

**THE CONSEQUENCES OF BEING YOURSELF: AN ANALYSIS OF THE IMPACT
OF CEO TRAITS ON THEIR DISMISSAL AND COMPENSATION**

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DEDICATION

This dissertation is dedicated to my family and friends without whom I would never be where I am today in so many aspects of my life. To my Mom who always told me I could be anything I wanted to be in this life and who taught me to find endless joy in education, I owe you forever for those lessons. Special thanks to my husband Rudy for tirelessly supporting my every dream and ambition with gusto. To my new son Cash: I hope that you will always follow your dreams, no matter how long or difficult of a road they require. Your Dad and I will always be your biggest supporters, and we can't wait to see how you will blow us all away.

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This three-paper dissertation draws from literatures on leadership (i.e. implicit leadership theory), psychology (i.e. personality and motivation theories), CEO compensation, Boards of Directors, gender differences, and CEO dismissal to develop theory regarding how previously under-researched individual attributes of CEOs influence important outcomes like CEO compensation and the risk of CEO dismissal. These papers will test the conceptual models for each paper using measures that rely on machine-learning-based and hand-collected data approaches. We find in Study one that the personality and motivational traits of CEOs interact (i.e. channeling theory) to increase their likelihood of being fired. Specifically, CEOs who are highly open to experience or neurotic are more likely to be fired. CEOs with a high need for affiliation are marginally more likely to be fired, but when combined with the traits of openness or neuroticism, are significantly more likely to be dismissed. Study two finds that CEOs who are higher in openness or agreeableness receive higher compensation. Study three finds that the amount of females on a CEO's Board of Directors moderates the positive relationship between CEO agreeableness and compensation by strengthening the relationship; in other words, when there are more females on a BOD, more agreeable CEO's make more money. Together, the work in this dissertation means to contribute to the growing field on how the individual differences of top executives influence the outcomes of themselves and their organization.

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**PAPER I. “IT’S NOT YOU, IT’S ME”: HOW CEO NEED FOR AFFILIATION,
OPENNESS TO EXPERIENCE, AND NEUROTICISM INFLUENCE CEO DISMISSAL**

ABSTRACT

This paper advances research on executive leadership by considering how two types of CEO psychological traits, motivational and personality traits, influence the likelihood that a CEO will be dismissed. Drawing on McClelland's seminal theory of needs-based motivation and the highly influential Big Five theory of personality, we argue that CEOs who are high in the need for affiliation, openness to experience, or neuroticism will be at greater risk of dismissal, because these attributes will be viewed by the Board of Directors as characteristics that violate prevailing implicit theories of effective executive leadership. We also extend our theoretical framework by utilizing the tenets of channeling theory to consider how the interaction of CEO motivations and personality traits affect the likelihood of being fired. We test our model utilizing a unique dataset that combines machine learning-based measures of CEO traits with hand-collected data on CEO dismissals across multiple years, and we find considerable support for our predictions. We also compare our results with a matching analysis based on a recently published database of CEO turnover events, and we see highly consistent results. We contribute to research on executive leaders, especially research on CEO dismissal and CEO personality and motivational traits.

INTRODUCTION

Efforts to identify and explain the causes and consequences of CEO turnover have been a long-term mainstay of scholarly research on executive leaders. Interest in CEO turnover has been motivated in no small part by the fact that the turnover of chief executives tends to have significant negative implications for organizations. The turnover of CEOs has been linked to unfortunate trickle-down outcomes such as: the delay or halt of important workplace activities, detrimental service reductions, organizational cost-cutting, wide-spread staff reductions, and an overall decrease in employee morale (Khaliq, Thompson, & Walston, 2006), as well as competitive disadvantage, drop in the quality and quantity of services rendered, decreased performance, turnover of other executives, and a 10 percent increase in stock price volatility the following year (Clayton, Hartzell, & Rosenberg, 2005; Khaliq et al., 2006).

While CEO turnover in general tends to be harmful in important respects, it tends to be especially detrimental when the turnover is involuntary, or in other words, when the CEO is dismissed. Parrino and colleagues found that institutional investors showed a greater tendency to abandon the stock of firms where CEOs were dismissed compared to companies where CEOs left voluntarily (2003). In a similar vein, Dedman and Lin (2002) found that the stock market reacts much more negatively when CEO turnover is involuntary. Despite the clear negative implications of dismissal, the rate at which CEOs are being dismissed has increased significantly over the last couple of decades (Alexandridis, Doukas, & Mavis, 2019; Bennis & O'Toole, 2000; Denis & Denis, 1995; Kaplan & Minton, 2012; Park, Chung, & Rajagopalan, 2021; Sahadi, 2019; Wiersema, 2002; Wiersema & Zhang, 2011; Zhang, 2008). Considering the negative consequences of CEO dismissal paired with the increased frequency of such events over time, scholarly interest in the predictors of CEO dismissal has accelerated in recent years, with researchers considering a wide range of

determinants (Gupta, Mortal, Silveri, Sun, & Turban, 2018; Jarva, Kallunki, & Livne, 2019; Yi, Zhang, & Windsor, 2019).

In the literature on CEO dismissal there has been some examination of how individual CEO characteristics influence the risk of dismissal. Much of the research in this vein has focused on characteristics like CEO power vis a vis the board, CEO tenure, or CEO insider versus outsider status (Dikolli, Mayew, & Nanda, 2014; Shen & Cannella, 2002). While these studies provide important insights, some salient CEO attributes have not received significant systematic consideration. Particularly lacking is research on the implications of CEO psychological traits (e.g., motivational and personality traits). There is a considerable body of research in psychology that scholars could draw on to develop theory about how the traits of CEOs might influence their likelihood of dismissal, and while prominent scholars have suggested that individual characteristics of CEOs, including CEO personality specifically, are “undoubtedly” indicators of likelihood of dismissal (Fredrickson, Hambrick, & Baumrin, 1988: 265), these traits have not been explored yet in the CEO dismissal literature. Recent scholars have even called for these studies, explaining that “research grounded in microlevel theory on personality characteristics facilitating CEO dismissal is limited” (Berns et al., 2021).

Our study seeks to begin to address this broad limitation of the literature on CEO dismissal through the lens of a micro-based theory of the interaction between personality and motivation, channeling theory. Our efforts to identify specific CEO psychological traits for study took into account that recent firm performance explains only limited variance in dismissal risk (Furtado & Karan, 1990). Wiersema and Zhang (2011), noted that “poor performance alone cannot explain the increased willingness on the part of the board of directors to take such a drastic action as the dismissal of the firm’s CEO” (p. 1161). With this in mind, we sought to

identify traits that could have implications for board member expectations regarding CEOs' effectiveness, *independent of objective current performance*. Such expectations are likely to be shaped to a considerable degree by board members' perceptions of how well a CEO's traits line up with their implicit theories of the traits of effective executive leaders. The basic thesis of our study is that CEOs that possess traits that violate these expectations will be at greater risk of dismissal.

In this light, we focused on CEO psychological traits that might lead to behaviors that are contradictory to the expectations of effective executive leaders, such as a CEO who tries too hard to accommodate the full range of corporate stakeholders or a CEO who appears to be indecisive, flighty, anxious, or negative to their Board of Directors. Following implicit leadership theory, effective executive leaders are expected by their Boards to be decisive, strong, stable, intelligent, and dedicated to strategic decisions that will benefit their firm in the long-term (Graetz, 2000; Offermann, Kennedy, & Wirtz, 1994). The leader trait perspective posits that it is the individual differences in people which lead to both their emergence as leaders and their potential for effectiveness as leaders (Eden and Leviathan, 1975; Lord, Foti, & De Vader, 1984; Hogan, Curphy, & Hogal, 1994; Weiss & Adler, 1981). Similarly, implicit leadership theory posits that we judge people as more "leader-like" when their traits and behaviors match more closely with our preconceived ideas of what effective leaders should be like (Hollander & Julian, 1969).

We looked to two highly influential frameworks within psychology to identify traits that would likely lead to behaviors that could be perceived as contrary to these expectations as CEOs who violate Board expectations are more likely to be dismissed (Weber & Wiersema, 2017). Specifically, we relied on McClelland's seminal theory of motivational traits, and identified the "need for affiliation" as one of these problematic traits. Individuals who are high in the need for

affiliation strive to be liked by all and are motivated by feeling accepted and part of harmonious relationships with others (McClelland 1961; 1975). CEOs with a greater intrinsic need to please others will be especially susceptible to trying to be “everything to all people” which violates implicit expectations that an effective CEO should be more concerned with the long-term strategy and success of their firm than pleasing others (Porter, Lorsch, & Nohria, 2004).

The second part of our theoretical framework draws on the Big Five theory of personality traits. While scholars have called for linking of the Big Five to the specific traits that signal leadership effectiveness (Hogan et al., 1994; Judge, Piccolo, & Kosalka, 2009), there is a paucity of work that has examined this relationship. Following the suggestion that “implicit leadership theory research also supports the utility of the big-five taxonomy”, (Hogan et al., 1994: pg. 497), we have selected the Big Five traits that should run most directly counter to perceptions of effective executive leaders. Specifically, we focus on openness to experience and neuroticism.

Highly open leaders have been found to be viewed as nonconformists (McCrae, 1996) who tend to take exception to conventional solutions and wisdom (Bono & Judge, 2004). Highly open leaders have even been called a “potential hazard in hierarchical, conventional, or traditional work settings” for their “anti-establishment attitudes” (Judge & LePine, 2007: pg. 337). Individuals who are high in openness to experience can be overly eager to embrace new ideas and may bounce from one idea to another in pursuit of fresh experiences which could be perceived as indecisiveness to a Board when their decisions seemed to be based in curiosity rather than logic (Costa & McCrae, 1985). Furthermore, while we expect effective executive leaders to be dedicated to long-term, resolute strategic decisions (Graetz, 2000), highly open leaders are more likely to get distracted with short-term, unproven strategies that can threaten the long-term stability of their organization (Antonakis, Cianciolo, & Sternberg, 2004). A highly

open CEO is more susceptible to being perceived as flighty, irresolute, or tending to make decisions that are based in curiosity rather than logic. These qualities run counter to a Board's expectations of an effective executive leader for their firm and thus will lead to higher likelihood of dismissal of the CEO by the Board. We also propose an interaction between CEO need for affiliation and openness to experience such that CEOs will be at greater risk of being dismissed to the extent that they are higher in both traits.

The third and final part of our conceptual framework considers the implications of a second Big Five attribute, neuroticism, on CEO likelihood of dismissal. Individuals who are high in neuroticism experience and display greater negative emotions (i.e., anxiety, frustration, and anger) (Costa & McCrae, 1985). CEOs who are high in neuroticism will be more prone to displaying negative affect in interactions with board members, which will tend to color Board assessments of the CEO's effectiveness in unfavorable ways. Neuroticism in CEOs has been shown by prior scholars to be negatively related with leader emergence or effectiveness (Judge, Bono, Ilies, & Gerhardt, 2002), and highly neurotic people have been shown to be perceived as less leader-like (Hogan et al., 1994). Thus, we also analyze neuroticism as a trait in CEOs that could lead to the perception of their ineffectiveness. Additionally, we analyze the combination of neuroticism with need for affiliation in a CEO which we argue will precede the display of negative emotions like anxiety, frustration, and anger, as they struggle to accommodate the divergent views and preferences of a wide range of stakeholders. We predict that these behaviors will be viewed especially negatively by board members leading to a greater risk of dismissal for CEOs with a combination of these two traits.

We test our theory using a unique dataset we developed, and we provide a comparison of the results utilizing a recently published dataset. Empirical research on CEO psychological traits

has been hampered by the fact that obtaining data on CEO traits using traditional approaches (e.g., multi-item survey-based measures) is difficult due to executive leaders' reluctance to provide personal information (Hoffman & Meusburger, 2018). Recently, scholars (e.g., Malhotra, Reus, Zhu, & Roelofsen, 2018; Harrison, Thurgood, Boivie, & Pfarrer, 2019a) have pioneered the application of advanced machine learning techniques to analyze publicly available CEO communications (e.g., transcribed meetings with security analysts) to derive measures of theoretically-important CEO traits. Our first unique dataset combines machine learning-based measures of CEO psychological traits with hand-collected data on CEO dismissals over multiple years. Our empirical tests using this dataset provide substantial support for our conceptual model, controlling for both financial and stock market performance. We then utilize a recently published public database of CEO turnover instances measured in a slightly different fashion to verify the robustness of results for our model. Results of both datasets are compared, and findings are widely consistent. Within the results of both analyses, we find support that a third personality trait, extraversion yields a significant effect on CEO rates of dismissal as well, and we encourage further research to explore the impact of extraversion on this important firm outcome.

This study contributes to scholarship on executive leaders, especially research on CEO dismissal, CEO personality, and CEO intrinsic motivation. Our study contributes to the CEO dismissal literature by being perhaps the first to examine how CEO dismissal is influenced by stable CEO motivational and personality traits. Though there have been long-standing calls for research on the link between CEO psychological traits and dismissal (Frederickson, et al., 1988; Pitcher, Chreim, & Kisfalvi, 2000), our study is the first, to our knowledge, to systematically consider this issue both theoretically and empirically.

Secondly, we contribute to research on the consequences of CEO intrinsic motives. Despite ample research at other levels of organizations on the importance of motivation, CEOs' implicit motives have received only limited prior attention (e.g., Miller & Dröge, 1986; Miller & Toulouse, 1986), perhaps due in part to the previously noted difficulty of obtaining implicit motivation scores for chief executives (Bednar & Westphal, 2006). Scholars have touted the important outcomes of CEO motivation as well as suggested that drivers of CEO motivation go far beyond just compensation (Canella, Finkelstein, & Hambrick, 2008; Fama & Jensen, 1983; Holmström, 1979), however, to our knowledge, the need for affiliation in CEOs specifically has not been previously explored and in particular not in relation to CEO dismissal.

Thirdly, we advance research in CEO personality by examining the influence of openness to experience and neuroticism on the likelihood of CEO dismissal. The application of the Big Five framework to the study of executive leaders has been limited by the difficulty of obtaining measures of CEO personality that are both reliable and valid (Harrison et al., 2019a). There are still very few studies in major management journals that apply the Big Five framework to CEOs (i.e. Harrison et al., 2019a; 2019 b; 2020), and our study contributes to this literature by being perhaps the first to consider how Big Five personality traits influence CEOs' risk of being dismissed.

Finally, we explore the interaction of motivation and personality traits in CEOs through the lens of channeling theory to suggest that firm-level outcomes widely studied in the strategic management literature, specifically CEO dismissal, can stem not only from individual characteristics of top management team members, but perhaps from the complex combination of traits which make up these vital members of the organization. The interaction of these frameworks opens a new avenue for research in the field of studying the upper echelons.

THEORY/HYPOTHESES

Who Boards Hire as CEOs

The model we explore in this study suggests that personality and motivation traits that inspire behaviors in CEOs that run counter to expectations of the behaviors of effective executive leaders will increase the propensity of these CEOs to be fired. Implicit leadership theory and other similar modes of thought (i.e. leader trait perspective) argue that it is the individual differences between leaders that determine their abilities to both rise as leaders and to be effective in these roles (Andersen, 2005; Eden and Leviathan, 1975; Lord et al., 1984; Hogan et al., 1994; Judge et al., 2009; Weiss & Adler, 1981). Common traits associated with effective leaders, for example, include being strong charismatic communicators (Graetz, 2000), and also being dominant (Lord & Maher, 1991) and strong (Offerman et al., 1994). Boards of organizations are more likely to hire CEOs who they perceive to fit the attributes they associate with an effective leader (Charan, 2005). The premise of our model, as guided by implicit leadership theory, is that certain traits in CEOs will violate these expectations of an effective leader. As the Boards get to know the CEOs they hired, CEOs who are high in these traits will be more likely to be fired. As a reader, the following question might come to mind: why would Boards hire a CEO that has traits which violate their expectations of an effective leader? It is important to understand that even smart Boards can hire the wrong CEO, because individuals have the ability to act differently during staged times like interviews (Bennis & O'Toole, 2000).

Research suggests that individuals are highly capable of masking undesirable qualities and even faking personality traits during interview processes to influence hiring decisions in their favor (Levashina & Campion, 2007; Rosse et al., 1998; Van Iddekinge et al., 2007). This form of impression management has been heavily studied, particularly in the context of

interviews. Literature on derailment, the phenomenon of successful managers who eventually get fired (McCall & Lombardo, 1983), has drawn these eventual dismissals to the inability of these leaders to maintain a specific image expected by important stakeholders beyond an extended period of time which can range from weeks to years depending on the individual (Bozeman & Kacmar, 1997; Hogan et al., 2010). Derailment research also extends to executives (Leslie & Van Velsor, 1996). Kaiser and colleagues explain that it is often not until after repeated contact that stakeholders are exposed to negative dispositions in leaders — it takes a while for leaders to “let down their guard” enough to be “less vigilant about how they are perceived” (2015: pg. 58). Although, individuals can manage the perceptions of others to increase their social desirability, eventually these masked dispositions appear after an extended amount of exposure to the person (Kaiser et al., 2015).

The extensive literature on impression management provides further support for the premise that CEOs are highly capable of masking qualities that would result in a negative impression during their interview process, including specific motivations and personality traits which may be deemed undesirable to the Board of Directors (Bozeman & Kacmar, 1997; Hogan et al., 2010; Kaiser et al., 2015). Later down the road, as Boards work closely with the CEO, their intimate knowledge of who the CEO is grows and their perceptions of the CEO will change accordingly. It is unlikely that a CEO will be able to consistently maintain masked characteristics as time wears on and the CEOs get past their “honeymoon stage” with the Boards that chose them. In the following sections, we detail traits in CEOs that are likely to be perceived negatively by Boards as the CEO’s mask wears off over time, resulting in eventual dismissal.

CEO Need for Affiliation and CEO Dismissal

Board member decisions regarding whether to dismiss a CEO are likely to be influenced

by assessments of CEO effectiveness as leaders, which are independent of recent objective performance (e.g., financial or stock price performance (Haleblian & Rajagopalan, 2006). Subjective assessments of CEO effectiveness are likely to be shaped by perceptions of the degree to which CEO traits align with board members' implicit theories of the traits of effective leaders. One widely-held expectation is that effective leaders, especially executive leaders, are willing to pursue actions that are good for the long-term health of the firm, even when those actions may engender negative reactions from important stakeholders (Cameron and Quinn, 2006; 2011; Cameron, Quinn, DeGraff, & Thakor, 2014). There is considerable danger for top executives that are seen by their Board of Directors as going too far in accommodating stakeholders' views and interests (Porter et al., 2004). CEOs who appear to constantly try to appease the full range of stakeholder perspectives are likely to be viewed negatively by board members to some considerable degree because doing so violates prevailing implicit theories of effective *executive* leadership (Bennis & O'Toole, 2000). There is an especially strong expectation that executive leaders are required to make hard choices that often cannot satisfy the interests of all stakeholders. Implicit leadership theory suggests that people have preconceptions about the traits of leaders (Eden & Leviatan, 1975), and scholars have shown that the perception of top managers as more "leader-like" can positively affect leader selection and retention (Jacquart & Antonakis, 2015). The traits we subconsciously perceive as "leader-like" have been heavily researched and traits like "dominance" (Lord & Maher, 1991) and "strength" (Offermann, Kennedy, & Wirtz, 1994) permeate popular opinion when it comes to identifying effective leaders.

Research on McClelland's needs suggests that CEOs who are high in the need for affiliation will be especially prone to being people pleasers/trying to please everyone. According

to McClelland, implicit motivators, like the need for affiliation, are considered relatively stable across time and have a substantial impact on spontaneous and long-term behaviors across different situations (McClelland, 1961; 1987). People who are high in the need for affiliation have a particularly strong desire for “company and a sense of belonging” (Kurian, 2013: 207). These individuals tend to make decisions based upon what will increase their personal likeability rather than organizational goals and could be perceived as “people-pleasers” (McClelland & Burnham, 1976).

According to this theory, CEOs who are higher in the need for affiliation will be more concerned about being viewed positively than making tough decisions for the firm, and will, therefore, be seen as acting in ways that are contrary to their Board’s implicit ideas of how an effective leader should behave, such as leading with “dominance” (Lord & Maher, 1991) and “strength” (Offermann et al., 1994). In efforts to accommodate diverse views and perspectives, affiliation-driven CEOs may delay or even avoid difficult decisions, because they are likely to offend or harm key stakeholders. CEOs with a high need for affiliation are likely to be viewed negatively by their Board of Directors, because in their quest to please everyone, they will likely be seen as indecisive and inadequately resolute. These attributes will innately violate implicit theories of effective executive leadership which will negatively impact the perceptions of the CEO’s efficacy by their Board. While implicit leadership theory posits that directors would expect a competent leader to be strong and stable in their values and behaviors, people with a high need for affiliation have been shown to adjust their own actions to maintain peaceful relations with others (Chatman & Barsade, 1995). Boards are likely to be highly concerned that delays in making, or even outright avoidance of, key decisions to maintain peaceful relations with others will negatively impact subsequent firm performance. Delay or avoidance of hard but

necessary decisions for a firm could be detrimental to a CEO's image in the eyes outside directors which could lead to dismissal when directors perceive a lack of decisiveness in the CEO.

CEOs who are high in the need for affiliation may be viewed as less effective in other respects as well. In particular, they may be seen as less capable of exercising adequate control over the behavior of direct reports and other company employees. Individuals who are higher in the need for affiliation tend to seek to please rather than control, are prone to favoritism, and avoid disciplining others (McClelland, 1987). Consequently, these CEOs will likely be perceived as less able to exercise control over subordinates. Managers who are high in the need for affiliation are often labeled as less effective because of their inability to make difficult decisions for fear of being disliked (Jha, 2010). McClelland and Boyatzis (1982) even noted that effective leaders tend to follow a pattern of behaviors that include being especially low in the need for affiliation.

To summarize, we have argued that CEOs who are higher in the need for affiliation will not meet the implicit standards of Boards of Directors who expect a CEO to be a decisive and resolute firm leader who is willing to make hard decisions that may engender negative responses from at least some stakeholders. We proposed that the violations of these expectations will lead to a higher likelihood that a CEO will be dismissed by the Board. If a CEO is perceived to be avoiding difficult decisions that are ultimately in the best interest of the firm, board members will see them as less effective leaders which will increase the likelihood of CEO dismissal (Haleblian & Rajagopalan, 2006). Therefore, we hypothesize:

Hypothesis 1: CEOs who are higher in the need for affiliation will be more likely to be dismissed.

CEO Openness to Experience and CEO Dismissal

In this section we identify traits from the Big Five Model of individual personality that are likely to increase the likelihood that a CEO will be dismissed. The Big Five personality theory groups personality into five major traits: extraversion, conscientiousness, neuroticism, agreeableness, and openness to experience (Costa & McCrae, 1985). These traits tend to be relatively stable over time (Block, 1971; Costa & McCrae, 1985; Costa & McCrae, 1988) and have been shown to be valid across different regions, cultures, and industries (Digman, 1990). The Big Five personality traits have been extensively linked to vital individual-level and organizational-level outcomes including: job performance, firm performance, and turnover intent/behaviors in employees (Araujo-Cabrera, Suarez-Acosta, & Aguiar-Quintana, 2017; Barrick & Mount, 1999; Barrick, Parks, & Mount, 2005; Nadkarni & Herrmann, 2010; Zimmerman, 2008).

Despite the plethora of research on the Big Five personality traits in the field of psychology and the evidence that this typology has strong external validity even in special population contexts like executives, there exist only a few studies in the management literature that delve into these traits in the upper echelons (Harrison et. al. 2019a). The current study means to address this limitation in the upper echelons literature by analyzing personality traits that will most likely damage a CEOs' image in the eyes of the Board and lead to the dismissal of the CEO once the traits are fully revealed by the CEO. Extant research has shown that executive search committees often look for a "boilerplate...of attributes" when selecting a CEO, and we believe that as Boards get to know their selected CEOs better over time through their behaviors, they might dismiss CEOs who, once they get more comfortable in their role, expose that they do not actually fit into this laundry list of traits that signal efficacy (Charan, 2005: 10). Extant literature often focuses looks at neuroticism and openness together (Diseth, 2003; Karsazi et al., 2021;

Schneider et al., 2012), perhaps due to the commonality of people who are both highly neurotic or highly open to preemptively explore all risks and options (Bogg & Vo, 2014). CEOs who are high in these two traits will face a higher likelihood of dismissal once the traits are revealed, because the traits of openness and neuroticism will cause CEOs to act in ways that run contrary to implicit expectations of leader behavior, and leaders are punished when they violate these expectations (Eden & Leviatan, 1975; Jacquart & Antonakis, 2015).

According to Costa and McCrae (1985), openness to experience is a trait characterized by the enjoyment of grasping new ideas. The trait of openness is characterized by a greater willingness to embrace new knowledge, concepts, or paths (Costa & McCrae, 1985), and a person with a high level of openness may be seen as more cultured or sophisticated by others (Digman, 1990). Research links higher levels of openness in CEOs to a higher frequency of volatile business decisions including: moving around members of their top management teams (TMT's), letting go members of TMT's, and changing the way the organization's resources are allocated on a large scale (Crossland, Zyung, & Hiller, 2014; O'Reilly, Caldwell, Chatman, & Doerr, 2014). Excessively bold actions by leaders can result in exposure to counterattacks, depletion of resources, and dangerous levels of attention to the leader or the organization (Judge et al., 2009). Furthermore, Benischke, Martin, and Glaser (2019) found that openness to experience in CEOs attenuates the negative relationship between equity risk-bearing and strategic risk-taking, suggesting that CEOs with a higher level of openness to experience are more likely to utilize risky strategies, even when there is much to potentially lose. High openness CEOs will show a greater tendency to pursue strategic solutions that are outside of relevant norms.

Highly open individuals are associated with highly permeable ways of thinking and

minds that are easily changed because of the individual's constant curiosity and willingness to receive new plans or ideas (McCrae & Costa, 2004). Much like a CEO who is high in the need for affiliation, a CEO who is highly open is more prone to accept and try to incorporate ideas and opinions from the full range of stakeholders, which may result in the perception that they are trying to be "everything to everyone". As mentioned above, this violates implicit theories of effective executive leadership. Furthermore, trying to accommodate too many diverse perspectives on strategic issues is likely to increase CEOs' propensities to pursue overly cognitively complex solutions. People who are intellectual and think in complex ways, such as a leader who is highly open, are often characterized as indecisive since they tend to be paralyzed by the amount of information and ideas they are constantly open to processing (Tetlock, 1992; Tetlock, Peterson, & Berry, 1993). Hence, these open CEOs are more likely to vacillate between competing solutions, which will tend to delay needed strategic decisions or possibly result in important decisions being avoided altogether. This behavior runs contrary to the expectations that effective leaders should be decisive and resolute.

Finally, based on extant research, open CEOs may be prone to make organizational changes more frequently and more dramatically (Crossland et al., 2014; O'Reilly et al., 2014). Implicitly, we look to leaders for stability and the protection of firm financial security. For a Board member, the fear of a leader who is more willing to cause organizational instability through impulsive or large-scale risk-taking behavior may be enough to decide to hire a new "safer" alternative CEO (Bennis & O'Toole, 2000). Personality surveys in the past have utilized terms and phrases to identify people high in the trait of openness such as: "reactive", "unconventional", and known to make decisions based on "unusual thought processes" (John, 1989; McCrae, Costa, & Busch, 1986; Costa, McCrae, and Dye, 1991). The perception of these

tendencies directly violates the expectations of a competent leader - someone who is expected to be level-headed rather than “reactive”. In sum, Boards are likely to perceive a highly open CEO as someone who engages in volatile decision-making, impromptu large-scale organizational changes, and unnecessarily risky strategies for the firm. This perception, may lead the Board to question their efficacy as a stable leader, increasing the likelihood of dismissal (Haleblian & Rajagopalan, 2006). Therefore, we hypothesize:

Hypothesis 2: CEOs who are higher in openness to experience will be more likely to be dismissed.

Channeling Theory: Need for Affiliation and Openness to Experience

In this sub-section we propose that CEOs will be at greater risk of being dismissed to the extent that they are higher in both the need for affiliation *and* openness to experience. While the previously discussed needs and personality theories suggest that human behavior is explained mainly by motivations or personality traits, channeling theory or the channeling hypotheses, argues that we can gain a more complete picture of behavior by studying explicit individual differences, such as personality, in conjunction with implicit motivations, rather than studying these traits in isolation from each other (Bing, LeBreton, Davison, Migetz, & James, 2007; Frost, Ko, & James, 2007; Lang, Zettler, Ewen, & Hülshager, 2012; McClelland, Koestner, & Weinberger, 1989; Winter et al., 1998).

Channeling theory argues that personality traits serve as “channel(s) for the expression of implicit motives” (Spain, Harms, & LeBreton, 2014, p. 51). Implicit motives compel us toward action, and personality dictates how that action is expressed. For example, Winter et al. (1998) found that extraverted individuals with a high need for affiliation were more likely to engage in volunteer work, while introverted individuals with a high level of need for affiliation were less likely to volunteer. Introverted individuals were more likely to fulfill their need for affiliation by

fostering intimate relationships rather than seeking interaction outside the home environment as the extraverted participants did (Winter et al, 1998). Although both groups were compelled to fulfill their high need for affiliation, the individual's level of the personality trait of extraversion dictated how they fulfilled that desire. In an opposing example, Winter et al. (1998) showed that those low in affiliation but highly extraverted might be adept at building relationships or networking, but not reliant upon doing so. We argue that in CEOs, their need for affiliation will compel them toward an action but how that action is expressed will be determined by their personality traits and it in turn will impact how they are perceived.

As explained in prior sections, for a CEO with a high need for affiliation, likeability and relationships are a primary goal, and for a CEO with high openness to experience, there is often a tendency to make bold or rash decisions (Crossland et al., 2014; O'Reilly et al., 2014). Following channeling theory, a CEO who is high in the need for affiliation will strive to be liked by everyone, and furthermore, if this CEO is also high in openness, they will channel their motivation for affiliation by attempting to listen to and please stakeholders or friends despite the long-term implications of their decisions. A CEO who strives to be liked by all by attempting to incorporate the divergent perspectives of stakeholders in strategic decisions will be even more likely to opt for overly complex or conflicting solutions to strategic issues perhaps vacillating between competing solutions. The overly complex decision making processes of a highly open CEO will become further aggravated when the CEO is also highly concerned with pleasing everyone because of a high need for affiliation.

Propelled by the motive to be liked and acting based on the trait of openness, a CEO could be compelled to make risky decisions to make peers or shareholders happy. CEOs who are compelled by likeability and have the openness levels to take risks like dramatically reallocating

resources or moving around TMT members (Crossland et al., 2014; O'Reilly et al., 2014), could be willing to engage in behaviors that may signal instability or favoritism to Board members. CEOs in general minimize risk-taking when they fear being dismissed (Chakraborty, Sheikh, & Subramanian, 2007), however, we argue that a CEO who prioritizes likeability and channels this motivation through openness may take risks that an otherwise more cautious CEO would avoid when close to dismissal to maintain or strengthen relationships.

Essentially, we predict that a CEO with a greater emotional need to be held in positive regard by key stakeholders because of their high need for affiliation will be amplified in their efforts to please everyone if the CEO is also highly open. Additionally, the risky decision-making associated with openness will likely be exaggerated when decisions could harm or offend stakeholders. The anxiety of maintaining likeability will be escalated by the tendencies to make bold decisions without considering broad outcomes that often come with higher levels of openness to experience, and vice versa. Therefore, we hypothesize:

Hypothesis 3: The tendency for CEOs who are higher in need for affiliation to be more likely to be dismissed will be stronger to the extent that CEOs are higher in openness to experience.

CEO Neuroticism and CEO Dismissal

Another personality trait in CEOs that we believe would cause a CEO to violate implicit leadership expectations leading to greater likelihood of dismissal is the trait of neuroticism. According to Costa and McCrae (1992), neuroticism or emotional instability, is a person's tendency to feel moods such as: frustration, anxiety, fear, and other forms of psychological stress. Neurotic individuals are more likely to express emotions that may have negative social connotations, and neuroticism has been found in to have a negative overall relationship with long-term performance (Hurtz & Donovan, 2000). Neurotic people have previously been shown to be perceived as less leader-like (Hogan et al., 1994), thus, following implicit leadership

theory, we posit that CEOs who portray higher neuroticism will lead to less positive assessments from board members and as a result decrease the board's confidence in the CEO.

CEOs with high levels of neuroticism may fall prey to dangerous levels of stress in their roles and lack the intellectual flexibility to deal with this stress (Peterson, Smith, Martorana, & Owens, 2003). Additionally, neuroticism is associated with poor coping skills in dealing with stressful situations (Gunthert, Cohen, & Armeli, 1999) and impulsive decision making (Fetterman, Robinson, Ode, & Gordon, 2010). Peterson and co-authors (2003) also found that highly neurotic CEOs had less team cohesion with their TMT's. We argue that the tendency of neurotic CEOs to make impulsive decisions, cope poorly with stress, and work less cohesively with other top management team members will go against the implicit expectations the Board of Directors has for how a successful and competent leader should behave.

Finally, prior scholars have found that firms with more neurotic CEOs face higher stock market volatility (Harrison, Thurgood, Boivie, & Pfarrer, 2019b). Board members care deeply about firm performance and potential signals for future performance (Haleblian & Rajagopalan, 2006). If CEOs who are highly neurotic have been shown to increase stock volatility, and a CEO begins to exhibit highly neurotic behavior, the Board is more likely to dismiss the CEO for fear of the effect of the CEO's emotionally unstable behavior on future firm performance. Therefore, we hypothesize:

Hypothesis 4: CEOs who are higher in neuroticism will be more likely to be dismissed.

Channeling Theory: Need for Affiliation and Neuroticism

Consistent with channeling theory, a CEO with a high need for affiliation who is also highly neurotic, would be compelled to seek likeability and would act on this desire in an anxious manner. As mentioned above, neuroticism is associated with negative social

connotations, high psychological stress, rigidity of behaviors, and low emotional stability (Costa & McCrae, 1992; Hurtz & Donovan, 2000). A CEO who is high in the need for affiliation but also highly neurotic could drive stakeholders away because of their high stress persona or their obsession with rigidity to certain behaviors. Neuroticism has been found to correlate highly with rumination and worry and to be positively linked to anxiety and depression (Muris, Roelofs, Rassin, Franken, & Mayer, 2005). For an affiliation-driven leader who seeks likeability but is perceived negatively by others because of their neuroticism, an already existing high psychological stress could be amplified. We argue that a leader with a high need for affiliation as well as a high level of neuroticism may become locked in a cycle of anxiety if they attempt to please everyone but are not successful due to their neurotic tendencies. Board members monitoring a CEO with a cycle of high anxiety could become concerned about the CEO's emotional stability and may react by dismissing them. Therefore, we hypothesize:

Hypothesis 5: The tendency for CEOs who are higher in the need for affiliation to be more likely to be dismissed will be amplified for CEOs who are higher in neuroticism.

METHODS

Sample

The sample utilized in the first round of analysis consists of CEOs of the S&P 500 from 2008 to 2016. We have 480 unique CEOs and 2,565 unique observations. 72 CEOs in the sample were determined to have been dismissed, 150 CEOs in the sample did not turnover, and 218 CEOs turned over voluntarily. 24.8% of instances of turnover in the sample set were coded as dismissals which closely reflects prior CEO dismissal research in which 22 percent to 29 percent of CEO turnovers were coded as involuntary dismissals (Wiersema & Zhang, 2011; Zhang, 2006). Our measures of CEO intrinsic motivation and personality traits are based on what CEOs said on conference calls with security analysts. Reliable measurement of these attributes requires that a CEO who spoke at least 1,000 words in total across the quarterly conference calls that occurred during the study period (Harrison et al., 2019; 2020). In total there were 89 CEOs who turned over during our time period that did not speak enough on conference calls to code their personality. We obtained conference calls transcripts through *Seeking Alpha* and used information from LexisNexis to identify and categorize CEO turnover events during the study period. Data for our other variables came from a range of standard sources including CompuStat, ExecuComp, ISS, and I/B/E/S.

Comparison Sample

The sample utilized in the second round of analysis consists of CEOs of the S&P 500 from 2008 to 2016. This dataset combines the previously described variables measured as they were in the first sample, however, the major outcome of turnover (voluntary versus dismissal) in this dataset was obtained from a recently published database of CEO turnover instances (Gentry et al., 2021). This turnover dataset consists of CEO turnover data for CEOs in the S&P 1500 for

the years 2000 through 2018, but the rest of the variables in our model, we have utilized only the S&P 500 CEOs from the years 2008 to 2016 from the database to do this supplementary analysis. In this comparison sample, we have 266 unique CEOs. 69 CEOs in the sample were determined to have been dismissed and 197 CEOs in the sample turned over voluntarily. 26% of instances of turnover in the sample set were coded as dismissals which closely reflects prior CEO dismissal research in which 22 percent to 29 percent of CEO turnovers were coded as involuntary dismissals (Wiersema & Zhang, 2011; Zhang, 2006). The measures of CEO intrinsic motivation, personality traits, and control variables were utilized as coded in the first sample described. All variables were analyzed during the last year of the CEO's tenure prior to instance of turnover.

Data Collection/Variables

Main Analysis: *Dependent variable: Voluntary turnover vs. involuntary turnover.*

Our dependent variable in this study, turnover, is coded as: voluntary/no turnover or involuntary. Our study utilizes a very specific method of distinguishing between voluntary and involuntary turnover instances as based on a combination of the separation techniques utilized in rigorous prior research on CEO dismissal (Zhang, 2006; Wiersema & Zhang, 2011). We include instances of no turnover with instances of voluntary turnover following Wiersema and Zhang (2011) as this prevents a possible selection issue from removing instances of no turnover.

Turnover announcement dates and reason for turnover were gathered via archival news sources (primarily Nexis). News reports have repeatedly proven to be a valid and reliable source of determining voluntary turnover versus dismissal in chief executives (Shen & Canella, 2002; Zhang, 2006). Following extant literature, cases where a CEO died, left due to health-related reasons, accepted a "similar position at another firm" (p. 290), or turned over in relation to a

merger, acquisition, or company split was coded as voluntary (Zhang, 2006). Similarly, if the announcement clearly stated that the CEO was asked to leave the organization for such reasons as scandal or performance problems, the turnover reason was coded as involuntary. Following Wiersema and Zhang (2011), turnover was coded as involuntary when the CEO was under the age of 65 at the time of the turnover (Graffin, Carpenter, & Boivie, 2011; Shen & Canella, 2002), or when the announcement was made with less than 3 months' notice to the public by the firm or after several months of declining financial returns for the company. Turnover events where a CEO was over the age of 65, *and* the firm was experiencing multiple months of financial decline or negative press, were coded as involuntary. However, in all remaining situations, turnover events involving a CEO over the age of 65 were coded as a voluntary. The age cut-off of 65 was selected, because it reflected the average age of the mandatory chief executive retirement age that organizations with retirement age requirements utilized. Turnover was then coded as a dichotomous variable with 0 being “voluntary turnover” and 1 being “involuntary turnover”/dismissal.

Supplementary Analysis: *Dependent variable: Voluntary turnover vs. involuntary turnover.*

Our dependent variable in the supplemental analysis, turnover, is coded as: voluntary turnover or involuntary and was obtained from a recently published database of CEO turnover (Gentry, 2021). We did not include any instances of no turnover in this analysis as the dataset utilized only features instances of turnover.

Turnover reasons were coded in this database utilizing archival news sources to group each instance of CEO dismissal into 1 of 8 specific types of turnover (including such involuntary reasons for departure as CEO illness and such involuntary reasons as CEO performance). In this analysis we will use voluntary versus involuntary turnover only to provide a comparison the our

prior analysis which coded instances of turnover as one of these two possible outcomes. Specific details of turnover coding for this database can be found in Appendix 2 which was copied from the original database's Appendix to ensure all details are accounted for (Gentry et al., 2021).

Independent variable: Need for affiliation.

Using Tensorflow (Abadi et al., 2016) we developed a machine learning algorithm, specifically a Deep Neural Net (DNN) classifier, to measure the need for affiliation using transcripts from quarterly earnings calls. Drawing upon the marker-word hypothesis, our algorithm measured implicit motives via the frequency of specific words spoken and their relation with each other (Hogendraad, 2003; 2005; Pennebaker, Booth, & Francis, 2007; Pennebaker, Francis, & Booth, 2001; Pennebaker & King, 1999; Smith, 1968; Winter, 1994), because utilizing machine learning has been confirmed by prior scholars to be a highly valid and reliable tool in assessing implicit motivation by analyzing text word usage (Pang & Ring 2020). We followed the following steps in developing our measure: 1) we created a sample of text that has been coded for the need 2) we trained the algorithm to accurately measure the need 3) we evaluated the accuracy of the measure and 4) we applied the measure to the full database.

Our training set was created by first using the 364 coded passages included within the Winter's (1994) training manual (see Appendix 1 for example passages coded as affiliative from the manual). The manual provides an optimal ground truth to train the algorithm since it provides unquestionably accurate scores. However, to increase the relevance of our training set, we also had two independent coders, with no knowledge of the purpose of the study, manually code 797 randomly selected text passages from CEO speech using the coding guidelines developed by Winter (1994). The coders worked as research assistants for over a year before they started coding for this project. Prior to coding any CEO passages, the coders were trained using the

Winter's (1994) training manual. This includes testing the coders' accuracy with the manual as well as with each other, using the pre-coded passages in the manual. As recommended in the manual, each coder was given a sample set of passages from the manual. After coding each sample set their accuracy was tested and they were instructed on which passages they missed. They were required to obtain a .8 rater-reliability with the coding manual on two consecutive sets, after which they were required to obtain a .8 inter-rater-reliability with each other. After the coders demonstrated accuracy with each other and the manual they began coding the transcripts.

Next, we split our training sample into two samples- 80 percent was used from training and the remaining 20 percent was used to validate the measure. We used a closed rather than an open language approach to our machine learning design, because a closed language approach provides great transparency and tends to perform better on smaller samples (Hua et al., 2005). A closed language approach denotes that we organized the text into word categories before providing the data to the algorithm rather than requiring the algorithm to organize the data itself. We then organized the text from each CEO passage using the Linguistic Inquiry and Word Count (LIWC) software into 36-word categories that are theoretically related with the need for affiliation. These include word categories that capture the speaker's relationship with others (personal pronouns, social, family, friend, work, leisure, home, sexual, prepositions), motivations (drives, affiliation, achievement, power, reward, risk, authentic, comparisons, number, and quantifiers), their perceived success/failure of obtaining their desires (tone, affect words, positive emotions, negative emotions, anxiety, anger, sadness, swear words, discrepancy, tentative, certainty, and clout), and desire to be liked by others (assent and total words count). These word categories were used as our input features for the machine learning algorithm, or what the algorithm focuses on. The algorithm then learned the unique pattern of affiliative speech through

hierarchically categorizing the input features into multiple groupings called hidden layers and nodes, specifically nine hidden layers with nodes decrease between each layer from 36 to four. The algorithm continually adjusts the categorizing system until it is as accurate as it can be.

The remaining 20 percent of the “training” set was used to test the final accuracy of the machine learning algorithm. Internal consistency between hand coded scores and the machine learning score was .927 for the need for affiliation. Suggesting that the algorithm is a valid measure for the need for affiliation*. Consistent with Winter’s scoring manual, the algorithm uses a continuous measure to capture the need for affiliation. Specifically, a ratio of affiliative imagery per text passage, with high scores indicating a high need for affiliation and low scores indicating a low need. Given that theoretically this need is considered a trait (McClelland, 1961; McClelland, 1987), we calculated a CEO’s need for affiliation by averaging their affiliation scores from all conference call transcripts that they spoke in during the sample period, creating a more stable score over time. This variable was centered prior to creating its interactions with neuroticism and openness.

Independent variables: Neuroticism and openness to experience.

We used a different machine learning method to measure CEO personality. More specifically, we measured the CEO personality traits of neuroticism and openness to experience using the machine learning algorithm already developed and made available by Harrison et al., (2019; 2020). Harrison and colleagues’ measure of personality has been shown to be valid and reliable with an average reliability of 0.81 with traditional measurements of personality. This measurement technique relied upon text analysis of CEO conference call transcripts. The measure calculates each personality trait as a continuous variable of between 1 and 7 (1 being the

* The algorithm will be made available for scholars by request.

lowest level and 7 being the highest level). Each CEO's personality scores reflect an average score of all everything they have said on earnings calls during their tenure in the role (from 2008 to 2016) to control for possible temporary moods or events occurring that may have affected their speech during short periods of time. These variables were centered prior to creating interactions between them and the need for affiliation. Though personality scores remain stable in our study as personality is shown in psychology research to be an overwhelmingly stable trait, we argue that our usage of panel data over time addresses the dynamic nature of the research questions which take into account that Board members get to know CEOs better over time, therefore, being more able to make decisions on their tenure based on their personalities and behaviors.

Control variables.

Given that there are several factors that may influence CEO turnover, we included a wide range of control variables that have been shown to be relevant in prior research. Starting with firm level controls: *Firm Performance* was operationalized as Relative Return on Assets (*ROA*). This was done by calculating an aspiration point of *ROA* (net income divided by total assets) for the firm and subtracting the firm's actual *ROA* from their aspiration point. Follow extant literature, our aspiration point was an equally weighted average of social aspiration (average *ROA* of the four-digit SEC code for the focal firm) and historical aspiration (weighted average of the focal firm's *ROA* in the past three years) (Greve, 2003). We also included a market-based measure of stock performance, *Cumulative Abnormal Returns (CAR)*, which was calculated as the buy and hold return for a company's stock minus the buy and hold return of the valuated market index for a period of 365 days prior to the announcement of the CEO's turnover. This variable was measured up to the date of the CEO's turnover announcement to avoid any stock

performance changes that could have taken place due to the turnover announcement. For CEOs with tenure shorter than one year, the CAR was calculated starting from the CEO start date. We also included a dummy control variable to take into account if CEO tenure was less than one year called *Short Tenure*. Prior research suggests that including more than one measure of firm performance is important and that including a market-based measure such as CAR may be important because ROA can be affected by managers engaging in earnings management (Gomez-Mejia, Tosi, & Hinkin, 1987; Thomas, 1989; Wiersema & Zhang, 2011). We controlled for industry with 2 digit SIC code dummy coding. Our final firm level control was *Firm Size*, operationalized as the natural log of total assets of the firm in the quarter the CEO turned over (Wiersema & Zhang, 2011).

Next, we included a series of controls related to the CEO including: *Age*, *Tenure*, *Duality*, *Interim Status*, and *Compensation*. The *Age of a CEO* was also included as a control, because it is expected to be highly correlated with the reason a chief executive departs an organization. The final model was run with and without the age control since this factor was also included in the dependent variable determination process, and results remained consistent. *CEO Tenure* or length of time (in month) spent in their role as CEO. Our model also took into account whether or not a CEO was hired on an *interim* basis. This was a dummy variable where non-interim CEOs were coded as 0, those hired for a temporary role and then replaced as planned were coded as 1, and those hired originally to fill an interim role and later hired on permanently to the position were coded as 2. *CEO Duality* describes the combination or separation of a CEO position with the position of chair of the Board of Directors. Duality was coded as a dummy variable with “1” being a CEO position that was combined with a board position and “0” being otherwise. Duality has been shown to moderate the negative relationship between firm

performance and turnover (Tran, Nguyen, & Nguyen, 2016). The CEO's *Compensation* was calculated by taking the natural log of the CEOs total compensation.

The other three personality traits in the Big Five personality typology, *Extraversion*, *Conscientiousness*, and *Agreeableness* were included as control variables to rule out influence of other traits and motivation types in the results. Moreover, including these variables avoids issues of omitted variable bias. These were measured using Harrison's et al., (2019; 2020) method as described above. For the same reasons, we also included controls for the *need for power* and *need for achievement*, using the same machine learning algorithm described above. The algorithm obtained a similar accuracy for these needs as it did with affiliation (achievement = .946, power = .917). Finally, we added two board related controls that have been linked to CEO dismissal decisions. *Board Size* which is the total number of board members and *Outside Ratio* which is the ratio of outside board members to the board size.

ANALYSIS

To test our hypotheses, we utilized a two-tailed panel logit regression analysis with a random effects estimation utilizing Stata MP software. Panel logit regression models are designed to handle dependent variables with two possible outcomes; our dependent variable of turnover had the two outcomes: voluntary or no turnover (0) and involuntary (1) in a longitudinal dataset which measures variables over an extended period of time. Random effects logit models have been utilized in CEO dismissal studies before when the instance of turnover was coded as we have in this study (Wiersema & Zhang, 2011). As a robustness check we ran our analysis with a panel probit model as well as a cross-sectional model, and the results were consistent. We used a random effect estimation because our independent variables are time invariant.

Often in turnover studies, hazard models are utilized, but hazard models are designed specifically to investigate the risk of an event occurring within a specific time period. Our research questions do not ask how long until a CEO exits a company based on specific antecedents but rather why they leave, which is coded as a dual possible outcome with 0 being no turnover or voluntary turnover and 1 being dismissal following Wiersema and Zhang (2011). Therefore, a logit regression analysis is appropriate (Greene, 2004; Wiersema & Zhang, 2011)

All variable correlations and summary statistics are reported below in Table 1. It is not uncommon find intercorrelations of personality between $|.4|$ and $|.6|$ (Harrison et al., 2019; Herrmann & Nadkarni 2014; Peterson et al., 2003) and our results intercorrelations were consistent with extant literature. As a precaution we ran a variance inflation factor (VIF) test to determine if the results were biased from multicollinearity. The results shown that all VIF values were fall far below the generally accepted threshold of 10, with a mean VIF of only 1.37 and highest being 2.56. These results, coupled with the size of our dataset and the stability of our

estimates, indicate that multicollinearity is not a concern for the analysis (Greene, 2011; Wooldridge, 2016).

SUPPLEMENTARY ANALYSIS

After running the aforementioned analysis on the hand-collected CEO turnover data, we ran the full model to test our hypotheses with the dependent variable of type of turnover swapped out for the turnover codes listed in a recently published public database of CEO turnover (Gentry et al., 2021). To test our hypotheses with this data, we used a two-tailed logit regression analysis utilizing Stata MP software. Logit regression models are designed to handle dependent variables with two possible outcomes; our dependent variable of turnover had the two outcomes: voluntary or no turnover (0) and involuntary (1) in a cross-sectional dataset which measures all variables only during the final term of the CEO's tenure prior to turnover. Logit models have been utilized in CEO dismissal studies before when the instance of turnover was coded as we have in this study to investigate the reason a CEO leaves a company rather than the risk of the event occurring which would typically utilize a hazard model (Greene, 2004; Wiersema & Zhang, 2011). All variable correlations and summary statistics for this dataset are reported below in Table 2.

RESULTS

Insert Tables 1- 4 here

Table 1 and 2 provide the correlation matrices and summary statistics for the main dataset and supplementary dataset. Tables 3 and 4 report the results of our main logit regression model using the panel data we collected and our supplementary analysis using the public database of turnover. In Table 3, Model 1 shows the results with only control variables. Model 2 includes the implicit motivation and personality traits. Models 3 and 4 provide the results of the interactions separately, and Model 5 shows the results for the complete model. Table 4 shows the main model (model 5) when run with the public turnover database for comparison of coefficients and significance in results of the main model.

Starting with our main analysis, for our first hypothesis, we found mixed support for our proposition that there would be a positive relationship between CEO need for affiliation and their likelihood of dismissal (Model 2, $\beta = 0.191$, $p = 0.065$). This effect was only marginally significant and insignificant within the full model (Model 5, $\beta = 0.180$, $p = 0.129$) — suggesting that the relationship between affiliation and dismissal is largely dependent on its relationship with personality, detailed further below.

In hypothesis 2, we predicted the trait of openness to experience to be positively related to involuntary CEO turnover. The results in Table 2 support this hypothesis, showing a positive and significant relationship (Model 5, $\beta = 0.848$, $p = .016$). This trait yielded the strongest results in terms of predicting a CEO's involuntary turnover and is still present even when accounting for the moderating relationship with other traits. After holding all other variables at their mean, the results suggest that the cumulative odds of involuntary turnover increases by 4% for every

standard unit increase in openness.

Hypothesis 3 that the personality trait of openness to experience would positively moderate the relationship between need for affiliation and CEO dismissal, and this hypothesis was also confirmed in that the interaction of variables significantly increases the likelihood of a CEO being fired. The positive relationship between need for affiliation and CEO dismissal is strengthened by openness to experience (Model 5, $\beta = 0.807$, $p < .001$). A margin plot for this interaction can be found in Figure 1 as marginal effects are crucial to report (Wiersema & Bowen, 2009) with the variables uncentered at one standard deviation above and below the means following Cohen, Cohen, West, & Aiken (1983). When comparing CEOs who are either high or low in affiliation, our results suggest that that a one standard unit increase in openness to experience will result in a 3 percentage increase in the cumulative odds of dismissal for CEOs who have a high need for affiliation compared to those that do not, when all other variables are held constant.

In hypothesis 4, we predicted that the trait of neuroticism in CEOs would be positively related to dismissal. We found marginal support for our hypothesis (Model 5, $\beta = 0.493$, $p = 0.100$). The results suggest that a one standard deviation increase in neuroticism will increase the cumulative odds of dismissal by 3.6%, controlling for all else. Hypothesis 5 predicted that the personality trait of neuroticism would positively moderate the relationship between need for affiliation and CEO dismissal, and this hypothesis was also confirmed as the interaction of variables further increases the likelihood of a CEO being fired. The positive relationship between need for affiliation and CEO dismissal is strengthened by neuroticism (Model 5, $\beta = 0.534$, $p = .030$). A margin plot for the interaction of the need for affiliation and neuroticism can be seen in Figure 2 with the variables uncentered at one standard deviation above and below the mean of

the need for affiliation scores following Cohen, Cohen, West, & Aiken (1983). When comparing CEOs who are either high or low in affiliation, our results suggest that a one standard unit increase in neuroticism will increase the cumulative odds of dismissal by 3.9 percentage for CEOs who are high in affiliation, controlling for all else.

Supplementary Analysis

Table 4 reports the results of our logit model when run with the public database of CEO dismissal data. The results of our hand-collected data are mostly similar to the results we see in this supplementary analysis, however, some results support our hypotheses even more robustly. For hypothesis 1, while we found marginal and mixed support for our proposition that the need for affiliation was positively related to CEO dismissal, in the supplementary analysis, we found that the positive relationship between CEO need for affiliation and their likelihood of dismissal was positive and highly significant ($\beta = 0.431, p = 0.009$). This effect strongly supported Hypothesis 1.

In hypothesis 2, we predicted the trait of openness to experience to be positively related to involuntary CEO turnover as shown also in the main analysis. The results in Table 4 support this hypothesis, showing a positive and significant relationship ($\beta = 0.627, p = 0.054$).

Hypothesis 3 that the personality trait of openness to experience would positively moderate the relationship between need for affiliation and CEO dismissal, and this hypothesis was also confirmed in that the interaction of variables significantly increases the likelihood of a CEO being fired. The positive relationship between need for affiliation and CEO dismissal is strengthened by openness to experience ($\beta = 0.699, p < 0.053$).

In hypothesis 4, we predicted that the trait of neuroticism in CEOs would be positively related to dismissal. While we found marginal support for our hypothesis when run with our

hand-collected data, the results of the supplementary dataset call this into question as the results of this relationship were insignificant ($p < .59$) and the sign on the coefficient was reversed ($\beta = -0.21$). The results of a direct relationship between neuroticism and CEO dismissal in both datasets point to the fact that neuroticism might not be a strong indicator of CEO likelihood of dismissal when existing without the need for affiliation. Hypothesis 5 predicted that the personality trait of neuroticism would positively moderate the relationship between need for affiliation and CEO dismissal, and this hypothesis was confirmed in the original dataset as well as the supplementary dataset strengthening our proposition that channeling theory plays a role in CEO behavior. When CEO motivation (i.e. need for affiliation) and CEO personality (i.e. neuroticism) existed in tandem, the supplementary analysis showed a positive and significant increase in the likelihood of the CEO being fired ($\beta = 0.810$, $p = .020$).

Insert Figures 1 & 2 here

Robustness Tests

Our analysis included CEOs who did not turnover during our time frame to avoid selection bias. However, to confirm our results, we also ran our analysis with just CEOs who turned over during the time frame with voluntary turnovers being coded as 0 and involuntary dismissals as 1. Additionally, we ran the analysis including the CEOs who did not turnover during the study sample years with a panel multinomial model and three outcomes: did not turnover, turned over voluntarily, and was dismissed. Results remained consistent. Wiersema and Zhang (2011) and Park et al, 2021 have found that financial analysts' recommendations have an important impact of CEO dismissal. For this reason, we ran robustness checks with controls for analysts' recommendations, specifically the change in analysts' recommendations, dispersion of recommendations, and the percentage of buy recommendations. The results remained consistent

with these controls. However, we chose to not include these controls in our main analysis due to issues of missing data within the IBES database. We ran the dataset as a cross-sectional analysis with each variable being measured only during the fiscal quarter of the instance of turnover or dismissal and found consistent results. Finally, we ran our sample set through an analysis using a probit estimation and found consistent results. The differences in Chi2 values for the logit and probit estimations was less than 2, so we can assume there is no significant difference between the two estimation models.

Lastly, we had concerns that the personality trait of agreeableness could also potentially lead to higher dismissal outcomes for CEOs. This personality trait has been shown in extant literature to be a double-edged sword for leaders with sometimes positive and sometimes negative outcomes (Higgs, 2009; Hogan et al., 1994; Peterson et al., 2003). We controlled for agreeableness in our model to ensure that it did not confound the effects of our traits of interest. However, we also ran the model with just agreeableness to see if this trait had an effect on CEO dismissal and there was no significant effect of this trait on instances of CEO dismissal.

DISCUSSION

In this paper we examine the relationship between CEO implicit motivations and explicit personality traits, and the likelihood of CEO dismissal. We predicted that CEOs who are higher in the need for affiliation, openness to experience, and neuroticism are more likely to be dismissed. We also proposed that the interactions of this motivation and the corresponding personality traits would strengthen each of our predicted relationships. Our empirical analyses, based on a novel dataset, provide consistent support for our conceptual model. A secondary analysis of a public dataset yielded similar results.

Although several objective factors have been shown to impact rates of CEO dismissal, and we know that performance can only explain part of the story as to why CEOs get dismissed so frequently (Furtado & Karan, 1990; Wiersema & Zhang, 2011), little theoretical research exists on the impact of CEO individual differences (i.e., personality and implicit motivation) that can influence this outcome. This study develops a model to explore these factors utilizing innovative methods of machine learning to provide a highly reliable analysis of real-time speech by CEOs during their conference calls with financial analysts. Specifically, our personal machine-learning measure of the need for affiliation opens doors for executive leadership scholars to further investigate implicit motivations in CEOs, an avenue of research that has been limited in the past by the lack of measures available (Bednar & Westphal, 2006; Hoffman & Meusburger, 2018). Prior research into CEO motivation has primarily utilized survey data. Measuring implicit motivation via survey data has been argued to be less reliable than a real-time speech capture technique such as the methodology utilized here. By integrating both hand-collected and machine learning data, we provide an innovative method of studying micro concepts of upper echelons to predict the macro outcome of CEO dismissal.

In the realm of bridging the micro and macro worlds, we expand the application of channeling theory to the study of executive leaders. In addition to opening new doors for the application of channeling theory by strategy scholars, this study shows that channeling theory holds with the personality traits of neuroticism and openness to experience which reaches beyond the scope of prior research on channeling theory (Winter et al. 1998; Thomas, Dickson, & Bliese, 2001). One of the most important implications of our study is that not only are the personality and motivations of a CEO important to their tenure, but also, that CEOs motivated by the same needs may behave differently as determined by their personality traits. Further, we find in our results an unexpected trait of interest with CEOs who are more extraverted to be significantly less likely to be dismissed (in both datasets). These findings are interesting and warrant the exploration of further research into the outcomes of extraversion in CEOs when paired with motivation traits through the tenets of channeling theory.

The study's core contributions to the executive leadership literature fall within three major categories: CEO dismissal, CEO intrinsic motivation, and CEO personality. First, we advance the CEO dismissal literature by adding the Big Five personality traits of neuroticism and openness as well as the implicit motivation of need for affiliation to the web of predictors of CEO dismissal. Scholars have held suspicions for multiple decades that personality could impact a CEO's likelihood of dismissal (Fredrickson et. al., 1988), and previous studies have made calls for research to link personality with dismissal in the upper echelons (Pitcher et al., 2000), but our study is the first to our knowledge to provide empirical evidence that this is the case. CEO motivation as a predictor of dismissal is also novel to the upper echelons literature.

Secondly, this study advances the executive leadership research on CEO intrinsic motivation which has until now mainly focused on the need for achievement or the need for

power in CEOs rather than the need for affiliation (Kunannatt, 2008; Miller & Dröge, 1986). Our study focuses on need for affiliation in CEOs which is an area with much left to be discovered. Additionally, this paper consolidates mixed prior results on whether the need for affiliation is a positive or negative predictor of outcomes for leaders. Our study finds that the need for affiliation is a detrimental rather than beneficial motivator in the prediction of tenure safety, specifically at the upper echelon level.

Finally, this study contributes to the literature in executive leadership personality by exploring the Big Five traits of neuroticism and openness to experience in CEOs as predictors of their likelihood of dismissal. Research into CEO personality as categorized by the Big Five typology is relatively sparse due to the difficulty of obtaining these traits at the upper echelon level. To our knowledge CEO personality has not been previously tied to the outcome of dismissal. Furthermore, we investigate mixed prior results on the trait of openness to experience as both a positive and negative indicator of leader outcomes. While the extant literature provides mixed findings on this trait, our study shows that being more open has negative implications for CEOs, specifically in the context of dismissal. Additionally, we find that not only is CEO personality make-up essential to tenure, but so is motivation because, as explained by channeling theory, personality directs how motivation will be expressed, even at the CEO level.

Managerial Implications

Given the critical role CEOs play in the success of a firm (Hambrick and Quigley, 2014) and the cost of replacing them (Khaliq et al., 2006; Parrino et al, 2003; Thrall, 2008), it is exceedingly important for firms to know what kinds of CEOs will be the most successful. Understanding the possible outcomes of certain CEO personalities and their motivating drivers can improve the CEO selection process. As seen by the results above, it would be a worthy investment to re-

design executive searches to measure personality traits and/or motivation types. Taking these traits into account during hiring could help boards avoid early terminations of CEOs. If the board is aware that an applicant is high in neuroticism, for example, they may choose a different candidate, leading to a more optimal hiring outcome. Extant literature suggests that individuals are highly capable of masking undesirable traits during interviews, and our study adds to the stream of literature that extends these capabilities to top executives.

Additionally, an understanding of the CEO's personality and motivations will enhance the board's ability to monitor and advise the firm. Each personality and motivational trait comes with its own strengths and weaknesses. Boards can adjust the structure of the firm, monitoring practices, or the dynamics of the other top management team members to capitalize on these strengths and limit the draw backs of these weaknesses. For example, CEOs with a high need for affiliation and may make decisions to remain liked could benefit from having a COO who can be the "bad cop" for them. In such an example, the firm can obtain the benefits associated with having an affiliation-driven CEO, while avoiding the costs. Ultimately, this enhanced board knowledge should lead to the hiring of a more effective CEO and the decrease of risk of dismissal for this chief executive officer. Whether it is right or wrong to dismiss CEOs based on their individual differences rather than solely based on their performance is not our place to decide, however, we do suggest that based on prior research, firm performance does not explain the full story about why some CEOs are dismissed (Fredrickson et al., 1988; Furtado & Karan, 1990; Wiersema & Zhang, 2011), and based on the results of our study, the psychological traits, specifically motivational and personality traits, of CEOs may explain part of this variance in dismissal outcomes. Our study has implications for future research into the predictors of CEO dismissal as well as the outcomes of implicit and explicit traits in executive leaders. Further, our

study warrant future exploration into the interaction of other motivational and personality traits, specifically the trait of extraversion as this trait surprisingly yielded a significant negative relationship with CEO likelihood of dismissal in both of our datasets and analyses.

CONCLUSION

Management scholars have not yet examined the impact personality has on CEO dismissal despite its obvious link (Fredrickson et. al., 1988). Utilizing concepts from personality, needs, and channeling theories, we argue and demonstrate that CEO dismissal is more likely to occur among those who have a high need for affiliation, are highly neurotic, or are more open to new experiences. Moreover, we show that the interaction between the need for affiliation and either personality trait will amplify the likelihood of dismissal. This paper not only provides a meaningful contribution to theory, but is important as well as to practitioners as understanding the impact of innate traits in the upper echelons can improve executive hiring practices and help organizations select leaders that will have a long and fruitful tenure with the company. In sum, we hope that future scholars will continue to investigate the impact of CEO motivation on the firm as well as the moderating influence of CEO personality.

Table 1: Summary Statistics and Correlation Matrix

Variables	Mean	SD	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	
(1) Turnover	0.027	0.163	0.000	1.000							
(2) Affiliation	1.444	1.097	0.004	6.932	0.017						
(3) Openness	4.668	0.564	3.121	6.240	0.036	0.033					
(4) Neuroticism	3.233	0.618	1.796	5.605	0.007	-0.080	-0.633				
(5) Extraversion	4.050	0.698	2.427	6.452	0.033	0.014	0.617	-0.466			
(6) Conscientiousness	4.776	0.778	2.184	7.000	-0.003	0.059	0.543	-0.605	0.415		
(7) Agreeableness	5.138	0.530	3.713	7.000	0.022	0.015	0.509	-0.408	0.412	0.228	
(8) ROA	1.660	6.210	-39.27	143.60	-0.010	-0.001	0.002	-0.004	0.022	-0.008	
(9) Cumulative Abnormal Returns	0.045	0.322	-0.876	5.361	-0.051	0.014	0.028	-0.016	0.033	0.019	
(10) Short Tenure	0.039	0.195	0.000	1.000	0.028	0.006	0.046	-0.033	0.038	0.034	
(11) Firm Size	9.587	1.349	6.426	14.73	0.030	-0.060	-0.129	0.005	-0.062	0.043	
(12) CEO Age	56.16	5.594	35.00	80.00	0.051	-0.109	-0.105	0.086	-0.138	-0.041	
(13) CEO Tenure	81.89	62.95	0.000	464.00	0.032	-0.077	-0.070	0.071	-0.102	-0.063	
(14) Interim CEO	0.045	0.291	0.000	2.000	0.048	-0.049	-0.021	0.007	-0.001	0.031	
(15) Duality	0.593	0.491	0.000	1.000	-0.011	0.017	-0.117	0.068	-0.118	-0.070	
(16) CEO Compensation	9.067	1.144	-6.908	12.28	-0.005	0.066	0.012	-0.009	0.045	0.019	
(17) Board Size	10.67	2.451	5.000	34.00	0.039	-0.034	-0.024	-0.062	-0.057	0.034	
(18) Outside Ratio	0.826	0.101	0.333	1.000	0.026	0.014	-0.091	0.025	0.017	-0.017	
(19) Industry											
N= 2,565, All correlations above .039 is significant at a .05 level											
	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(8) ROA	0.008										
(9) Cumulative Abnormal Returns	-0.014	0.031									
(10) Short Tenure	0.043	-0.029	-0.033								
(11) Firm Size	0.006	-0.035	-0.050	-0.042							
(12) CEO Age	0.031	0.004	-0.042	-0.086	0.143						
(13) CEO Tenure	-0.063	0.046	0.011	-0.211	-0.010	0.282					
(14) Interim CEO	-0.025	0.012	-0.023	0.065	-0.022	0.044	-0.047				
(15) Duality	0.044	0.014	0.005	-0.125	0.210	0.258	0.235	-0.057			
(16) CEO Compensation	-0.013	0.052	0.109	-0.047	0.276	0.106	0.001	0.002	0.149		
(17) Board Size	0.067	-0.041	-0.057	0.038	0.426	0.049	-0.095	-0.010	0.054	0.088	
(18) Outside Ratio	-0.009	0.040	-0.044	-0.076	0.250	0.094	-0.021	0.069	0.229	0.122	0.055
(19) Industry											
N= 2,565, All correlations above .039 is significant at a .05 level											

Table 2: Summary Statistics and Correlation Matrix for Supplementary Dataset

Variables	Mean	SD	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)
(1) Turnover	0.259	0.439	0.000	1.000						
(2) Affiliation	1.374	0.995	0.004	5.627	0.090					
(3) Openness	4.677	0.584	3.121	6.240	0.095	0.038				
(4) Neuroticism	3.222	0.547	1.796	5.604	-0.671	-0.050	-0.617			
(5) Extraversion	4.824	0.752	2.184	7.000	-0.051	0.080	0.490	-0.546		
(6) Conscientiousness	5.162	0.540	3.713	7.000	0.111	0.017	0.490	-0.391	0.200	
(7) Agreeableness	4.045	0.746	2.634	6.452	0.074	0.031	0.614	-0.444	0.351	0.355
(8) ROA	2.194	6.339	-5.494	52.049	-0.013	0.001	0.006	-0.032	-0.030	0.011
(9) Cumulative Abnormal Returns	-0.032	0.274	-0.876	2.146	-0.135	-0.043	-0.004	0.036	0.011	-0.039
(10) Short Tenure	0.056	0.231	0.000	1.000	0.035	-0.231	0.079	-0.029	0.088	0.032
(11) Firm Size	10.76	2.362	5.000	14.61	0.066	-0.012	-0.106	-0.041	0.025	0.011
(12) CEO Age	59.21	5.850	45.00	80.00	-0.141	-0.113	-0.049	0.041	-0.058	0.057
(13) CEO Tenure	102.0	63.62	7.000	464.00	-0.088	-0.029	-0.023	0.022	-0.058	0.011
(14) Interim CEO	0.094	0.410	0.000	2.000	0.080	-0.016	0.026	-0.043	0.066	-0.017
(15) Duality	0.602	0.491	0.000	1.000	-0.132	-0.022	-0.099	0.068	-0.061	0.064
(16) CEO Compensation	9.175	1.339	-6.908	11.39	0.031	0.080	0.002	0.002	0.033	-0.053
(17) Board Size	10.75	2.521	5.000	34.00	0.101	-0.091	0.023	-0.098	0.073	0.124
(18) Outside Ratio	0.842	0.090	0.462	0.938	0.031	-0.029	-0.064	0.014	0.028	0.002
(19) Industry	4.046	1.911	0.000	9.000	-0.023	0.023	0.227	-0.288	0.224	0.047

	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(8) ROA	0.000											
(9) Cumulative Abnormal Returns	0.118	0.019										
(10) Short Tenure	0.095	-0.035	-0.076									
(11) Firm Size	-0.074	-0.061	-0.004	-0.141								
(12) CEO Age	-0.140	0.025	-0.018	-0.005	0.090							
(13) CEO Tenure	-0.087	0.070	-0.060	-0.145	0.021	0.441						
(14) Interim CEO	0.052	-0.032	0.002	0.238	-0.057	0.015	-0.098					
(15) Duality	-0.130	0.033	0.023	-0.099	0.172	0.368	0.290	-0.022				
(16) CEO Compensation	0.067	0.023	0.068	-0.056	0.140	0.037	0.013	-0.092	0.108			
(17) Board Size	-0.035	-0.040	-0.013	-0.087	0.408	0.021	-0.044	-0.027	0.064	0.063		
(18) Outside Ratio	-0.030	-0.013	-0.012	-0.105	0.209	-0.05	-0.094	0.027	0.182	0.102	0.069	
(19) Industry	0.045	-0.117	0.005	0.015	0.126	-0.03	0.053	0.043	-0.07	-0.072	0.067	-0.058

N= 266, All correlations above |.039| is significant at a .05 level

Table 3: Panel Logit Regression Table: Main Analysis

	Model 1					Model 2					Model 3				
	Coef.	O.R.	St. E	z score	P value	Coef.	O.R.	St. E	z score	P value	Coef.	O.R.	St. E	z score	P value
Affiliation						0.191	1.210	0.103	1.850	0.065	0.191	1.211	0.103	1.850	0.064
Openness						0.820	2.271	0.346	2.370	0.018	0.821	2.272	0.346	2.370	0.018
Neuroticism						0.465	1.592	0.283	1.650	0.100	0.466	1.594	0.283	1.650	0.099
Affiliation X Openness											-0.015	0.985	0.174	-0.090	0.929
Affiliation X Neuroticism															
Extraversion						-0.264	0.768	0.212	-1.250	0.213	-0.264	0.768	0.212	-1.25	0.106
Conscientiousness						-0.020	0.980	0.269	-0.070	0.941	-0.019	0.981	0.269	-0.07	0.472
Agreeableness											0.285	1.329	0.222	1.280	0.200
ROA	-0.011	0.990	0.028	-0.370	0.624	-0.011	0.989	0.030	-0.380	0.706	-0.011	0.989	0.030	-0.380	0.705
Cumulative Abnormal Returns	-1.396	0.247	0.130	-2.660	0.008	-1.431	0.239	0.535	-2.680	0.007	-1.430	0.239	0.535	-2.670	0.007
Short Tenure	0.831	2.296	1.166	1.640	0.102	0.831	2.295	0.511	1.620	0.104	0.830	2.294	0.511	1.620	0.105
Firm Size	0.061	1.063	0.108	0.600	0.547	0.136	1.146	0.108	1.260	0.206	0.137	1.146	0.108	1.270	0.205
CEO Age	0.051	1.053	0.025	2.170	0.030	0.056	1.058	0.024	2.380	0.017	0.056	1.058	0.024	2.370	0.018
CEO Tenure	0.003	1.003	0.002	1.710	0.088	0.003	1.003	0.002	1.820	0.069	0.003	1.003	0.002	1.820	0.069
Interim CEO	0.473	1.606	0.428	1.780	0.076	0.577	1.780	0.275	2.100	0.036	0.577	1.780	0.275	2.100	0.036
Duality	-0.392	0.676	0.180	-1.470	0.141	-0.357	0.700	0.272	-1.310	0.189	-0.358	0.699	0.272	-1.320	0.188
CEO Compensation	0.012	1.012	0.091	0.130	0.896	-0.021	0.979	0.083	-0.250	0.801	-0.021	0.980	0.083	-0.250	0.805
Board Size	0.064	1.066	0.047	1.460	0.145	0.078	1.081	0.045	1.730	0.083	0.078	1.081	0.045	1.730	0.084
Outside Ratio	1.862	6.439	9.113	1.320	0.188	1.680	5.364	1.411	1.190	0.234	1.683	5.379	1.411	1.190	0.233
Industry	.0641		0.065	0.98	0.326	0.060		0.068	0.88	0.377	0.616		0.068	0.90	0.367
Number of Observations	2,565					2,565					2,565				
χ^2	29.09				0.002	43.42				0.000	43.39				0.001

Table 3 continued

	Model 4					Model 5				
	Coef.	O.R.	St. E	z score	P value	Coef.	O.R.	St. E	z score	P value
Affiliation	0.191	1.211	0.109	1.750	0.080	0.180	1.198	0.142	1.520	0.129
Openness	0.854	2.350	0.352	2.420	0.015	0.848	2.335	0.824	2.400	0.016
Neuroticism	0.355	1.427	0.281	1.270	0.205	0.493	1.637	0.491	1.640	0.100
Affiliation X Openness						0.534	1.705	0.419	2.17	0.000
Affiliation X Neuroticism	0.378	1.459	0.140	2.690	0.007	0.807	2.242	0.506	3.58	0.030
Extraversion	-0.356	0.701	0.213	-1.67	0.095	-0.418	0.658	0.143	-1.930	0.054
Conscientiousness	-0.021	0.979	0.268	-0.08	0.937	-0.099	0.906	0.239	-0.370	0.709
Agreeableness	0.296	1.344	0.226	1.31	0.190	0.440	1.553	0.360	1.900	0.058
ROA	-0.012	0.988	0.030	-0.400	0.689	-0.006	0.994	0.026	-0.220	0.828
Cumulative Abnormal Returns	-1.339	0.262	0.538	-2.490	0.013	-1.326	0.265	0.144	-2.450	0.014
Short Tenure	0.865	2.376	0.512	1.690	0.091	0.894	2.446	1.256	1.740	0.082
Firm Size	0.144	1.155	0.108	1.340	0.181	0.141	1.151	0.123	1.320	0.188
CEO Age	0.054	1.055	0.024	2.240	0.025	0.063	1.065	0.026	2.620	0.009
CEO Tenure	0.004	1.004	0.002	2.080	0.037	0.004	1.004	0.002	1.990	0.046
Interim CEO	0.607	1.834	0.275	2.210	0.027	0.625	1.868	0.516	2.260	0.024
Duality	-0.407	0.666	0.274	-1.480	0.138	-0.418	0.659	0.183	-1.500	0.133
CEO Compensation	-0.004	0.996	0.083	-0.050	0.957	-0.011	0.989	0.085	-0.130	0.900
Board Size	0.081	1.085	0.045	1.830	0.068	0.087	1.090	0.049	1.930	0.053
Outside Ratio	2.233	9.325	1.460	1.530	0.126	2.207	9.087	13.43	1.490	0.135
Industry	0.055		0.068	0.81	0.417	0.020		2.87	0.28	0.78
Number of Observations	2,565					2,565				
χ^2	50.33				0.000	54.69				0.000

Table 4: Main Model (5) run with Supplementary Analysis

	Coef.	St. E	z score	P value
Affiliation	0.431	0.165	2.61	0.009
Openness	0.627	0.440	1.42	0.054
Neuroticism	-0.21	0.400	-0.53	0.594
Affiliation X Openness	0.699	0.361	1.93	0.053
Affiliation X Neuroticism	0.810	0.349	2.32	0.020
Extraversion	-0.865	0.300	-2.88	0.004
Conscientiousness	0.320	0.338	0.95	0.344
Agreeableness	0.190	0.310	0.61	0.541
ROA	0.004	0.245	0.17	0.863
Cumulative Abnormal Returns	0.004	0.626	-1.63	0.103
Short Tenure	-1.069	0.787	-1.36	0.175
Firm Size	0.344	0.146	2.35	0.019
CEO Age	-0.098	0.032	-3.07	0.002
CEO Tenure	-0.002	0.003	-0.078	0.433
Interim CEO	0.719	0.371	1.94	0.052
Duality	-0.583	0.361	-1.61	0.107
CEO Compensation	0.024	0.153	0.16	0.875
Board Size	0.095	0.080	1.18	0.237
Outside Ratio	-0.013	3.511	0.65	0.995

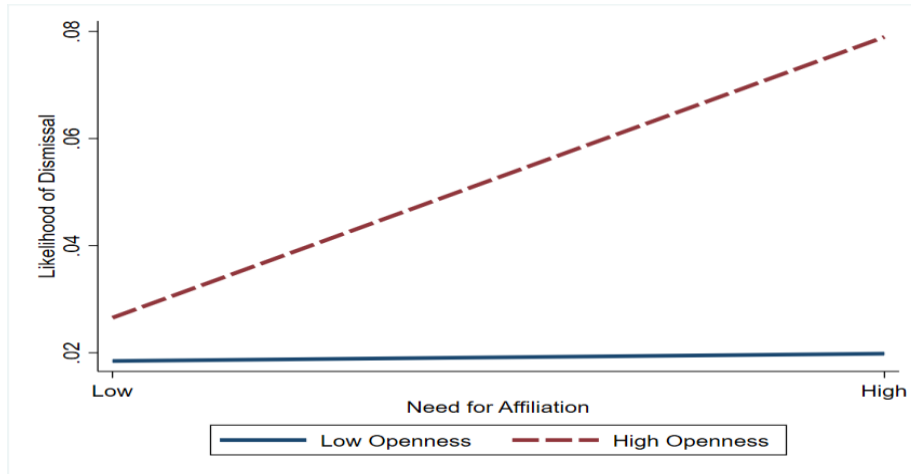


FIGURE 1: Moderation Effects of Openness on Need for Affiliation (Variables Uncentered)

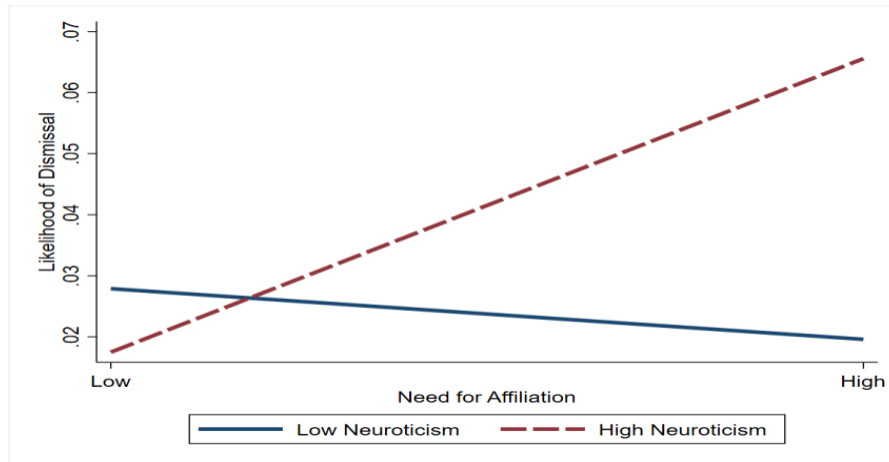


FIGURE 2: Moderation Effects of Neuroticism on Need for Affiliation (Variables Uncentered)

APPENDIX 1

Passages from the Winter (1994) scoring manuals. Underlined words represent the affiliative messages.

“A husband and wife have stopped during one of their Sunday promenades. The man, smiling so casually, obviously has a great deal of love for the woman whose back we can only see.” (page 148)

“There is a man and woman sitting on the bank of a river. They have some quiet time to just talk. They are enjoying the out of doors and the scenery. Talking together lets them know more about each other’s feelings. (page 174)

“America needs new leadership... leadership that balances a humane understanding of people’s needs with fiscal responsibility.” (page 220)

“In 1976, the last thing American people need is another smiling politician or spellbinding orator spewing political rhetoric. What we need is a leader with deep concern for the people and their problems and determination to carry out a sound program to resolve those problems.” (page 221)

“The prime cause of inflation today is not federal spending to take care of human needs. The prime cause is the insufficient investment in this nation has driven our productivity rate down to 66 percent. And it is a cozy relationship that presently exists between the White House and special interests...” (page 223)

“That we had torn down the barriers that separated those of different race and region and religion, and there had been mistrust, built unity, with respect to diversity. (page 229)

“As a result of the overthrow of a fascist dictatorship in GAMMA and PHI Movement that country has become a valid interlocutor. A dialog was started, and our relations improved as a result of the advent of popular power in RHO City.” (page 231)

APPENDIX 2

Coding instructions for CEO Dismissal Dataset

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1. Read. Review the articles that are posted for each link. Sometimes there is only one but often there are a couple that have information relevant to the departure event. Focus on getting a sense of whether the coverage is laudatory. Terse language that describes a CEO leaving office immediately or a CEO who leaves office while in good health/youth and does not remain on the company's board tend to indicate that the turnover was involuntary. Does the coverage talk about poor firm performance? Does the coverage talk about 'scandals' or other leadership crisis? If it is not clear or you don't have a good sense, take a break and move to the next one or look around the firm's media coverage (rather than the CEO's) around that time.

→ *We're looking for good information to make a reasonable judgement call* ←

2. Interpret. Once you have read through and familiarized yourself with the information around the CEO's departure, we'll want to categorize the departure into one that was either voluntary or involuntary.

Involuntary – Death or Illness (Codes 1 & 2):

The CEO sometimes gets sick or dies in office. If s/he dies in office, this is a code 1. Code 2 is if the CEO left the firm due to illness but did not die in office. This is a gruesome distinction, but sudden CEO death can tell researchers a lot about the stock market's value of a CEO

Voluntary – Retired or New Opportunity (Codes 5 & 6):

A CEO who left on his/her own terms at the end of their career or their time with the company will tend to have somewhat positive language about the firm's performance or what the CEO achieved. That person might stay on the company's board following their departure for a couple of years. This is a Code 5.

CEOs might also leave to take a new position. This is unusual but for a smaller company, sometimes larger firms hire the CEO from the other firm. This is a Code 6.

If the CEO stopped working for the focal firm, waited out a few months and took a new job, it is NOT a code 6. Code 6 is only if the person was poached to take a new job or left to a new company/job (going into government for example).

Involuntary – Dismissed for Performance or Behavioral Issues (Codes 3 & 4):

Involuntary turnover announcements tend to be terser. The focus tends to be on the incoming CEO. The outgoing CEO will frequently not be on the board or that person is only on the board for a few months following their departure. Involuntary departures can result from either a) poor performance or b) behavioral/policy problems. CEOs who engage in sexual harassment are often fired immediately and those acquisitions are made often publicly, or they leak out quickly.

Other Events (Code 7):

In the dataset, some events will look like a CEOs' departure but are in fact due to a data coding error. For example, if the firm is acquired and take private or merged so that it stopped being a publicly listed firm, this would be a Code 7. If the CEO is listed and described as an interim CEO or the person is part of a co-CEO arrangement (like Netflix) the CEO database we started with will appear to show a CEO turnover even if the CEO did not in fact leave. It only has one slot for the CEO.

No Information (Code 8):

Code 8 indicates that you can find no relevant information for this turnover event. SEC filings are uninformative, news media is scarce, and it is not possible to make even a reasonable judgement call about why this CEO left.

This should be very unusual. The companies we are looking at are all publicly traded with market values at least in the hundreds of millions of dollars. The news coverage might be sparse or buried in a university database, but there is nearly always a press release somewhere. First look to see if the company operated under a different name at the time, even googling "name change."

Additionally, the SEC will also have a filing from a public company who releases their CEO. Look for an 8-K filing with a code 5.02 or 7, these are the codes for "executive changes" or "Other material events." If all else fails, ask for support, but do not guess.

Gentry, R., Harrison, J., Quigley, T., & Boivie, S. 2021. A database of CEO turnover and dismissal in S&P 1500 firms, 2000-2018. *Strategic Management Journal*, 42(5), 968-991.

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**PAPER II. “PERSONALITY PAYS”: HOW CEO PERSONALITY AFFECTS THEIR
COMPENSATION**

ABSTRACT

In this study we explore differences in chief executive officer compensation as influenced by the personality traits of the CEOs. Through the lens of implicit leadership theory, we suggest that personality traits that will be perceived as more reflective of an effective leader in the minds of board members will command higher total compensation packages while CEOs with personality traits that do not match up with BOD expectations of effective leaders will be awarded lower compensation packages. We find that two personality traits, openness to experience and agreeableness, tend to benefit CEO's the most in terms of their total compensation packages, even when controlling for various types of firm performance. We also find that when CEO compensation is measured differently (specifically in cash benefits rather than as a total package), results vary in terms of the potential effects of CEO personality traits, specifically conscientiousness, extraversion, and neuroticism. Our study means to contribute to the literature on individual differences in CEOs (specifically personality) and the executive compensation literature.

INTRODUCTION

Executive compensation has been a highly public and contentious topic for the last few decades. Not only has the rapid increase in executive pay very starkly contrasted the increase of pay in regular employees (Jensen, Murphy, and Wruck, 2004; Mishel & Wolfe, 2019) with at least 25 companies in the S&P 500 still featuring more than 1,000:1 CEO to median employee pay ratios (AFL-CIO, 2022), but interestingly, there also exists an extreme gap between pay ratios in CEOs themselves. At the lowest end of CEO to employee compensation ratios, Berkshire Hathaway Inc., features a 6:1 pay ratio, while Abercrombie & Fitch Co. features a gap between employees and CEO ratios of 6,565:1 (AFL-CIO, 2022)! This discovery leads scholars like ourselves to question what factors contribute to why some CEOs are compensated so much more than others. Finkelstein, Hambrick, and Cannella have pointed out that research thus far attempting to explain differences in CEO compensation utilizing classic indicators of strategic outcomes has yielded highly mixed results, pointing to the fact that these indicators might be less explanatory of variance in compensation than other predictors, like individual differences in CEOs or Board members, that determine the CEO's behavior (2009). Understanding this variance in CEO compensation is crucial to our overall understanding of strategic performance at organizations, because firm performance is often correlated with CEO compensation (Kaplan, 2008). We aim to specifically examine how personality traits of CEOs could begin to explain the extreme variance in compensation of chief executive officers.

Prior literature on predictors of differences in CEO compensation has pointed to a number of potential indicators outside of the CEO themselves to attempt to explain why some CEOs are compensated significantly more or less including cultural dimensions (Tosi & Greckhamer, 2004), institutional investors and their investment opportunity sets (David,

Kochnar, & Levitas, 1998; Gaver & Gaver, 1993; Smith & Watts, 1992), corporate social responsibility (Cai, Jo, & Pan, 2011), and the compensation committee make-up (Newman & Mozes, 1989). A small amount of extant research, however, has also begun to look at the effects of CEO personal attributes on their compensation. The status of the CEO as an insider or outsider at the firm (Brockman, Lee, & Salas, 2016), the CEO's facial traits (Graham, Harvey, & Puri, 2017; Canace, Cianci, Liu, & Tsakumis, 2020), the CEO's reputation, their career track speed, and even their educational background (Falato, Li, & Milbourn, 2015), have all been shown to potentially impact the compensation of the CEO. Additionally, multiple studies have looked at whether CEO gender impacts compensation with highly mixed results (Bell, 2005; Bertrand & Hallock, 2001; Bugeja, Matolcsy, Spiropoulos, 2012; Elkinawy & Stater, 2011; Geiler & Renneboog, 2015; Jordan, Clark, & Waldron, 2007; Mohan & Ruggiero, 2003; Muñoz-Bullón, 2010, Vieito & Khan, 2012).

While there has been some prior attention to a narrow range of individual CEO characteristics as pay predictors in the executive compensation literature, there has been little systematic consideration of other CEO dispositional factors, specifically personality traits, outside of narcissism (O'Reilly, Doerr, Caldwell, & Chatman, 2014). The paucity of research on these factors in relation to CEO compensation probably exists because there are still many difficulties to obtaining individual-level traits at the chief executive level (Harrison, Thurgood, Boivie, Pfarrer, 2019a; Hambrick, 2007, Hoffman & Meusburger, 2018). We know that CEO compensation changes dramatically from firm to firm (Elsaid & Davidson, 2009), but we do not fully understand what it is about an individual CEO that might signal a higher or lower compensation package. In a practitioner-focused study of 100 CEO successions which involved in depth interviews with the boards of the organizations conducting the executive searches, Rakesh

Khurana found that many organizations he interviewed “ended up comparing candidates in terms of personalities rather than the position’s requirements and the company’s future needs” (2001: p.3). Despite the significant impact of a CEO’s personality on outcomes like selection, few rigorous academic studies have explored what it is about a CEO’s personality that could signal to a Board that he or she is more deserving of a higher compensation package. Though the Big Five personality model is the most studied personality theory in the field of psychology and psychologists might naturally look to these traits to help explain executive outcomes, and the fact that CEO personality has been shown to directly affect the decisions of Boards in CEO hiring, there have been no studies to our knowledge that analyze how the Big Five personality traits of a CEO directly affect the extent to which they are compensated. We aim to address this gap in the literature by explaining how the Big Five personality types could help to explain the strikingly different compensation packages received by CEOs at public firms.

This study seeks to address the limitations of the extensive literature on the determinants of CEO compensation outlined above. By integrating the widely validated Big Five personality theory from psychology and insights from the implicit leadership theory, we argue that in line with implicit leadership theory’s tenants, CEO’s who exhibit personality traits that are contrary to Board expectations of how an effective leader should behave will be compensated less. Literature on the compensation-related outcomes of individual differences in CEOs is still limited despite past findings that executive compensation seems to reflect attributes of CEO’s rather than just CEO performance, tenure, and position (i.e. CEO narcissism affects their compensation: O’Reilly et al., 2014).

Our study aims to contribute to the literature on executive compensation and CEO personality by integrating the tenants of the heavily studied Big Five personality theory and the

broadly established implicit leadership theory to explore predictors of the expansive variance in CEO compensation. The major contribution of this study is adding the Big Five personality model to the web of predictors of CEO compensation in the executive compensation literature which to our knowledge has been unexplored thus far. As bridging the gap between micro and macro topics swells in importance in the field of management, we hope to contribute to the analysis of the upper echelons through the lens of a highly validated psychological theory.

THEORY AND HYPOTHESES

Implicit Leadership Theory, CEO Personality, and CEO Compensation

Part of the job of a Board of Directors is to determine the CEO's compensation packages (Fama & Jensen, 1983; Finkelstein, Hambrick, & Cannella, 2009; Nobel, 2015). Drawing upon insights from implicit leadership theory, leaders are expected to behave in certain ways that confirm our innate beliefs on what is appropriate to their role and will be rewarded when they behave in ways that uphold these implicit beliefs (Eden & Leviatan, 1975; Jacquart & Antonakis, 2015). Implicit leadership theory suggests that people have innate preconceptions about the traits of leaders (Eden & Leviatan, 1975), and that we judge the effectiveness of a leader sometimes based solely on their adherence to a categorization of traits or attributes that we deem "leader-like" (Lord, Epitropaki, Foti, & Hansbrough, 2020). Implicit leadership theory posits that effective leadership is a socially constructed idea and is not based directly on the traits of a leader but rather on the perceptions of these traits as reflective of effective by others (Alabdulhadi, Schyns, & Staudigl, 2017; Foti, Hansbrough, Epitropaki, & Coyle, 2017). Scholars have shown that the perception of top managers as more "leader-like" can positively affect leader selection and retention (Jacquart & Antonakis, 2015).

Common traits associated with leadership include decisiveness, dominance, and intelligence (Foti, 2017; Lord et al., 2020; Lord, Foti, & De Vader, 1984; Offermann, Kennedy, & Wirtz, 1994). While the traits which are perceived as most "leader-like" have been shown to vary somewhat across different geographic locations (Alabdulhadi, Schyns, & Staudigl, 2017), multiple traits appear across studies in different contexts as indicators of rater perception of effective leadership. In studies across Chinese (Ling, Chia, & Fang, 2000), American (Offermann et al., 1994; Lord et al., 1984), and Dutch (Schyns & Schilling, 2011) samples for

example, though terms ranged from “charisma/charismatic” to “communicative” to “interpersonal skills” to “talks frequently”, a trait consisting of social forte consistently appeared in the most strongly validated categories of traits perceived to be associated with effective leaders. Traits across the aforementioned samples as well as another English sample (Epitropaki & Martin, 2004) also commonly reflected the tendency to be open to experiences with terms such as “versatility” and “dynamism” appearing across multiple studies. Other specific traits shown to be perceived as leader-like include: goal effectiveness, sensitivity, devotion/dedication, conscientiousness, and sensitivity (Epitropaki & Martin, 2004; Ling et al., 2000; Lord et al., 1984; Offermann et al., 1994; & Schyns & Schilling, 2011)

We integrate implicit leadership theory with the most heavily studied personality theory in the field of psychology, the Big Five personality theory, to predict which personality traits will signal to a Board that a leader is less effective, and therefore, how they will be compensated. In the sections that follow, we will discuss each of the personality traits in the Big Five model and how they directly reflect or map onto the traits we expect to find in effective executive leaders to predict which personality traits in CEOs will be perceived as most effective by their boards. We choose the Big Five personality traits as these traits have been shown to have extensive external validity and has been argued to be valid when studying members of all populations, including special executive populations, like CEOs (Digman, 1990). Additionally, the Big Five Personality model in CEOs has been linked to the CEO’s decision-making, specifically their initiation and implementation of strategic change at an organization (Herrmann & Nadkarni, 2014), and these types of behaviors will be considered by a compensation committee when determining what a CEO is worth to the firm in terms of compensation values (Pathak, Hoskisson, & Johnson, 2014).

The Big Five personality theory posits that all humans are made up of a unique combination of five major traits: openness to experience, agreeableness, neuroticism, extraversion, and conscientiousness. Anyone who has ever been part of a hiring committee knows that no matter the credentials of someone, the candidate's personality that shines through during the interview process is a critical factor in hiring decisions, and this is no different at the chief executive level. In fact, extant research shows that executive search committees often weigh personality of candidates over the firm's needs or the position's requirements (Khurana, 2001). We argue that the personality traits of a CEO could be a major predictor of not only whether or not they are selected for their position but also how well they are then compensated by their board.

Conscientiousness in CEO's: A Signal of a Leader

Perhaps the personality trait most commonly and consistently associated with positive organizational outcomes, including for leaders, is conscientiousness. This trait is associated with dependability, perseverance, responsibility, thorough planning, order, and achievement (Barrick & Mount, 1991; Goldberg, 1992; Harris, Cardador, Cole, Mistry, & Kirkman, 2019; Mount & Barrick, 1995) and has been found to be a positive trait which predicts task accomplishment in leaders, leader emergence, and even improved performance and productivity across multiple industries and levels including managers and professionals (Barrick & Mount, 1991; Judge, Bono, Ilies, & Gerhardt, 2002; Judge, Piccolo, & Kosalka, 2009; Marinova, Moon, & Kamdar, 2013). Conscientious individuals are perceived to be highly self-disciplined (Resick, Baltes, & Shantz, 2007), and highly cautious and selective in their decision-making (Costa & McCrae, 1992). Additionally, conscientiousness has been linked to helpful proactive behaviors like information gathering, networking, and building relationships (Schmit, Amel, & Ryan, 1993).

Prior research seems to agree that the identification of the Big Five personality traits, especially conscientiousness, in others is relatively easy and can be accurately determined by observation of such factors as: the organization of ones chosen work environment, pace of life, health/longevity, and occupational success (Gosling, Ko, Mannarelli, & Morris, 2002; Heine, Buchtel, & Norenzayan, 2008; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). Samples in the aforementioned studies do not specifically look at boards evaluating CEOs, however, the Big Five personality model has been shown to have extensive external validity even at higher levels of an organization (Digman, 1990), and the factors studied previously such as pace of life, health, and occupational success would be information that would be easy to obtain for a prospective or current CEO by his or her directors. Therefore, we argue that it will be evident to a Board of Directors whether a CEO is highly conscientious or not based on their behaviors, speech, decisions, personal lives, and past experiences or work history. Additionally, Peterson and colleagues found a direct relationship between CEO Big Five personality traits and the dynamics of the top management team at firms (2003), suggesting that these specific personality traits in CEOs are not only recognizable to their colleagues on the top management team (which often overlaps multiple directors on the board), but that they also impact firm-level outcomes.

Computer simulations of behaviors associated with conscientious individuals have yielded perceptions of consistency by viewers, with people who viewed the behaviors of characters coded as highly conscientious in the simulation describing these characters mainly as “predictable” (Durupinar, Pelechano, Allbeck, Gudukbay, & Badler, 2011). This holds true to the description of conscientiousness which suggests that individuals who are high in this trait are very careful with their decisions and dependable with their outcomes. Conscientious leaders are additionally perceived as charismatic (De Hoogh, Den Hartog, & Koopman, 2005). A recent

study by Harrison and colleagues (2020) finds that firms where CEOs who are perceived to be more highly conscientious will face less stock risk and that the relationship between firm stock risk and shareholder returns will be moderated by CEO conscientiousness such that more conscientious CEO's foster more confidence in investors with their cautious and dependable risk-taking behaviors. Conscientious CEO's make effective and trustworthy leaders because they are deliberate in their decision-making and devoted to reaching firm strategic goals (Bono & Judge, 2004; Colbert, Barrick, & Bradley, 2014; Harrison, Thurgood, Boivie, & Pfarrer, 2020). Through the lens of implicit leadership theory, we argue that the perception of a highly conscientious CEO by a board of directors will translate to that of a highly effective CEO as the attributes associated with highly conscientious individuals closely match those validated by prior studies of implicit leadership theory.

In an implicit leadership validation study which explored specific terms people associate with leadership, the term "conscientiousness" itself was in the top six recorded words utilized to describe participants' innate beliefs about the traits of an effective leader (Schyns & Schilling, 2011). Other validated scales of implicit leadership include such attributes as dedication (Epitropaki & Martin, 2004), devotion (Schyns & Schilling, 2011), and commitment to goal emphasis and effectiveness (Ling et al., 2000; Lord et al., 1984), all of which are also commonly attributed to conscientious leaders. An implicit leadership theory perspective indicates that a Boards of Directors will perceive a conscientious CEO as an innately effective leader. Conscientious CEO's will be seen as predictable, dependable, and charismatic leaders who will provide consistent results, deliberate goals, and effective decision-making and who should be compensated accordingly.

Therefore we hypothesize:

Hypothesis 1: CEOs who are higher in conscientiousness will be compensated more.

Extraversion in CEO's: A Signal of a Leader

The second personality trait we explore in CEO's from the Big Five model is extraversion which is also occasionally referred to as surgency. A person who is highly extroverted is often perceived as social, gregarious, active, assertive, dominating, and expressive (Barrick & Mount, 1991; McCrae & Costa, 1987). Extraversion has also been broken down into the two more specific traits of ambition and sociability (Hogan, 1986) and has been linked to improved performance in roles that require a higher level of interpersonal communication (Barrick & Mount, 1991). People who are highly extroverted could be more commonly known as a social butterfly or a people person. They obtain their energy from others rather than from being alone.

Increased quantity of communication, as would be expected in a highly extroverted leader, has been tied to increased compensation in CEO's. Specifically, Li, Minnis, Nagar, and Rajan (2014) found that CEO's who spoke more often in conference calls in relation to other officers present during the conference calls were paid more relative to their team members from the top management team total pay amount. They accredited this difference in compensation to the knowledge the CEO's were perceived to have because of the quantity of communication they participated in. Li and colleagues (2014) measured the frequency of this communication by quantifying CEO speech in analyst conference calls. Our study utilizes these same conference calls to obtain CEO personality scores, including the extraversion scores for CEO's in the sample. We argue that highly extroverted CEOs will be perceived to have more knowledge by their boards because of their increased frequency of speech. Extant research has found that CEOs with more perceived knowledge are compensated more (Li et al., 2014). Therefore, transitive

logic follows that CEOs who are more extraverted will speak more frequently which will be perceived as having a greater amount of knowledge which will lead to more extraverted CEO's being compensated more than less extraverted CEOs. Furthermore, an extraverted CEO will be more likely to devote the time and energy to build relationships with their Board members and be better at building these relationships than less extraverted CEOs. A CEO who is more effective at building these relationships will be expected to receive a higher compensation package.

Additionally, the attributes of a highly extraverted individual can be tied to closely to the attributes we innately expect of competent leaders based on prior implicit leadership theory research. Samples in three different countries have shown that people implicitly identify strong leadership skills in individuals who are “communicative” (Schyns & Schilling, 2011), who “talk frequently” (Lord et al., 1984), or who have strong “interpersonal skills” (Ling et al., 2000) or “charisma” (Offermann et al., 1994). Since the attributes of a highly extraverted CEO match closely with the attributes tied to the attributes expected in effective leaders, we argue that Board members will expect highly extraverted leaders to be effective and compensate them more based on this increased confidence in their abilities.

Lastly, we argue that a more extraverted CEO is more likely to feel confident in negotiating a higher salary package and be more successful in doing so. Since the trait of extraversion signifies dominance and confidence, we argue that a more extraverted CEO will feel more comfortable asking for what he or she desires in terms of compensation. Per this confidence, we also believe these highly extraverted will be more successful in meeting their demands. A meta-analysis on the impact of the Big Five personality traits on negotiation outcomes showed that extraversion was tied to improved negotiation outcomes in situations

where there is the possibility of integration or the attempt to satisfy the underlying needs of all parties (Bottom & Sharma, 2003).

Therefore we hypothesize:

Hypothesis 2: CEOs who are higher in extraversion will be compensated more.

Openness to Experience in CEO's: A Signal of a Leader

The Big Five model's third trait is openness to experience which is characterized by flexibility of thought, unusual thought practices, and creativity (McCrae & Costa, 1987). A CEO with high openness to experience might engage in such behaviors as changing long-standing firm traditions and launching new and possibly risky new campaigns or projects with strategic decisions being made quickly and sometimes reversed just as quickly if they do not pan out (Peterson et al., 2003). High openness to experience in CEO's has been linked to top management team risk-taking and intellectual flexibility (Peterson et al., 2003).

Elon Musk would be a CEO in today's society that exhibits the attributes of a CEO high in openness to experience with his willingness to pursue creative and risky projects and make quick and unpredictable strategic decisions. We argue that the willingness of a highly open CEO to engage in risk-taking behavior and creative exploration could reward them in terms of their compensation. While a CEO with a high-risk, high-reward mentality may be prone to increased risk of turnover if their plans do not pan out, CEO's who are perceived to be creative, flexible, and risk-taking are most likely hired with the confidence that these risks will pay off for the firm. Therefore, we predict that Boards who choose highly open CEO's do so in hopes of the creative strategic change they may bring and will compensate them higher to support and inspire this behavior.

We also expect openness to experience to be a personality trait which benefits CEOs in terms of compensation because of how clearly this personality trait relates to the attributes identified by the constructs in the scales utilized for implicit leadership theory. People have been shown to identify effective leaders as those who they perceive to have “versatility” (Ling et al., 2000) and “dynamism” (Epitropaki & Martin, 2004). Versatility and dynamism both refer to an individual’s willingness to pivot and to accept and embrace new and different situations. A CEO who is high in openness to experience will be comfortable with change and willing to engage in the pursuit of new ideas or strategies, or financial risk (Benischke, Martin, & Glaser, 2019). These behaviors directly map onto the attributes of versatility and dynamism found to be expected of effective leaders in implicit leadership research. Hence, we argue that a Board who observes a CEO that is highly open to experience will be more confident in their innate ability to lead an organization effectively and compensate the more because this personality trait closely reflects that of our innate assumptions for a successful leader.

Therefore we hypothesize:

Hypothesis 3: CEOs who are higher in openness to experience will be compensated more.

Agreeableness in CEO’s: A Double-Edged Sword

The fourth personality trait we explore in this sub-section is perhaps the trait with the most indeterminate outcomes for a CEO: agreeableness. Agreeableness can be characterized by cooperative behavior, warmth towards others, and a trusting persona (McCrae & Costa, 1987). The tendency of highly agreeable leaders to emphasize social cohesion, power sharing, and the building of strong relationships with team members has been widely validated by prior scholars (Barrick, Stewart, Neubert, & Mount, 1998; Peterson et al., 2003; Stogdill, 1974; Tjosvold,

1984). An agreeable CEO would be expected to listen to the opinions of their top management teams, respect their opinions, and these types of CEO's have been tied to greater decentralization of power on top management teams (Peterson et al., 2003). We argue that Boards who perceive an incoming CEO to be highly agreeable will have more confidence in the CEO's willingness to share their power, listen to others' opinions, and create team cohesion and will, therefore, compensate the CEO more than they would a less agreeable CEO.

However, through the lens of implicit leadership theory, we question whether or not being agreeable will benefit a CEO as shown by their compensation. Implicitly, we look for effective leaders who display "morality" (Ling et al., 2000), "sensitivity" (Offermann et al., 1994; Epitropaki & Martin, 2004), and behave as a "team player" (Schyns & Schilling, 2011). All of these attributes associated with Board biases towards effective leaders tie closely with the attributes of a highly agreeable CEO. However, implicit leadership also posits that we look for effective leaders who display "tyrannical" (Offermann et al., 1994, Schyns & Schilling, 2011) behavior and who speak more frequently than they listen (Lord et al., 2020). These previously validated characteristics of a perceived leader stand in contrast to the attributes of a highly agreeable leader. An agreeable CEO has been shown to increase the likelihood of decentralized power in their top management teams as well as increase team cohesion which are outcomes that stand in stark contrast to tyranny and monopolizing team conversation. Additionally, LePine and Van Dyne found that high agreeableness in leaders increased the likelihood of leaders to avoid voicing personal concerns and to surrender their own desires to maintain the peace which leads to less effective decision-making and organizational change (2001). An agreeable CEO's tendency to act in a passive manner and to prioritize the well-being of their team could lead to their compensation package being lower than a less agreeable CEO as they may strive for

avoidance of conflict over demanding more personal incentives. While the trait of agreeableness could increase incentives for CEOs because of its likelihood to increase a CEO's sensitivity and relationship-building, this attribute could also be detrimental to a CEO's incentives because it may increase the CEO's likelihood of surrendering to the desires of their top management team. Further, a more agreeable CEO may be less likely to challenge or negotiate the compensation they are offered as highly agreeable people strive to "keep the peace" with others and maintain their likeability.

Therefore we hypothesize both possible outcomes for highly agreeable CEO's:

Hypothesis 4a: CEOs who are higher in agreeableness will be compensated more.

Hypothesis 4b: CEOs who are higher in agreeableness will be compensated less.

Neuroticism in CEO's: A Sign of Weakness

The final Big Five personality trait we explore in this section is the personality trait that has shown the most overwhelmingly negative outcomes for leaders in both psychology and management literature: neuroticism. Also referred to commonly as "emotional instability", the trait of neuroticism is characterized by a tendency to act impulsively, anxiously, and defensively (McCrae & Costa, 1987) as brought on by low self-esteem and low self-efficacy (Judge et al., 2002). Leaders are vital in creating an environment in which their teams feel safe to speak up, make decisions, or take risks (i.e. psychological safety: Edmonson, 1999), and a leader with a high level of neuroticism is more likely to react negatively to events and to display socially negative perceived emotions such as anger, frustration, anxiety, and stress, which all run counter to the types of behaviors that create this type of psychological safety.

CEO neuroticism has been tied directly to increased stock risk for the firm (Harrison, Thurgood, Boivie, & Pfarrer, 2019b), despite the relationship of CEO neuroticism to decreased

strategic risk-taking (Benischke et al., 2019). In other words, though highly neurotic CEO's tend to take less strategic risks, their firm's still face higher stock risks in the market. This may be because neuroticism is one of the Big Five personality traits that is argued by prior scholars to be easiest to witness in individuals or because neuroticism is the Big Five trait most clearly associated with negative behaviors like stress, anxiety, negative outward reactions, and anger (Harrison et al., 2019b). High neuroticism in CEO's has been linked to low team cohesion on top management teams and rigid, inflexible intellectual behaviors by the top management team (Peterson et al., 2003). While neurotic leaders do exist and can be successful (i.e. Steve Jobs), extant research argues that not only are most successful leaders low in neuroticism (Bass, 1990), but we will innately perceive more neurotic people as weaker leaders (Hogan, Curphy, & Hogan, 1994; House, 1988). Therefore, we predict through the lens of implicit leadership theory that emotional instability, also known as neuroticism, will be perceived as negative in the eyes of the Board as guided by their expectations of what makes an effective leader. Following this decreased expectation of leadership effectiveness by their Board, CEOs who exhibit neurotic tendencies will be compensated less.

Therefore we hypothesize:

Hypothesis 5: CEOs who are higher in neuroticism will be compensated less.

METHODS

Data

The sample includes all of the CEOs of the S&P 500 publicly traded companies from 2006 to 2016. Originally this set featured 1,056 total unique CEO's, however, our final sample features 472 unique CEO's for 2,473 unique observations after dropping CEO's who did not speak enough to measure their personality traits accurately (Harrison et al., 2019a). Measures of CEO personality traits are based on text analysis from CEOs conference calls with security analysts. Because valid measurement of CEO personality traits with the Harrison et al., 2019 algorithm requires that a CEO spoke at least 1,000 words across the quarterly conference calls, only CEOs who spoke 1,000 words or more were included in our sample (2019a). CEO compensation, as well as firm and individual-level CEO control variables were gathered from multiple databases including: CompuStat, ExecuComp, and I/B/E/S and were measured on an annual basis.

Measures

Dependent Variable

CEO Compensation. The focal dependent variable of every hypothesis in this analysis is total CEO compensation. CEO total compensation includes all facets of their compensation package including cash, stock options, long-term incentives, and fringe benefits (Cheng, 2004). Total compensation is most commonly transformed using a logarithmic transformation to control for the skewness in compensation, so the measurement of total compensation in this study utilizes this method of measurement (Cheng, 2004; Gupta et al, 2018; Sloan, 1993). The model was also tested with an alternate measurement of CEO compensation, cash compensation

(CEO's annual salary plus bonus) CEO compensation was collected and calculated from the Execucomp database.

Independent Variables

CEO Personality. We measure CEO conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness utilizing a machine learning algorithm called The Open Language Chief Executive Personality Tool (OLCPT) developed by Harrison et. al. (2019a) which was designed to capture CEO personality traits by analyzing their speech during conference calls with analysts. This algorithm was built by utilizing multiple sets of data created by parsing over 100,000 quarterly CEO call transcripts with equity analysts, comparing language features to coded video metric data in a prior study (Hill, Petrenko, Ridge, & Aime, 2019), and with the validation of three separate raters who hand coded personalities of 207 CEO's based on the international personality item pool (IPP) to train the machine to create a validated instrument to capture language patterns that represent the Big Five personality traits in CEO conference call transcripts. The machine was trained based on an "open-language" technique which allows the machine to learn to identify "single words, multi-word phrases, and unconventional language use" and then to map these patterns onto each Big Five personality trait resulting in a score for each CEO for each personality trait on a 1 to 7 point scale (Harrison et al., 2019a; 2020 p. 1175). We utilized this machine learning algorithm to analyze conference calls for each CEO in our sample for all their years of tenure between 2006 and 2016 to hopefully account for different moods of the CEO's on specific days. Per Harrison et. al., CEO's had to speak at least 10,000 words during conference calls to provide enough content and context to obtain personality scores (2019a). Any CEO who did not speak enough words to analyze was removed from the sample. Each CEO is assigned one personality score in each of the Big Five categories as personality is

considered a consistently stable trait after the age of 30 in the personality literature, and the CEO's in our sample are over 30 years old (McCrae & Costa, 1982). Each CEO in our sample has a stable, time invariant personality score for each of the Big Five personality traits on a scale from 1 to 7.

Controls.

Following prior CEO compensation research, the model includes a series of controls, including factors at multiple levels that may be responsible for partial variance in CEO compensation. Control variable information was gathered from: CompuStat, ExecuComp, I/B/E/S, and annual public document filings with the SEC.

At the firm level, both accounting and stock measures of firm performance are included in the model as prior research has shown that utilizing multiple forms of performance as controls (preferably both an accounting and market-based measure) is important to obtaining accurate results due to the possibility of CEO's being able to manage the reported ROA of their firms (Conyon, Hab, Vergauwe, & Zhang, 2019). *Return on assets (ROA)* will represent the accounting-based measure of firm performance as this specific control has been directly tied to CEO compensation (Bliss & Rose, 2001). Return on assets is a continuous variable calculated by the firm's annual net income divided by the firm's annual assets. Firm ROA could theoretically affect a CEO's compensation because a firm that is performing better is more likely to compensate its executive leader as such. The second control to address firm performance will be a market-based annual measure of stock performance, *Cumulative Abnormal Returns (CAR)*, which is calculated as the buy and hold return for a company's stock minus the buy and hold return of the valuated market index for a period of 365 days and utilized in a continuous variable format. Again, firm performance could affect CEO compensation as the chief executive officer is

often held liable for a company's successes and failures and compensated as such. Our measure of compensation includes incentives and fringe benefits which are often based on firm performance. Firm size will be included as a control in the form of log assets as theoretically larger firms will be able to afford higher compensation for CEO's and firm size is one of the most robustly studied predictors of CEO compensation (Bliss & Rose, 2001; Daily et al., 1998; Gupta et al., 2018; Murphy, 1999). Industry as a dummy code by 2 digits from the SIC code was included as well to control for differences in pay due to the nature of certain industries.

Individual CEO-level controls have also been shown to have an impact on a CEO's compensation, so I included a series of CEO-level control in the analysis as well. First, I controlled for CEO age which is a time variant count variable. Tenure of CEO was included as a control which consists of how many months the CEO has served in the role; this is also a count variable which increases each month that the CEO serves in the role. The status of the CEO as an insider or outsider at the firm, meaning if they were hired into the CEO role after working at the firm internally for at least one year or not, has been widely linked to differences in CEO compensation, thus I included this control as a dummy variable with a 0 for a CEO who is an outsider and a 1 for insider status (Brockman et al., 2016). The extent to which the CEO has ties as a Board member with other CEOs on their board is often linked to their compensation, so I included a count variable control that specifies how many interlocking relationships the CEO has with BOD member firms (Hallock, 1997). Lastly, the CEO's gender was included as a control variable coded as a dummy with 1 indicating male and 0 indicating female as many past scholars have argued that there is a gender gap in CEO compensation (Bell, 2005; Bertrand & Hallock, 2001; Elkinawy & Stater, 2011; Jordan, Clark, & Waldron, 2007; Mohan & Ruggiero, 2003; Muñoz-Bullón, 2010, Vieito & Khan, 2012).

ANALYSIS

Utilizing Stata MP 15.0 software, analysis of the final model was conducted using a random-effects panel regression as the dataset spans over a ten-year period, the dependent variable (compensation) is a continuous variable that changes over time, and the focal independent variables (CEO personality traits) are time-invariant. Robust standard errors were utilized to correct for possible autocorrelation.

To check robustness of results, I also verified the results of the model utilizing a different measure of CEO compensation: cash compensation. This measurement of compensation consists of the CEO's annual salary plus their bonus. Prior scholars have sometimes included multiple measurements of compensation including this method of measuring cash compensation to verify results (Cheng, 2004). Results of both the analysis and supplementary analysis are discussed in the following results section.

All variable correlations and summary statistics can be viewed below in Table 1. Additionally, we ran a variance inflation factor (VIF) test to determine if the results were biased from multicollinearity. The results shown that all VIF values were fall far below the generally accepted threshold of 10, indicating that multicollinearity is not a concern for the analysis (Greene, 2011; Wooldridge, 2016).

RESULTS

Insert Tables 1-3 here

Table 1 provides the correlation matrix and summary statistics. Table 2 reports the results of our main panel regression model. Table 3 provides results for a supplementary analysis utilizing a separate measure of CEO compensation that only includes CEO cash compensation (annual salary and any annual bonuses received). In tables 2 and 3, Model 1 shows the results of the regression with only control variables included. Model 2 shows the complete models.

For our first hypothesis, we found marginal support in the opposite direction of our proposition that there would be a positive relationship between CEO conscientiousness and their total compensation (Table 2, Model 2, $\beta = -0.208$, $p = 0.08$). This effect was only marginally significant, but perhaps most surprising is the direction of the coefficient found here. These results were confirmed with strong significance when compensation was measured as just cash as well (Table 3, Model 2, $\beta = -0.469$, $p = 0.000$). which points to new possible implications of conscientiousness in CEOs addressed in the discussion section.

In hypothesis 2, we predicted the trait of extraversion to be positively related to CEO total compensation. The results in Table 2 did not support this hypothesis (Model 2, $\beta = -0.060$, $p = .344$). Much like hypothesis 1, these results are surprising based on prior research about extraversion in leaders, however, when the model was tested with compensation measured as cash compensation only, our hypothesis was confirmed with significant results pointing to highly extraverted CEOs making more cash compensation (Table 3, Model 2, $\beta = 0.239$, $p = 0.002$). Possible implications of these differing results are addressed in the discussion suggestion.

Hypothesis 3 predicted that the personality trait of openness to experience would be

positively related to CEO total compensation, and this hypothesis was confirmed in our results (Table 2, Model 2, $\beta=0.205$, $p=.016$). Results were inconsistent when tested with only cash compensation (Table 3; Model 2, $\beta=0.123$, $p=.354$). In hypothesis 4, we proposed competing hypotheses: that the trait of agreeableness would be either positively or negatively related to CEO total compensation. Hypothesis 4a was confirmed- CEO's who were more agreeable received higher total compensation (Table 2, Model 2, $\beta=0.143$, $p=.020$). Therefore, Hypothesis 4b was rejected. Hypothesis 4a was also confirmed when compensation was measured as only cash compensation (Table 3, Model 2, $\beta=0.159$, $p=.049$).

Finally, hypothesis 5 predicted that the personality trait of neuroticism would be negatively related to CEO total compensation, and this hypothesis yielded insignificant results in the full model (Table 2, Model 2, $\beta= -0.012$, $p=.853$). However, when compensation was measured as cash only, the hypothesis was confirmed and highly significant (Table 3, Model 2, $\beta= -0.399$, $p=.001$). Possible implications of these differing results are addressed in the below discussion section.

DISCUSSION

According to the results of our panel regression analysis, we find interesting contributions to the literature on CEO compensation as well as outcomes of CEO individual differences, specifically, CEO personality as well as some potential avenues for further investigation into the variance in these outcomes when CEO compensation is measured in different ways. Our first major contribution is to add CEO personality to the web of predictors of executive compensation through the lens of implicit leadership theory. Though CEO compensation research is long-standing and robust, scholars have realized more recently that we have yet to uncover the entire story surrounding the extreme variance between the compensation of different CEO's and have begun to examine individual-level factors at the CEO level for more explanation. Our study is the first of our knowledge to directly propose a relationship between each of the Big Five personality traits in CEOs and their compensation. We find in our results that two personality traits, openness to experience and agreeableness tend to yield the most significant results in terms of effects on CEO total compensation. We find in our main analysis that CEOs who are highly open or highly agreeable or more likely to receive higher total compensation. This leads to our second contribution which is to add evidence to one side of a long-standing series of mixed results on whether or not agreeableness is a trait that leads to positive outcomes for leaders. Research on this trait in leaders, specifically executive leaders, points to both benefits and consequences, and we aim with this study to explore whether agreeableness helps or hurts a CEO in terms of their compensation.

With mixed results in the personality literature about the benefits or detriments of certain personality traits, such as agreeableness, for leaders, we find in this study that being highly agreeable helps rather than hurts a CEO in the context of total and cash compensation. We

believe that in order to someday “close the loop” on why CEO pay varies so dramatically, we must draw upon not only the traditional predictors of strategic outcomes, but also upon psychological and sociological based theories which explain more of the variance between individual CEOs and how they are perceived by others. Our study answers a call for research specifically on how the Big Five personality traits can map onto the tenants of implicit leadership theory (Lord et al., 2020: p.66) as well as confirms the suggestions of prior scholars that Boards should “consider personality traits of their CEO’s when designing compensation packages” (Benischke et al., 2019: p. 153). One interesting finding in this study that leaves room for future exploration is the lack of effect of CEO neuroticism on compensation. Perhaps neuroticism is a more difficult personality trait to measure during a hiring process than the other Big Five traits?

Another unexpected outcome of conducting a robust analysis with two measurements of CEO compensation was the finding that results for some personality traits differ based on how CEO income was measured. While more research is needed to confirm that these differences are valid and legitimate, we see possible practical implications of these unexpected results. More specifically, the traits of conscientiousness, extraversion, and neuroticism yielded interesting differences that could be attributed to how CEO personality affects their cash compensation (salary and bonuses) versus their total compensation (all facets of their compensation package including: cash, stock options, long-term incentives, and fringe benefits -Cheng, 2004).

For example, highly conscientious CEO’s were found to make marginally less than less conscientious CEO’s in terms of total compensation but significantly less than less conscientious CEO’s in cash compensation. These findings, though opposite of our predictions, make sense as a highly conscientious CEO is less prone to the risk-taking that might yield a significantly higher annual bonus. Similarly, in the case of extraversion and neuroticism, we find that CEO total

compensation does not seem to be impacted by the levels of these traits in a CEO, however, when compensation is only looked at from a cash component, these traits seem to be significant indicators of compensation packages in our predicted directions (extraversion leading to higher compensation and neuroticism leading to lower compensation). We argue that looking at CEO compensation packages from different lenses may tap into the importance of CEO traits in certain aspects of their jobs rather than others. For example, cash compensation includes annual salary plus bonuses. It is plausible that a highly extraverted CEO would make significantly more in salary due to their bold negotiation skills, however, when other elements of their compensation are added to the measurement (i.e. fringe benefits), their extraversion may be less of an asset. Similarly, a highly neurotic CEO might find themselves with a significantly lower cash compensation package because of their tendency to take less risks or to negotiate too heavily in the early stages of their role, but these behaviors may be less important to their earnings of fringe benefits.

Limitations

We understand that there are always limitations in any study design. Firstly, our data is limited to public organizations only, so we are unable to check on if there are differences in compensation due to personality or gender of board members at privately held firms. Additionally, it could be questioned why a Board would choose a CEO in the first place that had a personality combination the directors did not like. However, based on the tenants of the Big Five personality theory, all people have varying levels of each of the 5 personality traits (Costa & McCrae, 1992), so all of the CEO's in the sample have a score that is not 0 (score of between 1 and 7) on each of the personality traits analyzed in the study, and our study means only to compare CEO's to other CEO's with varying levels of each personality trait.

Our measure of CEO personality has been utilized and published in multiple top tier journals including Strategic Management Journal (Harrison et. al., 2019a), Academy of Management Journal (Harrison, Thurgood, Bovie, Pfarrer, 2020), and Harvard Business Review (Harrison et al., 2019b), however, the machine learning algorithm, like any tool, does have some measurement error. Intercorrelations between some of the personality traits (specifically agreeableness and openness) are around .62 (Harrison et al., 2019a). However, prior tools utilized to obtain CEO personality also featured intercorrelations between the Big Five personality traits of between .40 and .70, so this tool is at least as reliable if not more than prior used tools (Colbert et al., 2014; Herrmann & Nadkarni, 2014; Nadkarni & Herrmann, 2010; Harrison et al., 2019a). Additionally, using an open-language tool such as the The Open Language Chief Executive Personality Tool, does not use specific predefined words and categories to define personality scores, so while this method is able to provide a richer analysis of text features than a closed-language method, there aren't a specific list of words and/or phrases that you can point to define each personality trait. We believe, however, that the open language technique provides a more robust methodology for capturing the nuances of language than a predefined dictionary-type, closed language tool could, and we hope that our study will inspire further research into how these open language style tools can be used to gather data that was previously extremely difficult to obtain from top executives. Further, utilizing text analysis and machine learning to obtain these nuances from CEO speech is becoming an increasingly popular method of conducting research on executive differences (Choudhury, Wang, Carlson, & Khanna, 2019; Harrison et al., 2019a; 2019b; 2020).

Lastly, there are other potentially relevant control variables that could be included in the final model because of their potential impact on CEO compensation such as average top

management team pay (Carpenter & Sanders, 2002). This variable is often calculated by logging the average total compensation of the top four paid top management team members which can be found in annual SEC filings for public firms, but this information was not included in our particular dataset for this study. CEO education has also been found to impact CEO compensation (Jalbert et al., 2010) and this could be an additional control measure utilized in future research on the impact of CEO personality on compensation.

Table 1: Summary Statistics and Correlation Matrix

Variables	Mean	SD	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)
(1) CEO Compensation	8.978	1.367	-6.908	13.230						
(2) Agree	4.048	0.699	2.427	6.512	.0439					
(3) Conscientiousness	5.131	0.524	3.713	7.000	-0.016	0.418				
(4) Extraversion	4.765	0.793	1.787	7.000	0.024	0.426	0.229			
(5) Neuroticism	3.244	0.622	1.796	6.103	-0.008	-0.470	-0.408	-0.606		
(6) Openness	4.668	0.555	3.121	6.240	0.004	0.622	0.513	0.563	-0.642	
(7) ROA	0.059	0.096	-2.283	0.620	0.045	0.123	0.066	0.142	-0.185	0.153
(8) Cumulative Abnormal Returns	0.050	0.315	-0.876	5.361	0.107	0.033	-0.016	0.024	-0.020	0.026
(9) Firm Size	9.643	1.378	5.000	14.671	0.282	-0.049	0.002	0.025	0.016	-0.123
(10) Industry	4.046	1.911	0.000	9.000	-0.031	0.116	0.016	0.221	-0.305	0.270
(11) CEO Age	56.24	6.412	34	86	0.104	-0.141	0.025	-0.040	0.086	-0.107
(12) CEO Tenure	81.89	62.95	0.000	648.00	0.004	-0.096	-0.067	-0.075	0.075	-0.061
(13) Inside v. Outside	1.411	0.810	0.000	1.000	-0.057	0.002	0.061	0.031	-0.045	0.085
(14) Board Interlocking	0.013	0.204	0.000	6.000	-0.015	-0.062	-0.064	-0.077	0.119	-0.038
(15) Gender			0.000	1.000	0.000	-0.033	-0.018	-0.052	0.031	-0.038

N= 2,473, All correlations above |.039| is significant at a .05 level

	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(8) Cumulative Abnormal Returns	0.128								
(9) Firm Size	-0.212	-0.346							
(10) Industry	-0.026	0.019	0.065						
(11) CEO Age	0.012	-0.048	0.137	-0.082					
(12) CEO Tenure	-0.025	0.011	-0.023	0.042	0.290				
(13) Inside v. Outside	0.042	-0.005	-0.104	-0.046	-0.063	0.059			
(14) Board Interlocking	-0.045	-0.026	-0.032	-0.059	-0.010	0.006	0.105		
(15) Gender	-0.025	0.001	-0.011	0.041	-0.012	0.077	-0.003	0.018	

Table 2: Panel Regression Analysis Results for DV: CEO Total Compensation

	Model 1				Model 2			
	Coef.	St. E	z score	p value	Coef.	St. E	z score	p value
Agreeableness					0.143	0.061	2.33	0.020
Conscientiousness					-0.208	0.119	-1.75	0.080
Extraversion					-0.060	0.063	-0.95	0.344
Neuroticism					-0.012	0.064	-0.19	0.853
Openness					0.205	0.085	2.42	0.016
ROA	1.198	0.251	4.76	0.000	0.913	0.295	3.10	0.002
Cumulative Abnormal Returns	0.347	0.046	7.49	0.000	0.371	0.083	4.47	0.000
Firm Size	0.245	0.027	8.94	0.000	0.299	0.055	5.42	0.000
SIC	-0.000	.000	-3.08	0.002	-0.00	0.000	-3.52	0.000
CEO Age	0.032	0.006	4.95	0.000	0.032	0.128	2.48	0.013
CEO Tenure	0.002	0.001	3.99	0.000	0.002	0.002	0.78	0.437
Inside v. Outside	-0.045	0.035	-1.30	0.193	-0.007	0.054	-0.14	0.890
Interlocked Board	-0.011	0.122	-0.09	0.930	-0.024	0.083	-0.28	0.778
Gender	-0.128	0.205	-0.62	0.533	0.023	0.101	0.23	0.819
Number of Observations	2,473				2,473			

Table 3: Supplementary Panel Regression Analysis Results for DV: CEO Cash Compensation

	Model 1				Model 2			
	Coef.	St. E	z score	p value	Coef.	St. E	z score	p value
Agreeableness					0.159	0.081	1.97	0.049
Conscientiousness					-0.469	0.126	-3.71	0.000
Extraversion					0.239	0.079	3.04	0.002
Neuroticism					-0.399	0.117	-3.40	0.001
Openness					0.123	0.133	0.93	0.354
ROA	0.999	0.192	5.20	0.000	0.724	0.311	2.33	0.020
Cumulative Abnormal Returns	0.0433	0.035	1.24	0.216	0.048	0.435	1.09	0.275
Firm Size	0.691	0.026	26.76	0.000	0.677	0.033	20.28	0.000
SIC	-0.000	0.000	0.19	0.850	-0.000	0.000	-2.56	0.011
CEO Age	0.004	0.006	0.70	0.486	0.008	0.009	0.97	0.330
CEO Tenure	0.000	0.001	0.36	0.722	-0.001	0.001	-0.66	0.509
Inside v. Outside	0.003	0.028	0.09	0.928	-0.031	0.044	-0.72	0.474
Interlocked Board	0.179	0.094	1.90	0.058	0.201	0.087	2.32	0.021
Gender	0.065	0.208	0.31	0.755	0.219	0.212	1.03	0.301
Number of Observations	2,473				2,473			

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**PAPER III. "SISTERS BEFORE MISTERS?" HOW BOARD GENDER DIVERSITY
AFFECTS CEO COMPENSATION**

ABSTRACT

In this study we explore differences in chief executive officer compensation as influenced by the number of females on the Board of Directors at the firm and the interaction of CEO personality and the number of female directors at the firm. We predict that the number of female directors will affect the compensation of female CEOs in either a positive or negative direction based on competing sociological theories and that the effects of these theories will extend not only to female CEOs but also to CEOs who display stereotypically female personality traits, specifically neuroticism and agreeableness. We find that a larger sample size of female CEO's is most likely needed to examine the effects of increased quantity of female directors on female CEO compensation. We also find that neuroticism in CEO's does not seem to interact with the quantity of female directors to affect CEO compensation, however, we find strong evidence that agreeable CEO's are compensated more based on the quantity of female directors present on their boards. Lastly, we find in a supplementary analysis that the trait of openness to experience in CEO's also interacts with the number of female directors on a CEO's board to increase CEO compensation significantly. Our study aims to contribute to the literature on gender differences in executive compensation, gender dynamics in the upper echelons, CEO personality, and outcomes of Board member characteristics, specifically gender on CEO compensation.

INTRODUCTION

Gender gaps in compensation at the CEO level have become a popular topic of strategic research as more females file up the ranks to top roles in organizations. Though “more” female CEO’s still means only about 6.4% of S&P 500 companies (Catalyst, 2022), the instability of the year 2020 (i.e. Covid-19 pandemic) brought a whopping 24% increase in female CEOs at Fortune 500 organizations (Newcomb, 2020), suggesting that as we face more challenges as a nation that require more flexibility and resilience in business, organizations may be increasing diversity at the top. Interestingly, findings on whether there is a gap between what female and male CEOs earn vary dramatically. While some scholars find a significant gap in male versus female chief executive compensation of up to 45% and in both directions (Bertrand & Hallock, 2001; Elkinawy & Stater, 2011; Kerber, 2021; Mohan & Ruggiero, 2003; Munoz-Bullon, 2010, Hill et al., 2015; Vieito & Khan, 2012), other scholars have found no gap in compensation by gender at all (Bugeja et al., 2012; Geiler & Renneboog, 2015; Gupta et al., 2018; Jordan et al., 2007).

Another stream of research on predictors of variance in CEO compensation focuses on how the characteristics of a Board affect the amount the CEO is compensated. This literature, however, is plagued with contrasting results and measurement problems (Finkelstein, Hambrick, & Cannella, 2009). According to Finkelstein and colleagues, the **only** overarching results which are “sufficiently robust” in the executive compensation literature are the tying of differences in CEO pay to distributions of power between the CEO and his or her directors (2009: p. 232). Outside of power distribution, research on characteristics of the Board as determinants of CEO pay find mixed results. Some scholars have found CEO compensation differences can be linked to such board traits as board size and the ratio of independent directors on the board

(Chhaochharia & Grinstein, 2009; Newman & Mozes, 1999) while others have found that the number of independent (also known as outside) directors on the Board does not impact CEO compensation outside of only incentive pay (Deutsch, 2005). Alternatively, O'Reilly et al (1988) found that the compensation of directors affected CEO compensation, while still others have found these indicators to show no significant differences in chief executive pay at all (Conyon & Peck, 1998). The mixed results on how the characteristics and dynamics of a CEO's board affect their compensation leave us to question how board makeup really impacts the compensation of the firm's CEO.

While few scholars have attempted to find evidence of moderators that could explain the varied results in the executive compensation and gender literature based on how compensation packages were calculated (i.e. Munoz-Bullon, 2010), other scholars have found there to be no pay gap between male and female CEOs, even when controlling for different measurements of compensation (Bugeja et al., 2012). With the increasing number of female CEOs, especially in recent years (Newcomb, 2020), the understanding of if there is a gender gap in compensation and the factors that contribute to this gap increases in importance for scholars and practitioners. Our study aims to look at a possible moderator of CEO pay, the number of females on the CEO's board of directors. Countries including but not limited to India, Iceland, Spain, France, Belgium, Kenya, and Israel have all imposed some type of quota for female representation on organizational boards (Terjesen, Aguilera, & Lorenz, 2014). Within the United States, the state of California has already mandated that public organizations include at least one female on their boards (with boards having more than four directors requiring even more female slots), and at least 11 other states in the United States have also instated or at least considered also mandating these types of board gender diversity requirements (Hatcher & Latham, 2020). With changing

policies which require more gender diversity on boards of directors, it stands to reason that understanding how these changes to boards might affect such outcomes as pay of chief executive officers becomes more relevant.

We first argue in this study that the impact of having more female directors on a Board could affect the compensation of female CEOs either positively or negatively based on competing sociological hypotheses regarding the treatment of females by other females in power. While some scholars have found that females at the top help other females to succeed (Gould, Kulik, Sardeshmukh, 2018; Terjesen & Singh, 2008), others have found that a “crabs in the barrel” phenomenon exists whereby females who try to climb their way to the top of organizations are pushed “back in the barrel” by other females who have already reached positions of power (Henson & Wheat, 2018; Miller, 2019). We propose competing hypotheses based upon both of these theoretical frameworks to determine whether having more females in top leadership positions helps or hurts other females.

We then delve into whether the aforementioned sociological theories apply also to treatment of others based on personality traits which are associated with females. Through the lens of the Big Five personality theory, we specifically look at two stereotypically “female” personality traits, neuroticism and agreeableness, to determine whether having more female directors on a board will help or hurt the compensation of CEOs who are high in these stereotypically female personality traits. Of the Big Five personality traits, prior scholars have found that neuroticism and agreeableness are the “big two of the Big Five” (Lippa, 2010, p. 1105) in terms of personality traits that display the largest differences between males and females. We explore the interaction of these traits in CEOs with the number of female directors present on the CEO’s board with competing hypotheses based on the opposing sociological

theories that exist for how females in power are expected to treat one another. We expect that if the principles of in-group biases exist in the upper echelons, boards with more female directors will compensate CEOs with stereotypically female traits more and that if the principles of the crabs-in-the-barrel phenomenon exist in the upper echelons, boards with more female directors will compensate CEOs they associate with female personalities less.

Our study aims to first contribute to the literature on gender inequities in executive compensation by exploring a possible moderator to CEO gender and pay, the impact of board gender diversity. Prior scholars have explicitly called for more research on the interaction of traits of organizational leaders on firm outcomes, touting that understanding interaction effects of these characteristics, including personality specifically, could shape strategic firm decisions (Hoffman & Meusburger, 2018). Secondly, we aim to determine which of the directly conflicting theories on how females will treat other females at the top of organizations (i.e., in-group biases versus the “crabs in the barrel phenomenon”) is more applicable to the relationship between female chief executive officers and their boards. In this way, we aim to add to or call into question the growing research stream on the “crabs in a barrel phenomenon” which currently contradicts much other management literature that credits women in positions of power with helping other women rise to the top. From this exploration we hope to find out whether females in power are more likely to aid or to limit other females at the top of in the context of compensation. Lastly, we explore whether the tenants of sociological theories on gender apply to personality traits which could be stereotypically associated with the female gender. We do so by adding the moderator of CEO personality (specifically, neuroticism and agreeableness) to the relationship between board gender diversity and CEO compensation to analyze whether the

sociological theories which drive gender research extend also to these stereotypically female traits.

THEORY AND HYPOTHESES

Do Females on Top (directors) Help or Hurt Other Females on Top (CEO's)?

In this sub-section of our study, we move into a discussion of how Board characteristics, specifically the number of female directors present on the Board, could potentially affect the compensation of females in the CEO role. Extant research has suggested that boards with higher ratios of independent female directors are more likely to monitor CEOs more closely and compensate them less overall (Benkraiem, Hamrouni, Lakhali, & Toumi, 2017). In this section of the paper, we aim to explore whether this applies to the treatment of all CEOs by female directors or whether the phenomenon previously witnessed is moderated by the gender of the CEO being monitored. Interestingly, research on how females in high positions at organizations will respond to an opportunity to “help” or hold back other females in positions of power in the organization are mixed. While some scholars find support for a trickle-down effect of females in power helping other females gain more power, more recent gender research suggests that females will sometimes actively limit other females in protection of their own limited resources. We aim to explore whether females residing on boards of directors will help or hurt female CEOs in the context of designing compensation packages.

Women Helping Women: In-group Biases

Social cognition research heavily points to the effects of in-group biases which refer to individuals' tendencies to prefer those who are more similar to themselves when hiring, evaluating, and rewarding others (Brewer & Brown, 1998; Reskin & McBrier, 2000). Multiple theories exist, especially in the field of sociology, to confirm the existence of ingroup biases with two of the most widely studied theories being social identity theory (SIT) and self-categorization theory (SCT), both of which emphasize that our behaviors are affected by our belonging to

certain social groups and that we tend to show favoritism to members of these communities (Lindeman, 1997). Individuals are prone to classifying themselves into these in-groups based on observable characteristics such as sex and race and are more likely to form networking relationships and congregate with members of their own in-group (Avery, McKay, & Wilson, 2008; Ibarra, 1995; Lawrence, 2006; Mehra, Kilduff, & Brass, 1998). Employees have been shown to cite less perceived support and trust from supervisors who do not fit into their demographic in-groups (Jeanquart, 1993).

One widely studied in-group community is based on gender, and it has been suggested that in-group biases are stronger for women than for men (Rudman & Goodwin, 2004). In other words, women are more likely to hire other women, associate with other women at work, and to help other women when given the opportunity to do so than males are. Additionally, we know from prior research that female directors are more effective at monitoring CEO's and compensating them accordingly (Benkraiem et al., 2017). The phenomenon of female executives making decisions based on in-group biases propagates a trickle-down effect that leads to more executive gender diversity at organizations (Gould, et. al., 2018; Terjesen & Singh, 2008). We posit that this trickle-down effect could also apply to the compensation of female CEO's by their female directors. Following the sociological theories that point to in-group bias favoritism, we

hypothesize:

Hypothesis 1a: Boards with more female directors will compensate female CEOs more.

Women Hurting Women: Crabs in the Barrel

While the aforementioned research suggests that females help females, and therefore, female directors will be more likely to “be on a female CEO's side”, other findings on females in power helping other females features more nuances than previously considered and shows that

the phenomenon of women in power helping other women operates only within certain boundary conditions. Gender diversity on boards has shown to help female CEOs in selection and compensation only when specific circumstances exist. Gupta and Raman found when delving into the claims that a higher ratio of female directors corresponds with a higher likelihood of a female CEO successor being chosen, that this finding only holds true when the CEO appointed is a member of the Board already, suggesting that female directors selecting female CEOs is rather a reflection of “a supply of viable candidates for the CEO position, rather than female directors affecting the likelihood of female CEO appointments by interpreting noisy signals about the abilities of female candidates” (2014: p.495). Another study found that some women who advanced in male-dominated fields favored other women for promotion opportunities while other women favored men as moderated by their own gender identification (Kaiser & Spalding, 2015).

Perhaps more interesting even than these boundary conditions surrounding female leaders helping other females is another recent stream of research that points to a phenomenon in which females who reach positions of power have been shown to actively engage in sabotage behavior against other females rather than supporting each other’s achievement motivations (Miller, 2019). Commonly referred to as the “crabs in the barrel syndrome”, this phenomenon is linked to members of specific communities or cultures holding each other back in different ways, specifically in the pursuit of achievement or advancement, despite the assumption that members of collective communities would want to collaborate and strengthen one another (Miller, 2014; 2015). Crabs in a barrel has studied instances of undermining behavior by females or other members of “oppressed collectives” possibly motivated by a “by-product of one’s desire to succeed in the face of systemic opposition (i.e., the barrel) and limited resources” (Miller, 2019: p. 353). In other words, this theory argues that when members of a minority or oppressed

community are able to break through the difficult barriers that exist in order for them to break the “glass ceiling” of organizations, they will hold others back that belong to their collective group to maintain the limited resources or positions at the top of organizations that exist for themselves. Following the Crabs in the Barrel phenomenon, we hypothesize:

Hypothesis 1b: Boards with more female directors will compensate female CEOs less.

Female Boards Responding to Stereotypically Female Traits in CEOs

In a further effort to consolidate mixed findings regarding the tendency of female directors to help or hold back other females in executive positions, we also explore how Boards with more female directors respond to CEOs who may or may not be female but may be higher in individual traits that are associated with female stereotypes. Building upon the competing theories that drive Hypothesis 1a and 1b, we argue that not only will the number of female board members affect the compensation for female CEO’s, but this diversity could also moderate the relationship between CEO personality and compensation when CEOs exhibit stereotypically female personality traits. We aim to discover whether the concepts of in-groups and out-groups as well as those of the crabs-in-a-barrel phenomenon only apply to specific observable categorizations of if they also translate to gender stereotypes. At the executive level, Matsa and Miller found that boards tend to prefer like-minded executives to themselves (2013), however, based upon the concept of crabs in a barrel, we questioned in the prior section whether this will hold true for female directors designing female CEO compensation packages or not. In this sub-section, we explore whether the concepts of in-group bias and/or crabs in a barrel extend to female directors of CEOs who exhibit the stereotypically female personality traits of neuroticism and agreeableness.

The traits of neuroticism and agreeableness exist within the highly studied Big Five Personality trait framework. Much personality research has been done on the differences in gender between the tendency to score differently in the Big Five Personality traits. Schmitt and colleagues found in an international study involving 55 separate nations that females overall tended to be higher in agreeableness, neuroticism, extraversion, and conscientiousness than males, but of these four personality traits, two traits showed the most significant gap between males and females (2008). On the traits of neuroticism, women in 49 of the 55 nations scored higher than men in all facets of the personality trait (Schmitt et al., 2008). On the trait of agreeableness, 34 of the 55 nations scored higher in all facets of the personality trait than males did (Schmitt et al., 2008). A follow-up study in 2010 revealed again that the two personality traits in the Big Five framework that exhibited the largest differences between males and females were neuroticism and agreeableness (Lippa, 2010). As we are interested in finding out how directors react specifically to personality traits in CEOs which are stereotypically female, we will focus on these two traits as moderators of gender diversity on boards and CEO compensation.

Neuroticism

Neuroticism, also commonly thought of as lack of emotional stability, is the trait found to be most overwhelmingly associated with females rather than males in prior gender personality research (Schmitt et al., 2008). Behaviors affiliated with the personality trait of neuroticism include self-consciousness, anxiety, and emotional conflict or stress (Weisberg, DeYoung, & Hirsh, 2011). Women in prior literature have not only scored higher in direct surveys on neuroticism, but they have also been found to score higher on affiliated facets of this trait such as lower self-esteem (Kling, Hyde, Showers, & Buswell, 1999) and higher anxiety (Feingold, 1994). We argue based upon the social identity and self-categorization theories that boards with

higher numbers of female directors will compensate CEOs who display higher levels of neuroticism more than boards with less female directors, because females will identify more closely with the trait of neuroticism and treat the CEO as an in-group member when designing their compensation.

Therefore, based upon the tenants of sociological theories that point to in-group bias favoritism, we hypothesize:

Hypothesis 2a: The number of female directors on the Board will moderate the negative impact of CEO neuroticism on CEO compensation by weakening the relationship.

We also pose a competing hypothesis based on the tenants of the crabs in the barrel phenomenon. From this theory we know that females in power can also display sabotage behavior to other females (Miller 2014; 2015; 2019). Following the tenants of this theory, we argue that females on the Board might “punish” CEO’s with the stereotypically female-associated trait of neuroticism. If a CEO exhibits traits a female director associates with female stereotypes (i.e., neuroticism), the director might perceive the CEO as part of their own in-group and decrease their compensation based on their desires to retain limited resources at the top of the firm for themselves.

Following the tenants of the Crabs in the Barrel phenomenon, we hypothesize:

Hypothesis 2b: The number of female directors on the Board will moderate the negative impact of CEO neuroticism on CEO compensation by strengthening the relationship.

Agreeableness

The second trait which has shown to be most strongly exhibited by females over a majority of the personality’s facets as well as over the majority of nations studied is agreeableness (Schmitt et al., 2008), Also thought of as the tendency to please others by acting in

ways that are more polite, compliant, or empathetic is the Big Five personality trait most commonly tied to female stereotypes like warmth and empathy (Feingold, 1994; Costa, Terracciano, & McCrae, 2001; Weisberg et. al, 2011). There is a rich library of psychology research on gender stereotypes with a plethora of scholars agreeing that females are expected generally to be more altruistic, gentle, considerate of others, and cooperative. These female stereotypes are highly correlated with the characteristics of a highly agreeable CEO. We posit that based on the tenants of in-group biases, female directors will treat CEOs who are more agreeable with favoritism as agreeableness will be perceived as an in-group quality for female directors. Therefore, based upon the tenants of sociological theories that point to in-group bias favoritism, we hypothesize:

Hypothesis 3a: The number of female directors on the Board will moderate the positive impact of CEO agreeableness on CEO compensation by strengthening the relationship.

We also know, however, that it is possible for female directors to limit those they feel are a part of their minority in-group in the upper echelons from obtaining more of the limited resources available by holding them back due to the crabs in a barrel phenomenon. Following this theory, female directors will compensate more agreeable CEOs less as they observe them as a threat to their in-group's limited resources. Not only do we believe female directors will see highly agreeable CEOs as weaker because of their tendency to please others, but we further suggest that based on the crabs in a barrel phenomenon, female-dominated boards will “hold back” CEO's who exhibit the personality trait of agreeableness because of its strong associations with female stereotypes like tenderness and empathy.

Following the tenants of the Crabs in the Barrel phenomenon, we hypothesize:

Hypothesis 3b: The number of female directors on the Board will moderate the positive impact of CEO agreeableness on CEO compensation by weakening the relationship.

METHODS

Data

The data utilized in this study features CEO's from the S&P 500 (publicly traded American companies) between the years 2006 and 2016. The original dataset was composed of 1,056 unique CEO's however, for hypotheses 1a and 1b, all male CEO's had to be removed from the sample. This decreased the sample size of female CEO's to 46 unique CEO's over 126 separate observations. For the sake of this study, we analyze only this sample set in Hypotheses 1a and 1, however, we believe the results of future studies would be much stronger with a larger sample size. Unfortunately, the reality of females in the CEO position still being far less than 10% of CEO's in public organizations makes asking this types of research questions difficult. For hypotheses 2a, 2b, 3a, and 3b, the research question includes CEO's of both genders, so the sample size is 472 unique CEO's with a total of 2,473 unique observations analyzed after data was cleaned, missing variables were dropped, and CEO's who did not speak enough words on analyst conference calls to accurately detect their personality traits were removed from the sample. The measure of CEO personality utilized in this analysis requires the CEO to speak at least 1,000 words across the conference calls analyzed in order to detect an accurate personality score for the CEO (Harrison et al., 2019). Board gender diversity, CEO compensation, as well as firm and individual-level CEO control variables were gathered from multiple databases including: CompuStat, ExecuComp, BoardEx, and I/B/E/S and will be measured on an annual basis.

Planned Measures

Dependent Variable

CEO Compensation. The focal dependent variable of every hypothesis in this analysis is CEO compensation. I plan to measure CEO compensation as total compensation which includes all facets of their compensation package including cash, stock options, long-term incentives, and fringe benefits (Cheng, 2004). Total compensation is most commonly transformed using a logarithmic transformation to control for the skewness in compensation (Sloan, 1993; Cheng, 2004). CEO compensation will be collected from the Execucomp database.

Independent Variables

Number of Female Directors on the BOD: Gender Diversity. The number of female directors on the BOD was measured as a count variable of female executives on the Board. We utilized a count variable method from 0 to 7 female directors on the board, and as a robustness check: we ran a supplemental analysis measuring female executive board members as a ratio of total board members with similar results. Gender of Board members was collected from the BoardEx database.

Moderators: CEO Personality traits

Neuroticism and Agreeableness.

The personality traits of CEO neuroticism and CEO agreeableness were collected utilizing Harrison et al's CEO personality algorithm which is an open language machine learning program that analyzes CEO speech in conference calls and outputs scores of personality traits based on a range of 1 to 7 (2019). The conference call transcripts were collected from Seekingalpha.com, a website dedicated to providing tools for investors. These moderators were utilized in the interactions shown in Hypotheses 2a, 2b, 2c, and 2d.

Controls.

CEO compensation research typically includes a series of controls at the firm level, the BOD level, and the CEO level to avoid the possibility of alternative explanations in results. These control variables are gathered from databases including CompuStat, ExecuComp, I/B/E/S, and annual public document filings with the SEC.

The first primary control utilized in executive compensation studies are forms of performance as one would expect a better performing firm to compensate their CEO more. Thus, we included two forms of firm performance, firm return on assets (ROA) and cumulative abnormal returns (CAR). A firm's return on assets is an accounting-based measure that is important to include in analyses of CEO compensation (Bliss & Rose, 2001). Return on assets is a continuous variable calculated by the firm's annual net income divided by the firm's annual assets. ROA could theoretically affect a CEO's compensation because a firm that is performing better is more likely to compensate its executive leader more, but it is also important to include a market-based measure of firm performance in the analysis because CEO's have been found to be able to manipulate their reported firm ROA's (Conyon, Hab, Vergauwe, & Zhang, 2019). Hence, we also included a control for cumulative abnormal returns (CARs) which are the buy and hold return for a company's stock minus the buy and hold return of the valuated market index for a period of 365 days and utilized in a continuous variable format.

The third firm-level control utilized in the analysis is firm size which is one of the strongest indicators of CEO compensation in prior research (Bliss & Rose, 2001; Chapple & Humphrey, 2014; Daily, Johnson, Ellstrand, & Dalton, 1998; Murphy, 1999). Additionally, we included a control for the industry of an organization in the form of a dummy representing each 2-digit SIC code (as different industries could have different median salaries).

Since this analysis relies on Board characteristics (i.e., gender), and our research questions involve the impact of number of females on a board, it is important to control for the total size of the boards being measured. We did so using a count variable of total directors on each firm's board. Additionally, we controlled for how many directors were "inside" versus "outside" directors.

At the CEO level, we controlled for CEO age (count variable by year), CEO duality, CEO number of ties with Board members, and CEO tenure (count variable by year) which have both been tied to CEO compensation.

ANALYSIS

We estimate random panel regression utilizing Stata MP software in all analyses as the dataset spans over ten years, the dependent variable (compensation) is a continuous variable that changes over time, and the focal independent variables (number of females on the Board) and this quantity's interaction with CEO personality trait scores are both time-invariant. Robustness analyses conducted included measuring female director quantity in two ways: as a count variable (main analysis) and as a ratio of the total directors on the board (supplemental analysis). Additionally, CEO compensation was measured in multiple ways to evaluate whether the effects we see with our independent variables differ depending on the type of compensation measured. The main analysis utilizes compensation measured as a total compensation package, however, supplementary analyses utilized compensation measured as solely cash compensation (i.e., annual salary plus bonus) as well as with CEO compensation as option only (i.e. the value of their stock options at the end of the fiscal year being measured). Following prior research, utilizing multiple measures of compensation including cash, option, and total measures is a strong way to validate results (Cheng, 2004).

Table 1 reports the correlations between all variables. As a precaution we also ran a variance inflation factor (VIF) test to determine if the results were biased from multicollinearity. The results shown that all VIF values were fall far below the generally accepted threshold of 10, with a mean VIF of only 1.27 and highest being 4.23. These results indicate that multicollinearity is not a concern for the analysis (Greene, 2011; Wooldridge, 2016).

Table 2 reports the results of our main panel regression models. In Table 2, Model 1 shows the results of the regression utilized to test Hypothesis 1a and 1b. Model 2 shows the results of the regression utilized to test Hypothesis 2a and 2b. In Table 2, Model 3 shows the

results of the regression utilized to test Hypothesis 3a and 3b.

Insert Tables 1-3 here

RESULTS

We do not find support for Hypotheses 1a or 1b. The effect of quantity of female directors on female CEO compensation is insignificant (Model 1, $\beta = 0.039$, $p = 0.582$). Despite the lack of significant results here, we believe there could be significance found with a larger sample size. The method utilized to predict the results of Hypothesis 1a and 1b required the deletion of all male CEO's from the sample set which reduced the set to only 46 female CEO's over 126 unique observations. While we believe this is the appropriate method of analysis for this research question, the limitation of a very small sample size makes finding powerful or accurate results difficult. We find consistent insignificance of results when we measure CEO compensation as cash compensation rather than total compensation, but again, the sample size is very small as the research questions required only female CEO's to be included in the set.

In hypothesis 2a and 2b, we predicted the number of female directors on the board to either weaken or strengthen the predicted negative relationship between CEO neuroticism and compensation. We find that the number of female directors on the board does not impact this relationship when compensation is measured as total compensation (Model 2, $\beta = -0.063$, $p = 0.382$) as well as when measured as only cash compensation. These results are not surprising based upon the results of Paper 2 in this dissertation which reported insignificant results when directly testing the relationship between CEO neuroticism and compensation. While all hypotheses and predictions were made for the dissertation prior to testing, results of studies 2 and 3 do show consistent results in significance and insignificance of CEO traits and compensation as also seen below in the results of Hypothesis 3a/3b.

Hypothesis 3 yields highly significant results. We find strong support for Hypothesis 3b which predicts that the number of female directors on a board will moderate the relationship

between CEO agreeableness and compensation by strengthening the relationship (Model 3, $\beta=0.126, p=0.023$).

Due to the results of Study 2 in this dissertation which reported that the trait of openness to experience in CEO's would increase their compensation significantly, we ran an extra analysis outside of our hypotheses to see if the quantity of female directors on the board also had a meaningful interaction with this personality trait, and results were unsurprisingly significant! Table 3 reports the results of our supplementary analysis which reports the interaction of CEO openness to experience and number of female directors on the board. This analysis is outside of the predictions of the original paper in this study, however, the results are unsurprising based upon the results of Study 2 and warrant further exploration in future research.

DISCUSSION

We find in this study that the number of female directors on a board may not affect the total compensation of a female CEO. However, we believe that these results could be perhaps limited by the small sample size of female CEO's we have to test at this time in public organizations. Further research should be done on the impact of females at the top of organizations on other females at the top as the numbers of females in these upper echelons of organizations increase. We also find in Study 2 and Study 3 of this dissertation that while the trait of neuroticism in CEOs does not seem to impact their compensation directly or in interaction with the number of females on the CEO's board, the traits of agreeableness and openness to experience both increase a CEO's compensation directly and when in interaction with the number of females on a CEO's board of directors. These results in practical application suggest that CEO's who are more agreeable and/or more open will be rewarded for these traits and even more so when they work with more females at the top of organizations.

This study contributes to literature on the outcomes of board characteristics (specifically board gender), the literature on individual differences in CEOs (i.e., personality), and the literature on CEO compensation. Considering the widely mixed findings that exist in prior research on the existence of a pay gap between female and male CEO's, we first aim to explore whether these varied findings can be attributed to the number of female directors on the CEO's board. We find that despite our predictions, the limited sample size of female CEO's still makes the understanding of why results are so mixed on this potential gender gap in compensation a challenging research question. While we hoped to uncover which of the clashing sociological theories (i.e. in-group biases versus crabs in the barrel) on how females at the top of organizations will respond to other females holds true for the board member-CEO dyad

relationship by investigating whether female BOD members would “help” female CEOs because they categorize them as a member of their own minority in-group or whether they would “punish” them with lower compensation to protect their own valuable and limited resources that exist at the upper echelons of the organizations, we find ourselves limited in this analysis by sample size.

Beyond adding females on the board as a predictor of female CEO compensation, we delve into whether the applied sociological theories of females in power helping or hurting other females also applies to personality types which are commonly stereotyped to females. In other words, do we categorize members of our in-group at work only by observable characteristics like gender, or do these categorizations also extend to the traits with which we stereotype members of that group to have? Specifically, we delve into the two personality traits most likely to be perceived as associated with female stereotypes, neuroticism and agreeableness. We find that agreeableness of a CEO does matter to female board members and further, in a supplementary analysis, we find that female directors also prefer highly open CEO’s in the context of executive compensation. Our findings also answer calls for analysis into the effects of interactions between top executive characteristics (Hoffman & Meusburger, 2018).

With prior research being mixed in the compensation literature on whether there is a pay gap between female and male CEO’s, we hoped to shed some light on the factors that could contribute to the extreme range of different salaries we see in chief executive officers of large, public organizations. Our findings suggest that one avenue for scholars interested in the upper echelons should explore in relation to outcomes like CEO compensation is the impact of how CEO personality or the interaction of CEO personality and number of females directors on the board might impact this outcome. As mandates for more gender diversity on boards across the

world become the norm, (Hatcher & Latham, 2020; Terjesen et al., 2014), it becomes more important that we understand the impacts of such mandates. Additionally, as more females rise to the top of organizations, these types of research questions become not only more interesting but also more testable.

Limitations and Avenues for Future Research

We understand that there are always limitations in any study design. Firstly, our data is limited to public organizations only, so we are unable to check on if there are differences in compensation due to gender of board members at privately held firms. Secondly, while we test effects over a span of ten years to encapsulate as many female CEOs as possible in the hypotheses regarding effects on female CEO compensation (Hypothesis 1a and 1b), the highly unequal representation of females in the chief executive role limit the strength of our analysis. As the number of females rising to the top of organizations increases, further research should be done to analyze the impact of gender on executive outcomes including but not limited to compensation. Thirdly, it could be argued that CEOs with certain personalities self-select into the chief executive role, however, we utilized a Heckman model to correct for any self-selection biases in a supplementary analysis, and results were consistent. Further, we find sufficient variance in personality traits between CEO's and only compare CEOs to other CEO's rather than to the general population to see the impact of this variance between people in this role.

Lastly, there are a series of additional controls that could be added to the study based on prior executive compensation research. For example, some prior research into CEO compensation has utilized mandated SEC filings to collect the average top management team pay of the top four paid management team members following Carpenter and Sanders (2002). Another control previously considered in CEO executive compensation research is whether the

CEO is an insider or outsider at their firm meaning whether they were hired into the CEO role after working at the firm internally for at least one year (Brockman, Lee, & Salas, 2016). CEO/Board interlock relationships could potentially affect compensation and could be included as a control variable (Hallock, 1997). Finally, there are other control variables that could be considered in future research according to past scholars of CEO compensation variance. For example, prior studies have looked at CEO attractiveness and even the CEO's physical "look of competence" (Graham et al., 2017) as an indicator of CEO compensation. However, research on the impact of such traits in females specifically is limited which leaves space for interesting research as the numbers of females at the top ranks of organizations grow over time and contribute more statistical power to these analyses.

Our study suggests that sociological theories concerning gender biases extend to personality traits, some of which are associated with gender (i.e., stereotypes). This finding offers an exciting new path for research in not only the upper echelons but also other levels of the organization as we find that it may not only be visible differences by which we stereotype but also behaviors.

Table 1: Summary Statistics and Correlation Matrix

Variables	Mean	SD	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)
(1) CEO Compensation	8.978	1.367	-6.908	13.230						
(2) Female Directors	1.890	1.099	0	8	0.100					
(3) ROA	0.059	0.096	-2.283	0.620	0.045	-0.028				
(4) Cumulative Abnormal Returns	0.050	0.315	-0.876	5.360	0.107	-0.028	0.128			
(5) Firm Size	9.643	1.378	5.000	14.761	0.282	0.317	-0.212	-0.035		
(6) SIC	4568.4	1880.4	100	9997	-0.031	0.022	-0.026	0.019	0.065	
(7) Board Size	10.764	2.362	5	34	0.101	0.425	-0.094	-0.062	0.445	-0.011
(8) Inside Directors	1.4111	0.810	0	10	-0.057	-0.001	0.042	-0.005	-0.104	-0.046
(9) Outside Directors	8.8551	2.251	0	28	0.136	0.460	-0.107	-0.073	0.496	-0.030
(10) CEO Age	56.238	6.411	34	86	0.104	0.079	0.011	-0.048	0.137	-0.082
(11) CEO Tenure	81.89	62.95	0.000	648.00	0.004	-0.094	-0.025	0.011	-0.023	0.042
(12) Openness	4.668	0.555	3.121	6.240	0.004	0.212	0.153	0.026	-0.123	0.270
(13) Neuroticism	3.244	0.622	1.796	6.103	-0.008	-0.246	-0.185	-0.020	0.016	-0.305

N= 2,473, All correlations above |.039| is significant at a .05 level

	(7)	(8)	(9)	(10)	(11)	(12)
(8) Inside Directors	0.188					
(9) Outside Directors	0.865	-0.185				
(10) CEO Age	0.056	-0.063	0.100			
(11) CEO Tenure	-0.085	0.059	-0.082	0.290		
(12) Openness	-0.021	0.085	-0.062	-0.107	-0.061	
(13) Neuroticism	-0.069	-0.045	-0.039	0.086	0.754	-0.642

Table 2: Panel Regression Analysis Results for All Hypotheses

	MODEL 1 (H1a/1b)				MODEL 2 (H2a/2b)				MODEL 3 (H3a/3b)			
	Coef.	St. E	z score	P value	Coef.	St. E	z score	P value	Coef.	St. E	z score	P value
CEO Compensation												
Female Directors	0.039	0.071	0.55	0.582	-0.063	0.066	-0.95	0.342	0.126	0.056	2.27	0.023
ROA	0.947	0.282	3.32	0.001	0.954	0.287	3.33	0.001	0.943	0.284	3.32	0.001
Cum. Abnormal Returns	0.276	0.143	1.93	0.053	0.369	0.054	6.79	0.000	0.364	0.054	6.71	0.000
Firm Size	0.266	0.081	3.29	0.001	0.291	0.029	9.99	0.000	0.291	0.029	10.0	0.000
SIC	-0.000	0.000	-0.88	0.381	-0.000	0.000	-2.54	0.011	-0.000	0.000	-2.50	0.012
Board Size	0.266	0.081	3.29	0.001	0.021	0.030	0.70	0.486	0.024	0.296	0.81	0.417
Inside Directors	-0.121	0.122	-1.00	0.319	-0.036	0.049	-0.74	0.462	-0.040	0.049	-0.80	0.421
Outside Directors	-0.023	0.072	-0.33	0.742	-0.041	0.013	-1.31	0.190	-0.045	0.031	-1.46	0.146
CEO Age	0.029	0.021	1.36	0.173	0.028	0.007	4.22	0.000	0.028	0.007	4.25	0.000
CEO Tenure Months	0.004	0.002	2.04	0.042	0.002	0.006	3.45	0.001	0.002	0.001	3.44	0.001
Number of Observations	126				2,473				2,473			

Table 3: Supplementary Panel Regression Analysis Results for Female Directors x Openness

CEO Compensation				
	Coef.	St. E	z score	p value
FemaleBoard x Openness				
Female Directors	0.144	0.727	1.99	0.047
ROA	0.929	0.285	3.26	0.001
Cum. Abnormal Returns	0.368	0.054	6.78	0.000
Firm Size	0.296	0.029	10.07	0.000
SIC	-0.000	0.000	-2.78	0.005
Board Size	0.021	0.030	0.72	0.474
Inside Directors	-0.041	0.049	-0.83	0.408
Outside Directors	-0.043	0.311	-1.37	0.169
CEO Age	0.028	0.007	4.14	0.000
CEO Tenure Months	0.002	0.001	3.46	0.001
Number of Observations	2,473			

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