	13%	0.26%
7	Telecommunications	12	1.20	29%	45%	0.94%
8	Utilities	27	1.22	21%	29%	2.67%
9	Shops	74	1.22	21%	27%	2.19%
10	Health	75	1.39	15%	20%	0.52%
11	Finance[*]	56	1.19	33%	33%	2.51%
12	Other	104	1.21	26%	33%	2.19%

[*] Excluding banks and insurance firms.

Table shows the Fama&French-12 code industry classification (FF-12), number of observations per industry (n), average CEO narcissism score per industry (avg. *CEONarcScore*), the proportion of empire-builders as given by the comparison of each firm's *ScaledAQC* with the <u>mean</u> industry *ScaledAQC* (avg. *Emperor_mean*), the proportion of empire-builders as given by the comparison of each firm's *ScaledAQC* with the <u>median</u> industry *ScaledAQC* (avg. *Emperor_median*), and the average scaled-acquisition (avg. *ScaledAQC*) per industry, as defined by dividing a firm's acquisition cash flows by its market value.

this control is the same as that above. If a firm has excess cash to spend, it may not necessitate a narcissistic CEO for empire-building to take place and value destruction to betide. All variables with significant outliers (1.5 times the inter-quantile range) are winsorized at 1% and 99%.

Consistent with Chatterjee and Hambrick (2007) and Rijsenbilt and Commandeur (2013), I control for *CEO Age* because the tendency to engage in grandiose strategies may vary as the CEO gets older. Additionally, the *CEO Tenure* may (ambiguously) affect the relative acquisition activity. When CEOs become more experienced within the firms they serve, they may either feel more confident with proceeding to relatively large acquisitions, or on the other hand they may have developed the competency to avoid the pitfalls of overpaying for a target, thus rendering unclear whether confidence, competency, or narcissism acts as the driving force. *CEO Gender* is also included as a control variable because males and females are, on average, inherently different across many dimensions (personality, interests, risk-aversion, etc.), and that could be translated to differences in investment decisions and strategic planning in general.

Lastly, to account for differences in market conditions and macroeconomic effects, industry fixed effects are included. Companies operating in the same industry experience the same production technology advances and market fluctuations. Specific industries might create conditions that potentially encourage excessive acquisition activity. The 3-digit SIC codes are therefore taken as control variables.

IV. Empirical Results

In this section, I present the descriptive statistics and correlations of the variables used in this study, while the model selection process is thoroughly discussed. Further, the regression output of hypothesis testing 1 and 2 are tabulated and I provide a plausible interpretation of the empirical results. Robustness tests conclude the section.

4.1 Descriptive Statistics and Correlations

I report descriptive statistics of all the variables for both the full and the reduced sample in Table 4. I will focus on the reduced sample (Panel B of Table 4) because I deem this sample more appropriate for the analysis due to the time dimension absence. Not only acquisitions are not a frequent event (many zeros in the sample) but there are also observations with negative cash outflows (cash inflows) meaning that either the acquiring firms paid less than the amount of cash held by their target(s) or the deal was settled with shares. Hence, given this idiosyncrasy, focusing on the reduced sample will offer a less distorted view of the data. Untabulated tests of differences between the sample means (H_0: $\bar{x}_i^{full} - \bar{x}_i^{reduced} = 0$) show that the means of *ROA*, *AT*, *Emperor_mean*, *Emperor_median*, and *ScaledAQC* are different at 1% level. Results are the same for both *equal* and *unequal* variances assumption.

An average CEO in my sample is 58 years old, with the youngest being 43 and the oldest 82. Out of the 277 CEOs, 11 are female (roughly 4%); this percentage is comparable with those documented in prior studies (Khan and Vieito, 2013; Marquez-Illescas et al., 2019). The average CEO tenure is 7.5 years, with the lowest being 0.5 and the highest 43. On average, CEOs are less narcissistic than the C-suites and they also show a lower variance in their *NarcScore*. By construction, the theoretical ranges of *CEONarcScore* and *CSuiteNarcScore* are from 0 to 18.12 and from 0 to 31.5, respectively. In reality, values very close to the extremes would mean that an awkwardly strange text was provided to LIWC software, thus rendering the results unacceptable. The actual values observed in the sample range from 0.35 to 2.28. The largest firm in my sample has total assets of $526 billion and the smallest has total assets of $66 million, while an average firm has total assets of $5 billion. On average, the firms in the sample have 4% *ROA* with roughly 18% of the observations reporting a net loss. Meanwhile, *MVBV* has a mean of 6.56 and a median of 3.28, which are both much higher than those reported in other CEO narcissism studies (e.g., Capalbo et al., 2018 report 1.72 and 1.92, respectively, while Marquez-Illescas et al., 2019 report 0.88 and 0.7, respectively; the latter admit these figures due to their sample selection criteria – largest firms by revenue, thus relatively low growth). On average, the proportion of cash to total assets (*PropCH*) is 11.2%, with the lowest at 0% and the highest at 55.1%. The mean and median of the *ScaledAQC* is 4.3% and 1.1%, respectively, with some firms reporting as low as almost 0%, while the highest observations are at 30.5%. When the mean industry *ScaledAQC* is used as a benchmark for the *Emperor_mean* dummy to be defined, the classification rate is almost equal. Instead, when using the median industry *ScaledAQC*, the classification of empire-builders goes up to 73%.

Table 5 reports the Pearson correlations among the variables. This table sheds light on simple associations among the variables of interest, the controls, and the dependent variables

TABLE 4: DESCRIPTIVE STATISTICS

Panel A: Full sample

Statistic	N	Mean	S.D.	Min	25th Pctl	Median	75th Pctl	Max
CEONarcScore	667	1.236	0.211	0.609	1.094	1.239	1.373	2.004
CSuiteNarcScore	667	1.360	0.247	0.346	1.196	1.361	1.507	2.288
ROA	667	0.020	0.099	-0.407	-0.009	0.031	0.069	0.242
MVBV	667	5.871	10.874	0.366	1.603	2.810	5.312	77.504
LogAT	667	8.353	1.554	3.714	7.246	8.291	9.430	13.173
PropCH	667	0.114	0.111	0.000	0.033	0.086	0.159	0.643
CEO Age	667	57.342	6.279	38	53	58	61	82
CEO Tenure	667	7.524	7.014	0.597	2.833	5.584	9.253	43.027
CEO Gender (male=1)	667	0.939	0.240	0	1	1	1	1
Emperor_mean	667	0.220	0.415	0	0	0	0	1
Emperor_median	667	0.304	0.460	0	0	0	1	1
ScaledAQC	667	0.018	0.053	-0.032	0.000	0.000	0.006	0.305

Panel B: Reduced sample (AQC>0)

Statistic	N	Mean	S.D.	Min	25th Pctl	Median	75th Pctl	Max
CEONarcScore	277	1.218	0.205	0.633	1.094	1.230	1.352	1.890
CSuiteNarcScore	277	1.369	0.243	0.346	1.214	1.360	1.504	2.288
ROA	277	0.040	0.075	-0.407	0.011	0.042	0.076	0.242
MVBV	277	6.564	11.477	0.487	1.994	3.278	6.257	77.504
LogAT	277	8.567	1.525	4.186	7.551	8.544	9.518	13.173
PropCH	277	0.112	0.100	0.000	0.042	0.088	0.148	0.551
CEO Age	277	57.736	6.196	43	54	57	62	82
CEO Tenure	277	7.526	6.929	0.597	2.915	5.756	9.310	43.027
CEO Gender (male=1)	277	0.960	0.196	0	1	1	1	1
Emperor_mean	277	0.516	0.501	0	0	1	1	1
Emperor_median	277	0.733	0.443	0	0	1	1	1
ScaledAQC	277	0.043	0.074	0.000	0.003	0.011	0.046	0.305

Table shows number of observations (N), mean (Mean), standard deviation (S.D.), minimum (Min), 25th percentile (25th Pctl), median (Median), 75th percentile (75th Pctl), and maximum (Max) of the variables of the full and reduced samples used in this study. *CEONarcScore* accounts for the CEO narcissism measurement and *CSuiteNarcScore* accounts for the aggregate narcissism measurement of the rest C-suite members. Both scores are created using the LIWC software and documented correlations between narcissism and the Big Five personality traits and between the Big Five personality traits and LIWC categories. *ROA* is the return on assets. *MVBV* is the market-to-book value of equity. *LogAT* is the natural logarithm of total assets. *PropCH* is the proportion of cash to total assets. *CEO Age* is the age of the CEO in years. *CEO Tenure* is the number of years the CEO has served the firm. *CEO Gender* is a binary variable that takes the value of 1 for males, and 0 for females. *Emperor_mean* is a binary variable that turns into 1 when the firm's value of scaled-acquisition is above the <u>mean</u> industry value (industry classification on the 3-digit SIC codes), and 0 otherwise. *Emperor_median* is a binary variable and turns into 1 when the firm's value of scaled-acquisition is above the <u>median</u> industry value (industry classification on the 3-digit SIC codes), and 0 otherwise. *ScaledAQC* is the scaled-acquisition and is computed by dividing a firm's acquisition cash flows by its market value.

TABLE 5: CORRELATION MATRIX

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) *CEONarcScore*	1											
(2) *CSuiteNarcScore*	0.231***	1										
(3) *ROA*	-0.141*	0.026	1									
(4) *MVBV*	-0.048	-0.006	0.257***	1								
(5) *LogAT*	-0.060	-0.037	0.102	0.065	1							
(6) *PropCH*	0.023	-0.029	-0.035	0.190**	-0.367***	1						
(7) *CEO Age*	0.121*	0.088	0.018	-0.013	0.046	-0.075	1					
(8) *CEO Tenure*	-0.027	-0.013	0.056	-0.035	-0.046	0.026	0.470***	1				
(9) *CEO Gender*	-0.113	-0.105	-0.053	-0.000	-0.012	-0.033	0.048	0.063	1			
(10) *Emperor_mean*	0.078	-0.014	-0.072	-0.085	-0.068	-0.147*	0.024	-0.057	-0.063	1		
(11) *Emperor_median*	0.052	0.028	-0.042	-0.074	-0.111	-0.086	-0.030	-0.045	-0.070	0.778***	1	
(12) *ScaledAQC*	0.033	-0.042	-0.269***	-0.058	-0.094	-0.130*	-0.083	-0.129*	0.011	0.358***	0.284***	1

*Significance at the 10% level; **significance at the 5% level; *** significance at the 1% level.

Table shows Pearson correlations between the variables used in the study. *CEONarcScore* accounts for the CEO narcissism measurement and *CSuiteNarcScore* accounts for the aggregate narcissism measurement of the rest C-suite members. Both scores are created using the LIWC software and documented correlations between narcissism and the Big Five personality traits and between the Big Five personality traits and LIWC categories. *ROA* is the return on assets. *MVBV* is the market-to-book value of equity. *LogAT* is the natural logarithm of total assets. *PropCH* is the proportion of cash to total assets. *CEO Age* is the age of the CEO in years. *CEO Tenure* is the number of years the CEO has served the firm. *CEO Gender* is a binary variable that takes the value of 1 for males, and 0 for females. *Emperor_mean* is a binary variable that turns into 1 when the firm's value of scaled-acquisition is above the mean industry value (industry classification on the 3-digit SIC codes), and 0 otherwise. *Emperor_median* is a binary variable and turns into 1 when the firm's value of scaled-acquisition is above the median industry value (industry classification on the 3-digit SIC codes), and 0 otherwise. *ScaledAQC* is the scaled-acquisition and is computed by dividing a firm's acquisition cash flows by its market value.

(i.e., *Emperor_mean*, *Emperor_median*, and *ScaledAQC*), in addition to providing some insight into potential multicollinearity. In particular, *CEONarcScore* is negatively correlated with *ROA*, implying that either CEOs' narcissism is detrimental to the firm's profitability, or narcissistic CEOs avoid unprofitable firms. In addition, *CEONarcScore* is positively correlated with *CEO Age* meaning that narcissism possibly manifests to a greater degree as the individual gets older (I report the same coefficient with Marquez-Illescas et al. (2019) but at less statistical significance). *ROA* is found positively associated with *MVBV* and *ScaledAQC*, presumably meaning that profitable firms experience an increase in market value, and through the increased denominator effect this translates to lower *ScaledAQC*. Firms with higher proportions of cash to total assets (*PropCH*) tend to illustrate higher *MVBV*, while by construction *PropCH* negatively correlates with *LogAT*. Interestingly, I find negative association between "cash-richness" (i.e., *PropCH*) and empire-building (negative correlation with *Emperor_mean* and *ScaledAQC*). *CEO Tenure* is positively correlated with *CEO Age* (something to be expected) and negatively correlated with *ScaledAQC*. This could mean that as CEOs become more experienced, they build the capability to avoid acquisition over-payments.

4.2 Model Selection

To identify the empire-building tendency, a non-linear model is specified. Logit and probit models are two highly utilized non-linear models with not so distinct differences; variation in their outcomes depends on the underlying data characteristics. Deciding which model is the most appropriate for this setting, I follow Chen and Tsurumi (2010) whose study shows that if the data is balanced, none of their model selection criteria can distinguish the probit and logit models. However, when unbalanced binary data are generated by a leptokurtic distribution, the logit model is preferred over the probit model. The probit model is preferred if unbalanced data are generated by a platykurtic distribution (Chen and Tsurumi, 2010, p.170). In the full sample, the *Emperor_mean* (*Emperor_median*) classifier identifies 147 (203) out of the 667 CEOs as empire-builders; a proportion of 22% (30%), whereas in the reduced sample, the *Emperor_mean* (*Emperor_median*) identifies 52% (73%) of the total observations as empire-builders. It is therefore clear that the data remains unbalanced in most cases, thus the excess kurtosis of the generating variable distribution needs to be calculated. The binary variables *Emperor_mean* and *Emperor_median* are generated from the *ScaledAQC* variable, which is the acquisition cash flows (*AQC*) scaled by the firm's market value (*MKVALT*). The excess kurtosis of the *ScaledAQC* distribution is 15.6 for the full sample and 15.3 for the reduced sample, indicating *leptokurtic* distributions. Hence, according to Chen and Tsurumi (2010), the most appropriate model for this data is the logit model, and to test the first hypothesis of the CEO's narcissism having an impact on empire-building propensity, I use the model in Equation 3 for both the full and the reduced sample. I also use an OLS model to identify whether CEO narcissism relates to the scaled-acquisitions directly, but I do so solely for the reduced sample. That model is presented in Equation 4.

$$P(y_i = 1 | x_i) = \frac{\exp{(x'_i \beta)}}{1 + \exp{(x'_i \beta)}} \qquad (3)$$

where,

y_i is the *Emperor_mean* or *Emperor_median* of the i_{th} firm-CEO,

x_i is the vector of independent variables of the i_{th} firm-CEO, and

β is the vector of the estimated coefficients

$$ScaledAQC_i = \beta_0 + \beta_1 CEONarcScore_i + \sum_{j=2}^{J} \beta_j Control_{ij} + \alpha_k + \varepsilon_i \qquad (4)$$

For the second hypothesis testing of the C-suite narcissism acting as a moderating factor in the relation examined in Hypothesis 1, I augment Equations 3 and 4 with the *CSuiteNarcScore* as the second variable of interest, as well as the interaction term of the CEO and C-Suite narcissism (*CEONarcScore×CSuiteNarcScore)*. When introducing interaction or power terms, high correlation is anticipated, so I checked for multicollinearity among the regressors with the variance inflation factor (VIF). As expected, the VIFs of the two narcissism scores and their interaction term were high (>86). A usual practice to reduce the correlations is to "center" the variables (i.e., subtract their means) before creating the powers or the products. By doing so, all the VIFs fell below 2, drastically reducing the inflation of the standard errors. In the regression tables of the next section, I report the average VIF for each variable.

4.3 Multivariate Results

Hypothesis 1

Table 6 reports the results of H1 testing. As discussed in the Research Design section, models (2) and (4) are included for the sake of completeness and transparency, while model (5) can be considered "raw", because the *Emperor_mean* and *Emperor_median* variables are generated from *ScaledAQC*. Hence, the main focus of this research lies upon models (1) and (3) and especially upon the reduced sample where the noise from negative or zero acquisitions is minimized. All models include industry fixed effects. I do not present MacFadden's (or any other) pseudo-R^2 simply because we cannot observe the underlying latent variable *Empire-building tendency*, and therefore it is not possible to calculate what percentage of its variance a model explains. "*Most pseudo-R^2 measures have no intuitive interpretation for values other than 0 or 1. For example, a McFadden's pseudo-R^2 of 0.6 indicates a 60 percent increase in the log-likelihood function—a figure without obvious meaning*" (Hoekter, 2007, p.340).

Results show that CEO narcissism has a positive effect on the empire-building propensity in most models, however, the *CEONarcScore* is not statistically significant at conventional levels in none of the them, thus I reject the directional H1. The tests also show that firm size, as proxied by *LogAT*, adds to the empire-building tendency in the full sample, whereas in the reduced sample it diminishes it. Generally, I would expect the firm size to be positively related to the propensity (for the reason discussed in the Research Design – Control Variables section), however, the tests yield mixed evidence. Interestingly enough, an increase in "cash-richness", as proxied by *PropCH*, will lead to a big and significant reduction of the empire-building tendency in all five models; a result that contradicts prior empirical studies which show that

TABLE 6: EFFECT OF CEO NARCISSISM ON EMPIRE-BUILDING PROPENSITY

	VIF	Full sample		Reduced sample (AQC>0)		
		Emperor mean (1)	Emperor median (2)	Emperor mean (3)	Emperor median (4)	Scaled AQC (5)
Intercept		**-5.063******	**-2.929***	3.359	**4.260***	0.024
		(0.009)	(0.097)	(0.208)	(0.100)	(0.741)
CEONarcScore	1.36	0.291	-0.591	0.757	1.116	0.028
		(0.616)	(0.262)	(0.410)	(0.212)	(0.247)
ROA	1.38	1.324	**2.527***	-2.206	-1.691	**-0.192*****
		(0.364)	(0.053)	(0.374)	(0.474)	(0.004)
MVBV	1.46	-0.012	-0.003	-0.010	-0.017	0.000
		(0.350)	(0.799)	(0.587)	(0.311)	(0.934)
LogAT	1.64	**0.165***	**0.204****	**-0.325****	**-0.413*****	**-0.006***
		(0.056)	(0.011)	(0.013)	(0.001)	(0.093)
PropCH	1.57	**-2.187***	**-2.278****	**-7.234*****	**-7.143*****	**-0.164*****
		(0.089)	(0.038)	(0.002)	(0.000)	(0.001)
CEO Age	1.66	**0.053****	**0.046****	0.009	-0.002	0.001
		(0.017)	(0.022)	(0.779)	(0.944)	(0.472)
CEO Tenure	1.69	-0.025	**-0.033***	-0.038	-0.022	-0.001
		(0.189)	(0.059)	(0.204)	(0.421)	(0.135)
CEO Gender	1.31	0.175	0.447	-1.056	-1.265	-0.002
		(0.734)	(0.351)	(0.232)	(0.151)	(0.941)
Industry fixed effects		Yes	Yes	Yes	Yes	Yes
Num. Obs.		667	667	277	277	277
R^2						0.607
Adj. R^2						0.339

*Significance at the 10% level; **significance at the 5% level; *** significance at the 1% level.
Table shows logit regression results for columns 1:4 and OLS regression results for column 5. *CEONarcScore* is the variable of interest and accounts for the CEO narcissism level. It is created using the LIWC software and documented correlations between narcissism and the Big Five personality traits and between the Big Five personality traits and LIWC categories. *ROA* is the return on assets. *MVBV* is the market-to-book value of equity. *LogAT* is the natural logarithm of total assets. *PropCH* is the proportion of cash to total assets. *CEO Age* is the age of the CEO in years. *CEO Tenure* is the number of years the CEO has served the firm. *CEO Gender* is a binary variable that takes the value of 1 for males, and 0 for females. *Emperor_mean* is a binary variable that turns into 1 when the firm's value of scaled-acquisition is above the <u>mean</u> industry value (industry classification on the 3-digit SIC codes), and 0 otherwise. *Emperor_median* is a binary variable and turns into 1 when the firm's value of scaled-acquisition is above the <u>median</u> industry value (industry classification on the 3-digit SIC codes), and 0 otherwise. *ScaledAQC* is the scaled-acquisition and is computed by dividing a firm's acquisition cash flows by its market value. Estimators of each variable are reported on the top row, and p-values appear in brackets below each coefficient.

cash-rich firms are more likely to destroy value when making acquisitions (Hafford, 1999). *CEO Age* is likely to enhance empire-building, providing evidence that the tendency to engage in grandiose strategies increases as the CEO gets older. On the other hand, *CEO Tenure* is

shown to diminish the propensity. Maybe when CEOs become more experienced or their self-identity becomes more intertwined with that of the organization, they become either more aware or more reluctant to "over-acquire".

Hypothesis 2

To test whether C-suite narcissism has any moderating effect on the relation between CEO narcissism and empire-building, I augment all five models with the *CSuiteNarcScore* (the variable that measures the aggregate narcissism level of other C-suite officers that were present along with the CEO during the Q&A sessions of the earnings call events) and with the interaction term *CEONarcScore×CSuiteNarcScore*. As discussed in the Model Selection section, I de-meaned the *NarcScores* before computing their interaction term, leading to a VIF reduction from over 86 to below 2, substantially reducing multicollinearity.

Table 7 reports the results from the second group of regressions. The effect of the variable of interest *CEONarcScore* remains positive in four out of the five models, but once again at non-statistically significant levels. The *CSuiteNarcScore* is statistically non-significant across all models as well, indicating no marginal effect on the empire-building propensity. On the other hand, the interaction term *CEONarcScore×CSuiteNarcScore* displays a negative coefficient in most models and it is statistically significant at 10% (p-value 0.093) in model (3),[19] thus the non-directional H2 is rejected. However, according to Ai and Norton (2003) and Hoekter (2007), the interpretation of interaction terms in non-linear models are somewhat complicated and can often be unintuitive; "*A positive (negative) sign on an interaction term does not mean that there is always an enhancing (diminishing) relationship between the two variables.*" (Hoekter, 2007, p.337). Following Hoekter's (2007) best practice when interpreting interaction terms of non-linear models, I plot Equation 3 for model (3) in Figure 4 with the other variables held constant at meaningful levels. Figure 4 displays the effect of CEO narcissism on the empire-building propensity in three cases. In the first case, all other variables are held constant at their means,[20] while in the second case, variables are raised or lowered one standard deviation from their mean so as to minimize the probability of empire-building (i.e., regressors with positive coefficients are lowered, whereas those with negative coefficients are raised). The third case is the same as the second, just *vice versa* (maximize the probability). *CEONarcScore* ranges one standard deviation from its sample mean, and the high (low) degree of the *CSuiteNarcScore* is defined by adding (subtracting) one standard deviation to its sample mean. Notice that due to the "centering", the interaction term is defined as: [$CEONarcScore_i$ – mean($CEONarcScore$)] × [$CSuiteNarcScore_i$ – mean($CSuiteNarcScore$)], and therefore for an average value of *CEONarcScore* or *CSuiteNarcScore* the interaction term becomes zero. Results suggest that when *above*-average narcissistic CEOs interact with *above*-average narcissistic C-suite officers the empire-building propensity declines, whereas when *above*-average narcissistic CEOs interact with *below*-average narcissistic C-suite officers the

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[19] Model (3) is the most informative of all five models due to both the *Emperor_mean* dependent variable and the reduced sample that it is estimated on (see discussion in the Dependent Variables and Data sections, respectively).
[20] This does not mean an average effect though, and there might not be a single firm with all of its variables at sample mean values.

TABLE 7: C-SUITE NARCISSISM INTERACTION

|	VIF	Full sample		Reduced sample (AQC>0)		
		Emperor mean (1)	Emperor median (2)	Emperor mean (3)	Emperor median (4)	Scaled AQC (5)
Intercept		**-5.586*****	**-3.122***	4.224	4.184	0.031
		(0.005)	(0.086)	(0.136)	(0.124)	(0.689)
CEONarcScore	1.42	0.247	-0.657	0.949	0.853	0.028
		(0.681)	(0.223)	(0.325)	(0.362)	(0.255)
CSuiteNarcScore	1.40	0.419	0.255	-0.692	0.334	-0.002
		(0.420)	(0.579)	(0.388)	(0.670)	(0.909)
CEONarcScore×CSuiteNarcScore	1.33	-1.740	0.508	**-6.842***	-6.785	-0.119
		(0.426)	(0.791)	(0.093)	(0.135)	(0.240)
ROA	1.39	1.206	**2.497***	-1.975	-1.915	**-0.192*****
		(0.413)	(0.058)	(0.432)	(0.422)	(0.004)
MVBV	1.47	-0.014	-0.003	-0.011	-0.022	-0.000
		(0.292)	(0.780)	(0.567)	(0.195)	(0.972)
LogAT	1.65	**0.176****	**0.207****	**-0.331****	**-0.414*****	-0.005
		(0.042)	(0.010)	(0.013)	(0.001)	(0.107)
PropCH	1.56	**-2.163***	**-2.272****	**-7.403*****	**-7.232*****	**-0.165*****
		(0.093)	(0.039)	(0.001)	(0.000)	(0.001)
CEO Age	1.68	**0.051****	**0.045****	0.005	-0.005	0.000
		(0.023)	(0.029)	(0.869)	(0.869)	(0.578)
CEO Tenure	1.70	-0.024	**-0.032***	-0.038	-0.020	-0.001
		(0.221)	(0.070)	(0.213)	(0.459)	(0.156)
CEO Gender	1.32	0.202	0.462	-1.028	-1.263	-0.001
		(0.696)	(0.338)	(0.251)	(0.155)	(0.956)
Industry fixed effects		Yes	Yes	Yes	Yes	Yes
Num. Obs.		667	667	277	277	277
R^2						0.611
Adj. R^2						0.337

*Significance at the 10% level; **significance at the 5% level; *** significance at the 1% level.

Table shows logit regression results for columns 1:4 and OLS regression results for column 5. *CEONarcScore* and *CSuiteNarcScore* account for the CEO narcissism level and the aggregate narcissism level of the rest C-suite members, respectively. These are the variables of interest, along with their interaction term. *ROA* is the return on assets. *MVBV* is the market-to-book value of equity. *LogAT* is the natural logarithm of total assets. *PropCH* is the proportion of cash to total assets. *CEO Age* is the age of the CEO in years. *CEO Tenure* is the number of years the CEO has served the firm. *CEO Gender* is a binary variable that takes the value of 1 for males, and 0 for females. *Emperor_mean* is a binary variable that turns into 1 when the firm's value of scaled-acquisition is above the mean industry value (industry classification on the 3-digit SIC codes), and 0 otherwise. *Emperor_median* is a binary variable and turns into 1 when the firm's value of scaled-acquisition is above the median industry value (industry classification on the 3-digit SIC codes), and 0 otherwise. *ScaledAQC* is the scaled-acquisition and is computed by dividing a firm's acquisition cash flows by its market value.

propensity increases. It is important to note that the magnitude of the effect depends on the level of the other covariates. For example, in the mean-values firm case and for high *CSuiteNarcScore*, the propensity of empire-building decreases from 40.4% to 33.6% as the *CEONarcScore* goes from $\bar{x} - s$ to $\bar{x} + s$; a decrease of roughly 17%.[21] In the same case, but for a low *CSuiteNarcScore*, an alike *CEONarcScore* increase leads to a surge of the empire-building propensity from 32.4% to 58.3%; an 80% relative change.

Overall, results suggest that high narcissism level of other C-suite officers acts as a counterbalance to the CEO's empire-building tendency. Plausibly, narcissistic non-CEO officers undermine big acquisition decisions because they may feel that their image will diminish in the spotlight of such an event, by expecting the narcissistic CEO to take all the credit in terms of publicity and applause – of course, the capacity to undermine such decisions depends on other critical factors such as CEO power. Results of control variables remain almost identical to that of the previous set of regressions, both in magnitude and statistical significance. Adjusted R^2 of model (5) slightly decreased, indicating that the additional variable and the interaction term do not contribute to the *ScaledAQC* variance explanation. As with the previous set of models, *MVBV* and *CEO Gender* do not have any effect on the empire-building tendency.

FIGURE 4: INTERACTION TERM INTERPRETATION
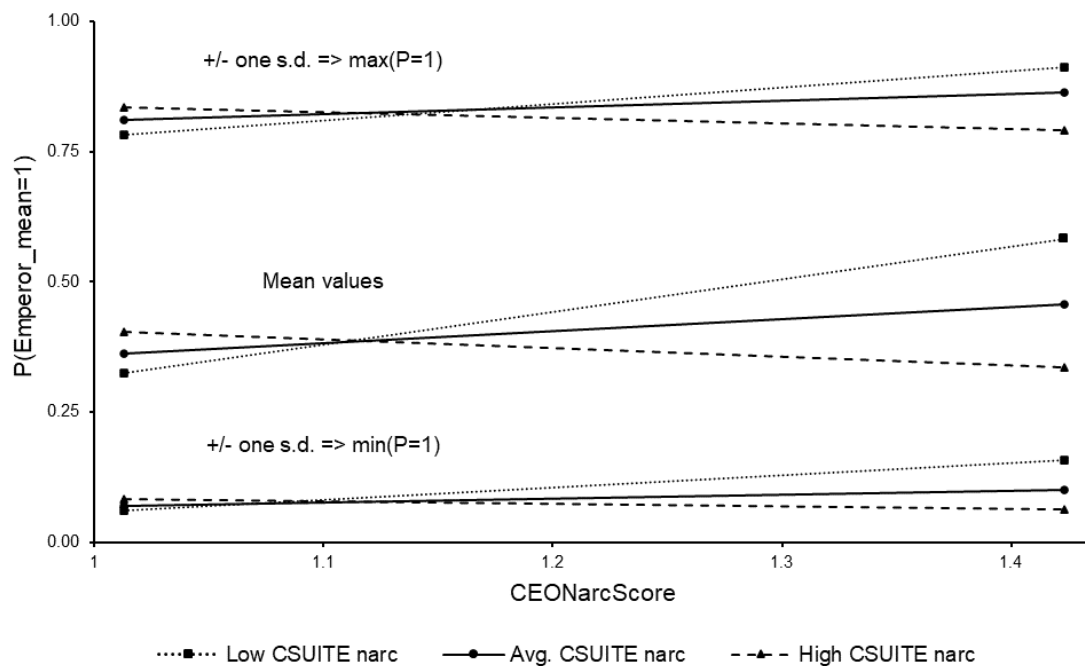
Graph shows:
$$p(y = 1|x) = \frac{x}{1+x}$$
where,
$x = \exp(4.224 + 0.949 \cdot CEONarcScore - 0.692 \cdot CSuiteNarcScore - 6.842 \cdot CEONarcScore \times CSuiteNarcScore$
$- 1.957 \cdot ROA - 0.011 \cdot MVBV - 0.331 \cdot LogAT - 7.403 \cdot PropCH + 0.005 \cdot Age - 0.038 \cdot Tenure - 1.028 \cdot Gender)$

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[21] Narcissism, as with any personality trait, is quite improbable to change that much. Instead, this could be seen as a change in CEO.

4.4 Robustness Tests

Different Industry Segregation

In hypotheses testing 1 and 2 I define the dependent variables *Emperor_mean* and *Emperor_median* by comparing each firm's *ScaledAQC* to the mean and median industry *ScaledAQC*, respectively. The industry segregation is based on the 3-digit SIC codes, which may seem narrow; there are 164 unique industries within the full sample and 105 within the reduced one, leading, on average, to about 4 and 2.6 firms per industry, respectively. To mitigate any bias from this narrow industry definition, I test Hypothesis 2 (the one with the significant result) by changing how industries are segregated. For the first test, I use the 2-digit SIC codes – that gives, on average, 12 firms per industry for the full sample and 7 firms per industry for the reduced sample. For the second test, I use the FF-12 codes – this practice gives, on average, roughly 56 firms per industry for the full sample and 23 for the reduced one. Overall, results remain robust to the different industry segregation tests: the interaction term coefficients (and p-values) of model (3) of the additional tests are -6.903 (0.048) and -7.761 (0.021), while the interaction term coefficient (and p-value) of the initial test is -6.842 (0.093). Panels A & B of Table 8 present the regression output, while Figures 5 and 6 provide the graphical interpretation as in the previous section.

Binary NarcScores

Results of hypothesis testing 2 are based on continuous *NarcScore* variables but their interpretation is illustrated in a *de facto* binary manner ($+/-1$ standard deviation from the mean being above or below average narcissistic). To check whether results hold against a binary independent variable, I create the *CEONarcScoreBinary* and *CSuiteNarcScoreBinary* dummy variables, which turn into 1 if their continuous values are above their respective mean, and 0 otherwise; 50.5% of the CEOs and 54% of the C-suites in the full sample, and 51.3% of the CEOs and 50% of the C-suites in the reduced sample are classified as *above*-mean narcissistic. I am not de-meaning the binary interaction term. This additional test yields the same results as that of the initial H1 and H2 tests,[22] but with two exceptions for H2: (i) the interaction term becomes significant in model (1) as well (coefficient -0.736; p-value 0.078), and (ii) the *CEONarcScoreBinary* shows statistical significance in model (3) (coefficient 1.139; p-value 0.012), further reinforcing the joint effect findings of the previous section, but also providing evidence for a marginal effect from the CEO narcissism. For example, these results suggest that if a firm that previously employed a *below*-average narcissistic CEO, but has changed to an *above*-average narcissistic one – and given all other covariates at mean values and *CSuiteNarcScoreBinary* at 0 – the CEO's narcissism alone increases the empire-building propensity from 37.2% to 65%; an increase of 27.8 percentage point or roughly 75%. On the other hand, when the *CSuiteNarcScoreBinary* is 1, and the same CEO change occurs, the bigger (in absolute terms) interaction term coefficient drives the empire-building propensity from 40.8% to 37.2%; a drop of 3.6 percentage points or 9%. Panel C of Table 8 presents the regression output, while Figure 7 provides the interaction term interpretation.

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[22] For the sake of space, H1 results are not tabulated.

TABLE 8: ROBUSTNESS TESTS

Panel A: Industry defined by 2-digit SIC codes

| | VIF | Full sample | | Reduced sample (AQC>0) | | |
		Emperor mean (1)	Emperor median (2)	Emperor mean (3)	Emperor median (4)	Scaled AQC (5)
Intercept		-1.575	-2.200	**5.484****	**5.052****	0.079
		(0.334)	(0.106)	(0.034)	(0.023)	(0.246)
CEONarcScore	1.31	-0.443	-0.419	0.524	-0.473	0.024
		(0.434)	(0.367)	(0.537)	(0.521)	(0.290)
CSuiteNarcScore	1.28	0.717	0.138	-1.051	0.834	-0.007
		(0.130)	(0.724)	(0.150)	(0.191)	(0.713)
CEONarcScore× CSuiteNarcScore	1.28	-1.912	0.775	**-6.903****	-3.313	-0.110
		(0.347)	(0.637)	(0.048)	(0.287)	(0.217)
Firm-level controls		Yes	Yes	Yes	Yes	Yes
CEO-level controls		Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes
Num. obs.		667	667	277	277	277
R^2						0.349
Adj. R^2						0.212

Panel B: Industry defined by FF-12 codes

| | VIF | Full sample | | Reduced sample (AQC>0) | | |
		Emperor mean (1)	Emperor median (2)	Emperor mean (3)	Emperor median (4)	Scaled AQC (5)
Intercept		-1.981	**-2.759****	**4.533***	**3.690***	**0.214*****
		(0.204)	(0.027)	(0.066)	(0.071)	(0.002)
CEONarcScore	1.20	-0.254	-0.622	0.587	-0.639	0.011
		(0.641)	(0.150)	(0.462)	(0.353)	(0.634)
CSuiteNarcScore	1.20	0.652	0.105	-1.018	0.774	-0.020
		(0.144)	(0.768)	(0.150)	(0.187)	(0.294)
CEONarcScore× CSuiteNarcScore	1.13	-1.429	0.608	**-7.761****	-1.327	-0.102
		(0.430)	(0.684)	(0.021)	(0.626)	(0.237)
Firm-level controls		Yes	Yes	Yes	Yes	Yes
CEO-level controls		Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes
Num. obs.		667	667	277	277	277

TABLE 8 (CONTINUED)

R^2					0.182
Adj. R^2					0.115

Panel C: Binary NarcScores

|		Full sample		Reduced sample (AQC>0)		
	VIF	Emperor mean (1)	Emperor median (2)	Emperor mean (3)	Emperor median (4)	Scaled AQC (5)
Intercept		**-3.587*****	**-3.403*****	1.061	2.952	**0.107***
		(0.010)	(0.009)	(0.572)	(0.177)	(0.068)
CEONarcScoreBinary	2.95	0.452	-0.128	**1.139****	0.556	0.010
		(0.134)	(0.652)	(0.012)	(0.300)	(0.463)
CSuiteNarcScoreBinary	2.16	0.151	-0.002	0.150	-0.076	-0.011
		(0.606)	(0.993)	(0.707)	(0.869)	(0.365)
CEONarcScoreBinary× CSuiteNarcScoreBinary	4.39	**-0.736***	-0.096	**-1.292****	-0.623	-0.012
		(0.078)	(0.805)	(0.035)	(0.378)	(0.531)
Firm-level controls		Yes	Yes	Yes	Yes	Yes
CEO-level controls		Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes
Num. obs.		667	667	277	277	277
R^2						0.353
Adj. R^2						0.217

*Significance at the 10% level; **significance at the 5% level; *** significance at the 1% level.

Table shows logit regression results for columns 1:4 and OLS regression results for column 5, for different industry definitions (Panels A & B) and binary *NarcScores* (Panel C). *CEONarcScore* and *CSuiteNarcScore* account for the continuous CEO narcissism measurement and the continuous aggregate narcissism measurement of the rest C-suite members, respectively. *CEONarcScoreBinary* and *CSuiteNarcScoreBinary* account for the binary CEOs narcissism measurement and the binary aggregate narcissism measurement of the rest C-suite members, respectively; they turn into 1 when their continuous values are above the respective mean value, and 0 otherwise. These are the variables of interest, along with their interaction term. *Emperor_mean* is a binary variable that turns into 1 when the firm's value of scaled-acquisition is above the <u>mean</u> industry value (Panel A: industry classification on the 2-digit SIC codes; Panel B: industry classification on the FF-12 codes), and 0 otherwise. *Emperor_median* is a binary variable and turns into 1 when the firm's value of scaled-acquisition is above the <u>median</u> industry value (Panel A: industry classification on the 2-digit SIC codes; Panel B: industry classification on the FF-12 codes), and 0 otherwise. *ScaledAQC* is the scaled-acquisition and is derived by dividing a firm's acquisitions cash flows by its market value. All models include the set of firm-level control variables (i.e., *ROA*, *LogAT*, *MVBM*, *PropCH*), the set of CEO-level control variables (i.e., *CEO Age*, *CEO Tenure*, *CEO Gender*), and industry fixed effects. To the left of the models are presented the average variance inflation factors (VIF) as a multicollinearity indicator. Estimators of each variable are reported on the top row, and p-values appear in brackets below each coefficient.
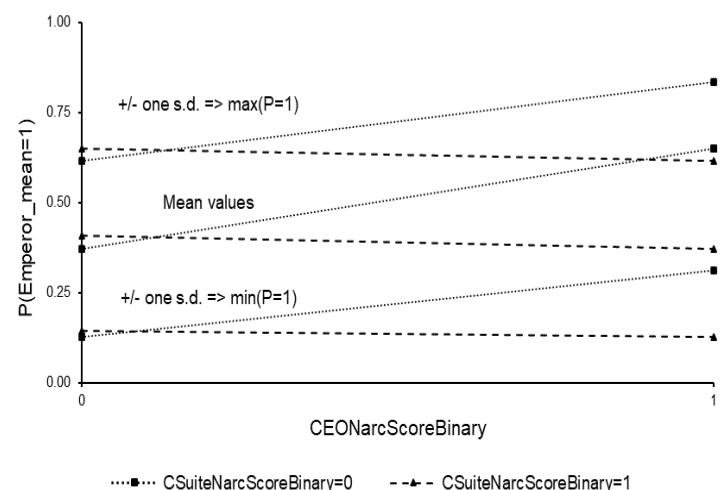
FIGURE 5: INTERACTION TERM INTERPRETATION
(Industry segregation on 2-digit SIC codes)
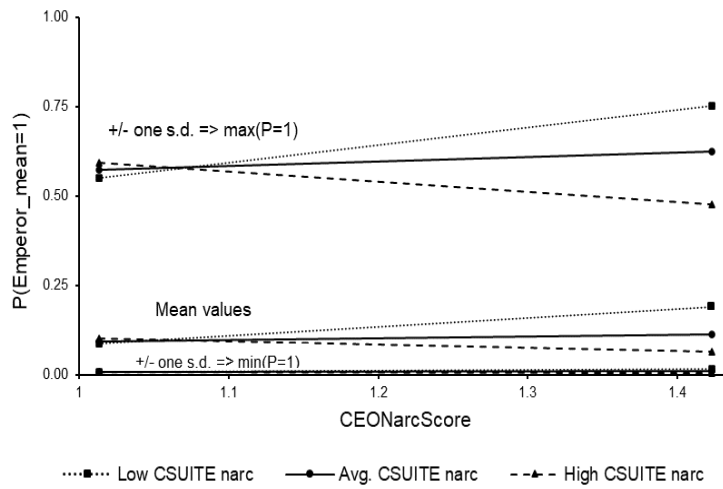
FIGURE 6: INTERACTION TERM INTERPRETATION
(Industry segregation on FF-12 codes)
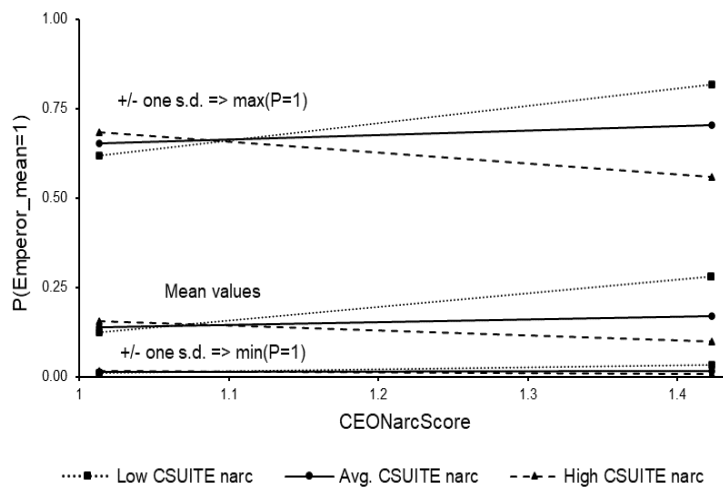
FIGURE 7: INTERACTION TERM INTERPRETATION
(Binary NarcScores)

V. Conclusion

Narcissistic individuals require a steady stream of self-image reinforcement and applause at frequent intervals (Buss and Chiodo, 1991). To obtain such applause, narcissists must regularly undertake challenging or bold tasks that are visible to a respected audience (Wallace and Baumeister, 2002). In addition, narcissists are inclined to perceive life as a series of contests (Wallace and Baumeister, 2002) and therefore may be more favorably disposed to competing (Carter et al., 2015). Acquisitions are not only highly media-covered events, but they can also offer a layer of competition that narcissists would crave to be a part of. Moreover, it is well acknowledged that managers do not always make shareholder value-maximizing acquisitions, leading to empire-building tendencies, i.e., excessive or irrational acquisition activity (Jensen, 1986). By constructing a novel way of measuring narcissism through textual analysis of earnings call events, I examine the relation between CEO narcissism and empire-building, and the moderating effect of the other C-suite officers' narcissism on that relation. Empire-builders are "identified" by comparing each firm's scaled-acquisition (i.e., acquisition cash flows divided by the firm's market capitalization) with their respective mean/median industry value. I find that there is no marginal effect on empire-building, neither from the CEOs' nor from the other C-suites officers' narcissism. Nevertheless, there is a joint effect – significant interaction term. Firms employing *above*-average narcissistic CEOs but *below*-average narcissistic C-suite officers, could expect an increase in the empire-building tendency. On the other hand, when all the C-suite executives are *above*-average narcissistic, firms could expect a tendency decrease. The magnitude of the effect though dependents on other firm- and CEO-level characteristics. Results are robust to different industry segregation and to categorical narcissism measurement scale.

My work is not free from limitations. First, despite the appeal of computerized language measures, they are still quite crude. Programs such as LIWC ignore context, irony, sarcasm, and idioms. For example, the word "mad", is coded as an anger word. When people say things such as "I'm mad about him" the meaning and intent of their utterances will be miscoded. LIWC, like any computerized text analysis program, is a probabilistic system and noise within my narcissism measurement is inevitable. Second, since I make use of three different studies to create a novel narcissism measurement, their limitations become mine as well. For example, Raskin and Hall (1979), who developed the NPI, recognize that social desirability bias is something unavoidable, as is the case with any forced-choice questionnaires. In their association study about narcissism and the Big Five personality traits, Paulhus and Williams (2002) sample psychology undergraduates, and the associations of the Big Five and LIWC word categories, that Yarkoni (2010) finds, are based on bloggers and their writings: not CEOs, nor spoken words turned into transcripts. Third, a key assumption that I make when defining the empire-building dummies is that there is, on average, a high level of "acquisition rationality" within industries, so that "irrational acquirers" can be compared to a "solid" benchmark. For example, if all the firms within an industry experience an M&A frenzy, only those above the mean/median *ScaledAQC* will be classified as empire-builders, while in reality, all of them are. Finally, because Compustat and ExecuComp are the two main data sources that

I use in this study, firms in my sample are public, relatively big, and mainly U.S. incorporated, thus generalization of my results to private, small, or non-U.S. firms may not be applicable.

Since narcissism is a multidimensional concept, several avenues for further research remain. To the best of my knowledge, something that has not been tried out yet in the CEO narcissism research is a blend of textual analysis-oriented measurements with the "classic" ones originally proposed by Chatterjee and Hambrick (2007) (e.g., photograph size, relative compensation, etc.). Such a mix of scores may offer a higher internal validity measurement, since the unalike nature of the scores can probably capture different aspects of narcissism's manifestation. On the other side of the equation, excessive M&A proxies based on *goodwill impairments* could potentially capture the value-destroying empire-building construct at a higher degree.

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APPENDIX A

Variable definition

Variable	Variable description	Data source
AT	Total assets	Compustat
AQC	Acquisitions, net of cash acquired, and other	Compustat
CEONarcScore	Unobtrusive measurement of CEO narcissism	Own computation
CEO Age	The age of the CEO in years	ExecuComp
CEO Gender	Dummy variable that takes the value 1 if the CEO is male, and 0 if the CEO is female	ExecuComp
CEO Tenure	The tenure of the CEO in years	ExecuComp
CH	Cash	Compustat
CSuiteNarcScore	Unobtrusive measurement of the aggregate non-CEO C-suite members narcissism	Own computation
Emperor_mean	Dummy variable that takes the value 1 when the firm's *ScaledAQC* is greater than the mean industry *ScaledAQC*, and 0 otherwise	Own computation
Emperor_median	Dummy variable that takes the value 1 when the firm's *ScaledAQC* is greater than the median industry *ScaledAQC*, and 0 otherwise	Own computation
LogAT	The natural logarithm of total assets	Compustat
MKVALT	Market capitalization as of fiscal year-end	Compustat
MVBV	Market-to-book value ratio	Compustat
PropCH	The proportion of cash to total assets	Compustat
ROA	Return on assets	Compustat
ScaledAQC	Acquisitions, net of cash acquired, and other divided by the market capitalization	Compustat
SEQ	Shareholders' equity	Compustat

APPENDIX B

Literature review table of CEO narcissism on organizational outcomes

Authors (Year)	Topic / Focus / Question	Narcissism Measurement	Context / Sample	Findings
Chatterjee and Hambrick (2007)	Pioneered the CEO narcissism research with their unobtrusive measures of narcissism; examined the relationship between narcissism and strategic dynamism, performance extremeness, number and size of acquisitions.	5-item Narcissism Score (NS)	Computer software & hardware – U.S. 111 CEOs 105 firms 1992-2004	Narcissism in CEOs is positively related to strategic dynamism and grandiosity, as well as the number and size of acquisitions, and it engenders extreme and fluctuating organizational performance.
Rijsenbilt and Commandeur (2013)	This study explores the aspects of the relationship between possible indicators of CEO narcissism and fraud.	15-item NS	S&P500 – U.S. 953 CEOs 1992-2008	The findings confirm the expected influence of plausible proxies for CEO narcissism on fraud (as proxied by Accounting and Auditing Enforcement Releases (AAER) that are published by the SEC) by showing a positive relationship.
Reina, Zhang, and Peterson (2014)	The study reconciles the positive and negative sides of CEO grandiose narcissism by examining the role that CEO organizational identification plays in moderating the effect of CEO grandiose narcissism on top management team (TMT) behavioral integration.	16-item Narcissistic Personality Inventory (NPI)	Computer software & hardware – U.S. 97 CEOs 97 firms	Found that when narcissistic CEOs (do not) define themselves in terms of the attributes of their organizations, their narcissism is (detrimental) beneficial to TMT behavioral integration and ultimately to firm performance.
Aktas et al. (2016)	Investigate the relationship between acquirer CEOs' narcissism and deal initiation/negotiation speed; target CEOs' narcissism and bid premium; both side CEOs' narcissism and the probability of deal completions.	Proportion of first-person singular pronouns to total first-person pronouns.	Public firms – U.S. 146 CEOs 2002-2006	The authors find that among acquiring CEOs, narcissism is associated with initiating deals and negotiating faster; more narcissistic target CEOs obtain higher bid premiums; higher narcissism in both target and acquirer CEOs is associated with a lower probability of deal completion.
Petrenko et al. (2016)	Hypothesize that CEO narcissism has positive effects on levels and profile of organizational CSR; additionally, CEO narcissism will reduce the effect of CSR on performance.	Third-party ratings of video samples of CEOs.	S&P500 excl. financial, insurance, and utilities – U.S. 2007-until end of tenure 1,004 CEO-year obs.	Show that the CSR of firms can be significantly affected by CEO narcissism; also show that the positive relationship between CSR and firm performance is weaker for firms with more narcissistic CEOs.

Kashmiri, Nicol, and Arora (2017)	Examines the relationship between narcissistic personality characteristics in CEOs and firms' innovation outcomes.	4-item NS	U.S. 395 firms 2006-2010	Results indicate that firms with narcissistic CEOs introduce significantly more new products and exhibit a greater proportion of radical innovations in their new product portfolios. However, such firms are also more likely to encounter a product-harm crisis.
Buyl et al. (2017)	Investigate how CEO narcissism, in combination with corporate governance practices, impacts organizational risk-taking and how this in turn affects organizations' resilience to environmental conditions	6-item NS	Banking – U.S. 92 CEOs 92 firms 2006-2008	Before the 2008 financial crisis, CEO narcissism positively affected the riskiness of banks' policies; the positive effect of narcissism was dampened, when board monitoring was more effective; banks led by more narcissistic CEOs before the September 2008 collapse experienced a slower recovery to pre-shock performance levels.
Capalbo et al. (2018)	The authors test the hypothesis that narcissistic leaders over-identify themselves with the organizations they lead and expend considerable effort to achieve their goals, including by engaging in unethical behavior (earnings management).	Proportion of first-person singular pronouns to total first-person pronouns.	NYSE – U.S. 936 firms 2008-2012	The study provides evidence that firms with narcissistic CEOs engage in accruals management to manage earnings positively.
Marquez-Illescas et al. (2019)	The authors hypothesize that CEO narcissism has a positive effect on the tone of earnings announcements and that the positive effect of CEO narcissism on the tone of earnings announcements is lower in firms led by an older CEO.	3-item NS	Fortune 500 – U.S. 280 firms 215 CEOs 1996-2014	The study shows that qualitative disclosures in firms with narcissistic leaders will be biased upward; the bias will moderate as CEOs become older.
Cragun, Olsen, and Wright (2020)	A combined meta-analytic and narrative review of CEO narcissism.	n.a.	n.a.	The review identifies five methods of measuring CEO narcissism, each with strengths and weaknesses. The authors find that while extant findings exhibit common themes, such findings remain mixed and potentially dependent upon methods.

Correlations between the Big Five personality traits and LIWC categories from Yarkoni (2010)

LIWC category	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Total pronouns	0.06	0.06	−0.21***	0.11**	−0.02
First-person sing.	0.12**	0.01	−0.16***	0.05	0
First-person plural	−0.07	0.11**	−0.1*	0.18***	0.03
First-person	0.1*	0.03	−0.19***	0.08*	0.02
Second person	−0.15***	0.16***	−0.12**	0.08	0
Third person	0.02	0.04	−0.06	0.08	−0.08
Negations	0.11**	−0.05	−0.13**	−0.03	−0.17***
Assent	0.05	0.07	−0.11**	0.02	−0.09*
Articles	−0.11**	−0.04	0.2***	0.03	0.09*
Prepositions	−0.04	−0.04	0.17***	0.07	0.06
Numbers	−0.07	−0.12**	−0.08*	0.11*	0.04
Affect	0.07	0.09*	−0.12**	0.06	−0.06
Positive emotions	−0.02	0.1*	−0.15***	0.18***	0.04
Positive feelings	0.01	0.11*	−0.11**	0.14**	−0.02
Optimism	−0.08*	0.05	0	0.15***	0.16***
Negative Emotions	0.16***	0.04	0	−0.15***	−0.18***
Anxiety	0.17***	−0.03	−0.02	−0.03	−0.05
Anger	0.13**	0.03	0.03	−0.23***	−0.19***
Sadness	0.1*	0.02	−0.03	0.01	−0.11*
Cognitive Processes	0.13**	−0.06	−0.09*	−0.05	−0.11**
Causation	0.11**	−0.09*	−0.02	−0.11**	−0.12**
Insight	0.08	0	−0.08	0.01	−0.05
Discrepancy	0.13**	−0.07	−0.12**	−0.04	−0.13**
Inhibition	0.09*	−0.13**	−0.07	−0.08	−0.05
Tentative	0.12**	−0.11*	−0.06	−0.07	−0.1*
Certainty	0.13**	0.1*	−0.06	0.05	−0.1*
Sensory processes	0.05	0.09*	−0.11**	0.05	−0.1*
Seeing	−0.01	0.03	−0.04	0.09*	0.01
Hearing	0.02	0.12**	−0.08*	0.01	−0.12**
Feeling	0.1*	0.06	−0.01	0.1*	−0.05
Social processes	−0.06	0.15***	−0.14***	0.13**	−0.04
Communication	0	0.13**	−0.06	0.02	−0.07
Other references	−0.08*	0.15***	−0.14***	0.15***	−0.02
Friends	−0.08*	0.15***	−0.01	0.11**	0.06
Family	−0.07	0.09*	−0.17***	0.19***	0.05
Humans	−0.05	0.13**	−0.09*	0.07	−0.12**
Time	0.01	−0.02	−0.22***	0.12**	0.09*
Past tense Vb.	0.03	−0.01	−0.16***	0.1*	0
Present tense Vb.	0.06	−0.01	−0.16***	0	−0.06
Future Tense Vb.	−0.02	−0.06	−0.08	−0.01	−0.01
Space	−0.09*	0.02	−0.11**	0.16***	0.04
Up	−0.1*	0.09*	−0.15***	0.11**	0.09*
Down	−0.04	−0.02	−0.11**	0.11**	0.06
Inclusive	−0.02	0.09*	0.11**	0.18***	0.07
Exclusive	0.1*	−0.06	0	−0.07	−0.16***
Motion	−0.02	0.02	−0.22***	0.14***	0.04
Occupation	0.05	−0.12**	0.01	−0.04	0.06
School	0.06	−0.07	0.02	−0.01	−−0.04
Job/work	0.07	−0.08*	0.04	−0.07	0.07
Achievement	0.01	−0.09*	−0.05	0.05	0.14***
Leisure	−0.05	0.08*	−0.17***	0.15***	0.06
Home	0	0.03	−0.2***	0.19***	0.05
Sports	−0.01	0.05	−0.14***	0.06	0
TV/movies	−0.02	0.05	0.05	−0.05	−0.06
Music	−0.02	0.13**	0.04	0.08*	−0.11**
Money/finance	0.04	−0.04	−0.04	−0.11**	−0.08
Metaphysical	−0.01	0.08	0.07	−0.01	−0.08
Religion	−0.03	0.11**	0.05	0.06	−0.04
Death	0.03	0.01	0.15***	−0.13**	−0.12**
Physical states	0.03	0.14***	−0.09*	0.09*	−0.05
Body states	0.02	0.1*	−0.04	0.09*	−0.07
Sexuality	0.03	0.17***	0	0.08*	−0.06
Eating/drinking	−0.01	0.08	−0.15***	0.03	−0.04
Sleep	0.1*	0.02	−0.14***	0.11**	−0.03
Grooming	0.05	−0.01	−0.2***	0.07	−0.05
Swear words	0.11**	0.06	0.06	−0.21***	−0.14**

Underlined coefficients are statistically significant at FDR = .05. All correlations are based on a minimum *N* of 576.

* = p<.05 ** = p<.01 *** = p<.001

APPENDIX D

Narcissistic Personality Inventory (NPI) questionnaire

1. A. I have a natural talent for influencing people.   B. I am not good at influencing people.
2. A. Modesty doesn't become me.   B. I am essentially a modest person.
3. A. I would do almost anything on a dare.   B. I tend to be a fairly cautious person.
4. A. When people compliment me, I sometimes getembarrassed.   B. I know that I am good because everybody keeps telling me so.
5. A. The thought of ruling the world frightens the hell out of me.   B. If I ruled the world, it would be a better place.
6. A. I can usually talk my way out of anything.   B. I try to accept the consequences of my behavior.
7. A. I prefer to blend in with the crowd.   B. I like to be the center of attention.
8. A. I will be a success.   B. I am not too concerned about success.
9. A. I am no better or worse than most people.   B. I think I am a special person.
10. A. I am not sure if I would make a good leader.   B. I see myself as a good leader.
11. A. I am assertive.   B. I wish I were more assertive.
12. A. I like to have authority over other people.   B. I don't mind following orders.
13. A. I find it easy to manipulate people.   B. I don't like it when I find myself manipulating people.
14. A. I insist upon getting the respect that is due to me.   B. I usually get the respect that I deserve.
15. A. I don't particularly like to show off my body.   B. I like to show off my body.
16. A. I can read people like a book.   B. People are sometimes hard to understand.
17. A. If I feel competent, I am willing to take responsibility formaking decisions.   B. I like to take responsibility for making decisions.
18. A. I just want to be reasonably happy.   B. I want to amount to something in the eyes of the world.
19. A. My body is nothing special.   B. I like to look at my body.
20. A. I try not to be a show-off.   B. I will usually show off if I get the chance.
21. A. I always know what I am doing.   B. Sometimes I am not sure of what I am doing.
22. A. I sometimes depend on people to get things done.   B. I rarely depend on anyone else to get things done.
23. A. Sometimes I tell good stories.   B. Everybody likes to hear my stories.
24. A. I expect a great deal from other people.   B. I like to do things for other people.
25. A. I will never be satisfied until I get all that I deserve.   B. I take my satisfactions as they come.
26. A. Compliments embarrass me.   B. I like to be complimented.
27. A. I have a strong will to power.   B. Power for its own sake doesn't interest me.
28. A. I don't care about new fads and fashions.   B. I like to start new fads and fashions.
29. A. I like to look at myself in the mirror.   B. I am not particularly interested in looking at myself in the
30. A. I really like to be the center of attention.   B. It makes me uncomfortable to be the center of attention.
31. A. I can live my life in any way I want to.   B. People can't always live their lives in terms of what they
32. A. Being an authority doesn't mean that much to me.   B. People always seem to recognize my authority.
33. A. I would prefer to be a leader.   B. It makes little difference to me whether I am a leader or not.
34. A. I am going to be a great person.   B. I hope I am going to be successful.
35. A. People sometimes believe what I tell them.   B. I can make anybody believe anything I want them to.
36. A. I am a born leader.   B. Leadership is a quality that takes a long time to develop.
37. A. I wish somebody would someday write my biography.   B. I don't like people to pry into my life for any reason.
38. A. I get upset when people don't notice how I look when I goout in public.   B. I don't mind blending into the crowd when I go out in public.
39. A. I am more capable than other people.   B. There is a lot that I can learn from other people.
40. A. I am much like everybody else.   B. I am an extraordinary person.

Big Five Index (BFI) questionnaire

		Disagree a lot				Agree a lot
1.	Talks a lot	1	2	3	4	5
2.	Notices other people's weak points	1	2	3	4	5
3.	Does things carefully and completely	1	2	3	4	5
4.	Is sad, depressed	1	2	3	4	5
5.	Is original, comes up with new ideas	1	2	3	4	5
6.	Keeps their thoughts to themselves	1	2	3	4	5
7.	Is helpful and not selfish with others	1	2	3	4	5
8.	Can be kind of careless	1	2	3	4	5
9.	Is relaxed, handles stress well	1	2	3	4	5
10.	Is curious about lots of different things	1	2	3	4	5
11.	Has a lot of energy	1	2	3	4	5
12.	Starts arguments with others	1	2	3	4	5
13.	Is a good, hard worker	1	2	3	4	5
14.	Can be tense; not always easy going	1	2	3	4	5
15.	Clever; thinks a lot	1	2	3	4	5
16.	Makes things exciting	1	2	3	4	5
17.	Forgives others easily	1	2	3	4	5
18.	Isn't very organized	1	2	3	4	5
19.	Worries a lot	1	2	3	4	5
20.	Has a good, active imagination	1	2	3	4	5
21.	Tends to be quiet	1	2	3	4	5
22.	Usually trusts people	1	2	3	4	5
23.	Tends to be lazy	1	2	3	4	5
24.	Doesn't get upset easily; steady	1	2	3	4	5
25.	Is creative and inventive	1	2	3	4	5
26.	Has a good, strong personality	1	2	3	4	5
27.	Can be cold and distant with others	1	2	3	4	5
28.	Keeps working until things are done	1	2	3	4	5
29.	Can be moody	1	2	3	4	5
30.	Likes artistic and creative experiences	1	2	3	4	5
31.	Is kind of shy	1	2	3	4	5
32.	Kind and considerate to almost everyone	1	2	3	4	5
33.	Does things quickly <u>and</u> carefully	1	2	3	4	5
34.	Stays calm in difficult situations	1	2	3	4	5
35.	Likes work that is the same every time	1	2	3	4	5
36.	Is outgoing; likes to be with people	1	2	3	4	5
37.	Is sometimes rude to others	1	2	3	4	5
38.	Makes plans and sticks to them	1	2	3	4	5
39.	Get nervous easily	1	2	3	4	5
40.	Likes to think and play with ideas	1	2	3	4	5
41.	Doesn't like artistic things (plays, music)	1	2	3	4	5
42.	Likes to cooperate; goes along with others	1	2	3	4	5
43.	Has trouble paying attention	1	2	3	4	5
44.	Knows a lot about art, music, and books	1	2	3	4	5

Scoring instructions can be found at: *https://arc.psych.wisc.edu/self-report/big-five-inventory-bfi*

Narcissism measurement reliability

Panel A: Cronbach's alpha

	CEONarcScore		*CSuiteNarcScore*	
Items	32	3	32	4
Sample units	4254	4254	4254	4254
Alpha	0.03	0.89	0.02	0.77

Panel B: PCA

	CEONarcScore		*CSuiteNarcScore*	
Dim.1	*Eigenvalue 4.49*	Factor loading	*Eigenvalue 4.41*	Factor loading
	We	12.76	We	14.72
	Self	15.65	Self	16.48
	OtherRef	18.00	OtherRef	18.96
			Motion	0.77

Cronbach's alpha ranking:
>0.9: Excellent   >0.6: Questionable
>0.8: Good   >0.5: Poor
>0.7: Acceptable <0.5: Unacceptable

Panel A shows how the *CEONarcScore*'s and the *CSuiteNarcScore*'s Cronbach's alpha (i.e., the internal consistency or reliability measurement of a latent variable) improves by reducing the number of measurement items from 32 to 3 and 4, respectively.

Panel B shows the selective results of principal component analysis (PCA). All factor loadings are well above the cut-off value of ~0.03(=1/32) meaning that their contribution to the explanation of the latent variable of narcissism is very high. Eigenvalues of 4.49 and 4.41 in this setting translate to 14.05% and 13.79%, respectively, of explained variation within the whole analyzed data.