



# Do the Right Thing: The Imprinting of Deonance at the Upper Echelons

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## Abstract

This study expands the application of deonance theory into organizations' upper echelons by examining how CEOs imprinted with a sense of duty can influence managerial decision-making. We hypothesize an imprint of bounded autonomy, an *ought-force* that constrains their decision-making and understanding of behavioral freedom, influences duty-bound CEOs to self-report errors in past financial reporting. We test deonance theory propositions of instrumentality for behavioral expansion, namely loss avoidance and gain attainment, related to institutional ownership concentration and CEO equity ownership. We use CEOs that are graduates of U.S. service academies as a proxy for duty-bound executives and find firms they lead are more likely to issue a financial restatement to correct a previous reporting error. This finding is robust to alternate explanations such as being error-prone, earnings management, auditor oversight, and risk behaviors. We also find evidence that deonance may be subject to behavioral expansion. The likelihood of issuing a restatement decreases as institutional ownership concentration and CEO equity ownership increases. This study shows imprinted deonance within the C-suite influences important organizational outcomes.

**Keywords** Deonance · Financial restatements · Imprinting · Military CEOs · Upper echelons

## Introduction

Deonance (a neologism) is derived from the Greek *deon*, referring to duty or obligation. The significance for morality comes from the additional translation as

that which is binding or proper, thereby also implying accountability (Folger, 2012, p. 123).

Folger (2001) pioneered deonance—a person's sense of duty—as an emergent management scholarship topic. Scholars have flocked to deonance exploring its connection with various management concepts such as perceived organizational support and citizenship behavior (Eva et al., 2020), behavioral ethics, organizational deviance (Folger et al., 2013; Hannah et al., 2014), and feedback-seeking behavior (Moss et al., 2020). Despite these advances, management scholars note that deonance should be further integrated into organizational research (Palanski et al., 2021). While CEO values have important ramifications for organizations, the role of deonance in decision-making remains understudied (Bromiley & Rau, 2016). Thus, this paper extends deonance theory expressed by Folger and others to an organization's upper echelon. We conceptualize deonance as duty orientation defined “as an individual's volitional orientation to loyally serve and faithfully support other members of the group, to strive and sacrifice to accomplish the tasks and missions of the group, and to honor its codes and principles” (Hannah et al., 2014, p. 220).

Our paper provides empirical evidence that addresses several important aspects of deonance theory by taking an

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upper echelons perspective. For instance, prior research predominantly focuses on front-line employees and middle-level managers. In this paper, we extend the application of deonance theory to CEO managerial decision-making as deonance is an *ought-force* that constrains an individual's decision-making and understanding of behavioral freedom (Folger, 2012; Folger et al., 2013; Heider, 1958). Additionally, our paper provides empirical evidence that deonance is malleable (Folger, 2012; Hannah et al., 2014), namely, whether loss avoidance and gain attainment can constrain the role of deonance in CEO decision-making. More specifically, our research question addresses *under what circumstances do CEOs imprinted with deonance make different decisions than peer CEOs?*

Since we focus our attention on CEO-level decisions that reflect an effort to “do the right thing,” we examine financial restatements as an outcome that reflects CEO deonance. Restatements are often the result of unintentional errors stemming from judgment in the financial reporting process (Plumlee & Yohn, 2010).<sup>1</sup> As a reflection of executive decision-making, CEOs have discretion over financial restatements, and restatements carry significant personal risk (Pfarrer et al., 2008; Zhao & Olivera, 2006). In other words, the restatement setting identifies a situation where doing the right thing is costly to the CEO and where it is reasonable to observe variation in the frequency of restatements, providing a basis for our empirical tests. In our additional tests, consistent with deonance theory propositions, we examine whether loss avoidance and gain attainment can influence any observed behavioral expansion (Folger et al., 2013) and whether these factors weaken the likelihood CEOs issue a financial restatement. We identify two boundary conditions, CEO stock ownership and the presence of institutional owners, which represent significant loss avoidance and gain attainment factors. Stock ownership exposes the CEO to downside financial risk and upside financial benefits (Gomulya & Boeker, 2014), while institutional owners can influence CEO employment risk (Dunford et al., 2008).

Our study makes several contributions to the existing literature. First, our study applies deonance theory to research on upper echelons as we provide evidence that imprinted deonance influences executive decision-making. Second, we extend the nomological network of deonance theory to include financial reporting, specifically error-reporting, as a

relevant topic – i.e., we examine *what type* of CEO is more likely to report errors, despite the significant risk associated with the decision to do so. Further, we address how CEO stock ownership and institutional ownership influence an imprinted CEO to relax their commitment to reporting more accurate information to avoid potential loss and seek potential gain (Folger et al., 2013).

Our study also *contextualizes* deonance research. Generally, contextualizing research identifies context-specific features and describes how context-specific features influence organizational phenomena (Härtel & O'Connor, 2014). Various scholars note context-specific research offers unique insights that enrich theory development (Hällgren et al., 2018; Hambrick & Quigley, 2014; Johns, 2017), especially when it bridges the gap between micro-level (i.e., deonance) and macro-level (i.e., financial restatements) research (Bamberger, 2008). Service academy attendance serves as a specific context that provides evidence that intense character-based leadership development programs can imprint deonance (i.e., Folger et al., 2013; Hannah et al., 2014; Jennings & Hannah, 2011), which manifests in highly relevant managerial decisions.

## Theory Development

Deonance is cultivated by an *“ought-force”* that conveys duty imperatives (Folger, 2012; Heider, 1958) such as loyalty, honor, and code that are grounded in a commitment to the ethics of one's community. Community members conceive themselves as officeholders with certain obligations and responsibilities to the larger group (Haidt & Kesebir, 2010; Shweder, 1999). This commitment may arouse a psychological state of deonance “when a situation brings to bear beliefs about the relevance of moral directives...” and “...represents the instigation of an *“ought-force”* (Heider, 1958, p. 234) that calls for self-restraint rather than unfettered choice” (Folger, 2012, p. 124). Deonance theory also “assumes that people try to govern their own interpersonal conduct... ..on the grounds of moral accountability” (Folger, 2001, p.7). Once internalized, deonance “serves as a means of individual and collective motivation and self-control. It consists of an explicitly or implicitly articulated set of moral principles, values, and behavioral standards to guide and govern [their] conduct and performance” (Jennings & Hannah, 2011, p. 554).

In addition to moral accountability, procedural accountability is a source of accountability (Lerner & Tetlock, 1999). Procedural accountability, the “means that individuals have to account for the ways in which judgments and decisions were made” (Pitesa & Thau, 2013, p. 552), is also of great importance in deonance theory (see the opening quotation from Folger, 2012). Judgment is at the heart of deonance

<sup>1</sup> The Financial Accounting Standards Board (FASB) Statement No. 154 defines a financial restatement as “the revising of previously issued financial statements to reflect the correction of an error” (<https://www.fasb.org/summary/stsum154.shtml>). More information on financial statements is located at the following Security and Exchange Commission webpage: <https://www.sec.gov/oiea/reports/pubs/investor-publications/beginners-guide-to-financial-statements.html>.

because it is the antecedent to moral behavior. It is often easier to obscure facts and hide the truth from others, especially if self-reporting errors might bring unwanted attention or sanction. The judgment is whether to report the error or not. Often, duty-bound people desire important stakeholders to see them as moral and dutiful (Lerner & Tetlock, 1999). While no person is infallible, accountability concerning decisions that reflect a person's judgment capture whether a "moral compass" guides their actions. A person imbued with deonance will admit the error to their stakeholders because deonance-imprinted people desire their stakeholders to trust their judgment and are willing to face scrutiny to show they remained duty-bound in their decision-making. Decisions built on a foundation of deonance are valued even if the outcomes are less than optimal.

Deonance theory also suggests dutiful obligations are imprintable. Imprinting establishes a "familiar behavioral process" (Hoffman & Ratner, 1973, p. 527) where "during a brief period of susceptibility, a focal entity develops characteristics that reflect prominent features of the environment, and these characteristics continue to persist despite significant environmental changes in subsequent periods" (Marquis & Tilcsik, 2013, p. 199). The subject is highly susceptible to environmental influences that imprint and influence subsequent behaviors well past the sensitive period (Immelmann, 1975). There is limited research concerning early life imprints on executive behavior. However, there are two notable exceptions. Kish-Gephart and Campbell (2015) show a CEO's social class during their youth influences their propensity to take strategic risks; subsequent career experiences, namely education and functional background, influence this relationship. Likewise, Bianchi and Mohliver (2016) show early work experiences of CEOs during prosperous economic times were associated with stock options backdating later in their careers. In each case, the imprinted experience determined CEOs' cognition and subsequent behavior.

We posit that early life experiences imprint certain firm executives such that they live by deontic principles more steadfastly than their peers do. Indeed, management scholars propose that executives' values, personality, and experiences strongly influence their decisions concerning accurate, timely reporting of firm performance (Hambrick & Mason, 1984; Wang et al., 2016). For instance, extant research shows education, functional training, and professional background heavily influence executive decision-making as they used prior experiences to make sense of their operating environment (Finkelstein et al., 2009; Hambrick, 2007). Likewise, personal experiences such as upbringing influence CEO cognition and subsequent behavior (Bianchi & Mohliver, 2016; Kish-Gephart & Campbell, 2015).

## The Influence of CEO Deonance on Financial Restatements

A critical aspect of financial reporting is the correction of prior financial misstatements, commonly called financial restatements. The choice to issue a financial restatement may present two conflicted choices. Not issuing a correction allows executives to leverage information asymmetry to minimize personal sanctions; however, reporting timely, accurate information concerning past errors maintains their obligation to firm stakeholders. Regardless of the reason, some CEOs suffer adverse outcomes following financial restatements (Wesley & Ndofor, 2013). Restatements may lead to termination (Desai et al., 2006) and often lead to negative equity market reactions (Badertscher et al., 2011; Lev et al., 2008; Wilson, 2008). CEOs must balance correcting a misstatement with suffering negative outcomes for themselves and their firm and face a dilemma when choosing whether to issue a restatement given the possible sanctions. We surmise some CEOs, namely those imprinted with deonance, are more inclined to report a correction to previously reported, now erroneous information in the face of potential negative consequences.

Researchers have argued that an obligation toward faithful representations should exist within some people (Ross, 1930), especially in financial reporting (Ruland, 1984). For instance, Ruland (1984) notes that accounting should be a faithful representation of firm financial condition and contends that reporting accurate financial information is "financial mapmaking and that maps should be accurate (they should be faithful)" (p. 224). Their utility should be evaluated "by how useful they are in fulfilling their purpose" (Ruland, 1984, p. 224). For CEOs imbued with deonance, their past experiences provide formal (e.g., codes of ethics and policies, reward systems, training programs) and informal infrastructures (e.g., peer behavior and reinforcement, use of language, social norms) that imprint a common understanding of personal duty (Trevino, 1986). Accurate reporting reflects the CEOs' obligation to maintain accountability in the face of adverse outcomes and report accurate information even when adverse to their interests. This fulfills Ruland's (1984) view of financial reporting.

Further, this view of deonance is akin to Jensen's (2009) view that integrity is when one's word is whole, complete, and uncompromised. We posit that CEOs imprinted with deonance view the correction of inaccurate reporting as a dutiful obligation to their stakeholders. Therefore, CEOs imprinted with deonance may be more likely to issue financial restatements than non-graduate CEOs.

**Hypothesis 1** CEOs imprinted with deonance are more likely to issue financial restatements than their peer CEOs.

## Loss Avoidance and Gain Attainment

According to deonance theorists, loss avoidance can provide an instrumental basis for behavioral expansion beyond obligatory deontic behavior, from free behavior to non-free behavior. Free behavior is behavior that an individual believes to be allowed and permissible (i.e., within their discretion), whereas non-free behavior is behavior that an individual believes to be forbidden or not allowed (i.e., outside of their discretion; Brehm, 1966; Folger, 2001). “The greater the magnitude of the negative effects of avoiding the non-free behavior, the stronger the instrumental status of the non-free behavior, and the more likely an individual will engage in the non-free behavior” (Folger et al., 2013, p. 913). Additionally, gain attainment also provides an instrumental basis for behavioral expansion. “The greater the magnitude of the positive effects of engaging in the non-free behavior, the stronger is the instrumental status of the non-free behavior, and the more likely an individual will be to engage in the non-free behavior” (Folger et al., 2013, p. 913).

Our paper posits that CEOs imprinted with the duty to do the right thing are more likely to issue financial restatements (non-free behavior) despite personal risk. Following deonance theorists’ logic, other factors (which increase losses or decrease gains) related to financial restatements may have consequences that are so great that graduate CEOs more often eschew their sense of obligation to stakeholders. We identify two factors, CEO stock ownership, and institutional ownership, which may be salient moderating factors in our setting.

### CEO Stock Ownership

As variable compensation directly tied to the firm’s market capitalization, stock ownership exposes the CEO to more significant downside risk and upside benefits related to the firm’s future prospects. Accordingly, CEO stock ownership can operate as a loss avoidance or gain attainment mechanism (or both) that alters an individual’s behavior and use of discretion (Folger et al., 2013). In addition, CEO stock ownership is likely to influence a CEO’s decision to issue a restatement. After all, CEOs who issue a restatement are likely to experience wealth reduction (Gomulya & Boeker, 2014) and may not maintain or increase the firm’s value (Wesley & Ndofor, 2013). Thus, we conclude CEO stock ownership is likely an instrumental basis for behavioral expansion for CEOs imprinted with deonance. In other words, with higher levels of CEO stock ownership, these CEOs may be less likely to issue financial restatements despite their higher inclination to do the right thing.

**Hypothesis 2** The quantity of firm equity owned by CEOs imprinted with deonance negatively moderates their

likelihood of issuing financial restatements. When CEOs imprinted with deonance own high (low) amounts of firm equity, their likelihood of issuing financial restatements decreases (increases) relative to their peer CEOs.

### Institutional Ownership

Folger et al. (2013) also argue that people in subordinate positions will alter their behavior to meet the expectations of others to which they are accountable. To this end, research suggests institutional owners hold significant influence over CEOs. As the most influential shareholders, institutional owners are best positioned to prevent managerial opportunism due to their increased monitoring incentives, especially as they own more equity in the firm (Connelly et al., 2010a, 2010b). Institutional owners can influence the firm’s board to terminate the CEO, which serves as a powerful influence on CEO behavior (Dunford et al., 2008). Subsequently, this represents the risk of significant loss. Correspondingly, deonance theory specifically proposes that “loss or harm avoidance can provide an instrumental-status association for behavioral expansion” (Folger et al., 2013, p. 913).

Empirical evidence supports these propositions. For example, Denis et al. (1997) established that executive turnover is positively related to institutional ownership during firm underperformance. Underperformance could include publishing erroneous information concerning the firm’s financial health as reflected in revising previous financial statements, especially since it often adversely influences a firm’s market capitalization (Wesley & Ndofor, 2013). More recent studies have also shown increased institutional owner monitoring can influence managerial cognition such that executives behave with more self-interest (Connelly et al., 2017; Shi et al., 2017). Self-interest would include withholding information that could potentially undermine the CEO’s perceived competence, thereby increasing their employment risk. Given institutional owner monitoring, especially by activist owners (e.g., Gupta et al., 2018), represents a significant employment risk, we expect institutional ownership to negatively moderate the relationship between graduate CEOs and the likelihood of financial restatements.

**Hypothesis 3** Institutional ownership negatively moderates the likelihood that CEOs imprinted with deonance issue financial restatements. When institutional owners own high (low) amounts of firm equity, the likelihood of CEOs imprinted with deonance issuing financial restatements decreases (increases) relative to their peers.

## Research Setting

A significant challenge in empirically testing deonance theory is (a) identifying a cohort of firm executives who share a common imprinting experience and (b) identifying decision-related outcomes that reflect the imprinting experienced by the cohort. We identify CEOs who are graduates of United States service academies (hereafter, named graduate CEO and GRAD CEO)<sup>2</sup> as executives likely to be imprinted with a sense of obligation to “*do the right thing.*” Our theory states that duty-orientation persists in professional settings long after their military service.

As revealed by Hannah et al. (2012), deonance research is very relevant to graduate CEOs. Service academies imprint graduate CEOs with deonance, and this imprint cultivates their sense of bounded autonomy (i.e., “*do the right thing.*”). The professional development programs at service academies exert significant resources to imbue their cadets with an “*ought force.*” necessary in their future military careers. They are taught they should report timely and accurate information, including any revision to previously reported information (e.g., status changes, erroneous information, etc.). As a result, they possess a deonance perspective in their decision-making imprinted during a specific period in their lives and have decision heuristics activated for critical organizational decisions. The following section describes how this occurs.

### A Character-Based Approach to Imprinting Deonance

As flagship institutions that serve as the standard-bearers for leadership development in each military service officer corps, the U.S. federal government takes great care, effort, and expense to imprint service academy graduates with a sense of deonance. Service academies engage in “character-based leadership development,” which imprints a sense of duty to “*do the right thing.*” even though such decisions may carry significant personal risk. The service academy approach mirrors deonance that focuses on social norms that encourage virtuous behavior (Weaver & Trevino, 1994). As noted by Jennings and Hannah (2011), “a character-based approach appeals to the time-honored martial virtues internal to the military vocation, for example, honor, courage,

<sup>2</sup> The United States service academies are the U.S. Air Force Academy (USAFA), U.S. Coast Guard Academy (USCGA), U.S. Merchant Marine Academy (USMMA), U.S. Military Academy (USMA or West Point), and U.S. Naval Academy (USNA). Their students are referred by their military rank, cadet and/or midshipman and are gender-neutral terms. We use the term cadets when referring to service academy students in this manuscript and offer our apologies to USNA and USMMA students, staff, and alumni.

patriotism, sacrifice, and so on” (p. 554).<sup>3</sup> This approach reflects the underlying assumption that a person’s constitution ultimately drives their behavior (Blasi, 1980; Verplanken & Holland, 2002) and “theorizes ethics in terms of the development of character and virtue rather than just behavioral compliance with social norms” (Jennings & Hannah, 2011, p. 554). To this end, researchers have noted that the virtues of duty and honor “when internalized become the social-psychological mechanisms” (Jennings & Hannah, 2011, p. 554), which ultimately guide behavior. This type of character-based approach is likely to “generate and sustain extra-ethical virtuous behavior under conditions of high moral intensity where personal risk or sacrifice is required in the service of others” (Hannah & Avolio, 2011, p. 992). This suggests that a character-based approach imprints a sense of duty, which generally guides decision-making.<sup>4</sup> In essence, early experiences at each service academy determine subsequent persistent behaviors that are discriminant from other learning processes (i.e., Homans, 1961; Lorenz, 1937).

A cadet’s tenure at a service academy tightly fits imprinting theory. To be imprinted is to establish a “familiar behavioral process” (Hoffman & Ratner, 1973, p. 527), and a necessary condition to imprint behavior is “...a temporally restricted sensitive period characterized by high susceptibility to environmental influence...” (Marquis & Tilcsik, 2013, p. 199). Our setting meets the two necessary conditions for imprinting. First, graduate CEOs attend a service academy between the ages of 17 and 23. These ages are formative years in human development that determine subsequent adult behavior – i.e., graduate CEOs are receptive to external influences during their time at an academy. Cadets, including future CEOs, are receptive to external influences during this imprinting period (i.e., Immelmann, 1975). Second, service academies are considered “total institutions” (Pershing, 2003), whereby cadets are relatively isolated from the outside community over *four to five years*. A total institution’s goal is to alter one’s self-conception and replace it with an identity consistent with its purpose. During this period, each

<sup>3</sup> Hannah et al., 2014 introduction of duty orientation to management and leadership research relied heavily on military professionals. Notably, four of their five studies were based on military personnel. They reasoned that the study of deonance theory is important for occupations where a sense of duty orientation is critical, such as the professions (e.g., medical, clergy, legal), public service work (e.g., law enforcement, fire, military). Other scholars have studied other ethical matters in the context of military samples as well (e.g., Rubino et al., 2018).

<sup>4</sup> For instance, Breslin (2000) found junior officers demonstrated a willingness to sacrifice themselves for mission accomplishment. They also showed a heightened respect for civilian society, as shown by the support of diversity initiatives in the military (Breslin 2000) and their intentions to report fellow soldiers’ unethical actions to their superiors (Hannah and Avolio 2011).

academy formally introduces cadets to the military organizational culture and the explicit and implicit expectations regarding followership, leadership, personal conduct, and integrity (Mitchell & Cahill, 2005).<sup>5</sup> An extended period of indoctrination occurs after the summer until graduation, with an explicit goal of developing officers capable of leading men and women in their respective armed service.

In their mission to develop exceptional leaders, service academies purposefully design cadets' lives to encourage their character development and internalize military values such as loyalty, duty, respect, selfless service, honor, integrity, and personal courage<sup>6</sup> (e.g., U.S. Army core values; McNally et al., 1996; Murray et al., 2021). In addition, decision heuristics developed within this infrastructure are reinforced daily such that cadets can more easily identify instances whereby the 'appropriate action' is desired. "There is clear evidence from the present investigation (supported by the broad institutional study) that the values of cadets change, generally in a direction consistent with the explicit socialization objectives... ..as cadets increasingly identify with the reference group" (Stevens et al., 1994, p. 481).

The character development of cadets occurs in the context of the values, programs, policies, and practices at each service academy (Callina et al., 2019). This cultivates a sense of duty within cadets (Yu, 2013, 2016). Cadets are taught an obligation to "do the right thing," which is often directly connected to procedural accountability. Senior leaders heavily analyze the managerial decisions of their junior military officers. The institutional belief is successful outcomes are most often borne from thoughtful decision-making, and while unfavorable outcomes are inevitable, careful attention to the decision-making process is paramount. Therefore, the service academy trains cadets to update their superiors amidst unfavorable outcomes and hold

themselves accountable for their decision-making process. This behavior is likely to transcend professional settings for those imprinted with this ethos. This suggests that individuals imprinted with deonance should have an obligation toward faithful and accurate representation of information to important stakeholders.

We suggest the imprint persists well after their time at an academy (and subsequent military service). The imprinting environment is especially salient for behaviors expected of senior executives. As future officers, cadets are trained in complex decision-making and develop a framework that considers multiple stakeholders.<sup>7</sup> An additional significant imprint on cadets is accountability for one's actions. Service academies train cadets to make sound decisions by stressing procedural accountability (e.g., Pitesa & Thau, 2013). Their decision-making in future professional contexts reflects this deonance imprint.

In summary, the service academies' leadership development programs provide each graduate with an identity that supports the armed services' organizational culture and becomes central to their self-conception as junior officers. In addition, these programs imbue graduates with mental schemas, namely an obligation to "do the right thing," which are chronically available, readily primed, and easily activated for information processing (Lapsley and Laskey 2001). Moreover, each service academy intends to develop leaders for service to the country in the public and private sectors after their military service (Crossan et al., 2013). Therefore, we expect the professional development at each service academy to manifest itself in graduates' decision heuristics long after their military careers.

## Methods

### Empirical Setting

We integrate deonance and upper echelon theories to explain why some CEOs are more willing to self-report an error by issuing a financial restatement. We test whether CEO imprinted with deonance are more likely to self-report an error by issuing a financial restatement than their peers to

<sup>5</sup> Prior empirical evidence has found that a military education uniquely influences the development of cadets' character and personality (Giambra 2018; Jackson et al., 2012; Priest et al., 1982; Stevens et al., 1994). A service academy "attracts students with relatively high commitment to personal value" (Priest and Beach 1998, p. 91) and evidence indicates that cadets tend to self-select into military academies (Priest et al., 1982; Stevens et al., 1994). Indeed, service academies such as West Point utilizes traditional human resource management functions of recruiting, selection, job rotation, and training to improve their character-development process (Offstein and Dufrense 2007).

<sup>6</sup> Service academies perform an assimilation function by which civilians or enlisted persons transition to roles as military officers through a process of imprinting in which they acquire a common set of sentiments and attitudes (Dornbusch 1955). McNally et al. (1996) discuss the "unique friction" that makes military academies different from civilian universities; the friction between providing an education that "emphasizes academic excellence while promoting innovative and independent thinkers" and training that instills the values of discipline and duty necessary for the professional military officer (p. 182).

<sup>7</sup> For example, at the United States Military Academy (USMA), decision heuristics are taught in three parts: (a) "Does this action attempt to deceive or allow anyone to be deceived?" (b) "Does this action gain or allow the gain of privilege or advantage to which I or someone else would not otherwise be entitled?" (c) "Would I be satisfied by the outcome if I were on the receiving end of this action?" (Offstein et al., 2017, p. 490). Senior officers at service academies argue that decision-making often comes down to doing the harder right than the easier wrong. Exposure to such choices reinforce the courage to "do the right thing" (e.g., Offstein et al., 2017).

**Table 1** Sample distribution by fiscal year

Years	GRAD=1			GRAD=0			$\chi^2$ Diff
	Obs	Restate	Pct (%)	Obs	Restate	Pct	
2004	24	3	12.5	1177	73	6.2%	1.57
2005	28	5	17.9	1232	157	12.7%	0.64
2006	26	6	23.1	1634	188	11.5%	3.32*
2007	25	7	28.0	1411	227	16.1%	2.56
2008	22	6	27.3	1659	151	9.1%	8.47***
2009	28	0	0.0	1947	190	9.8%	3.02*
2010	32	3	9.4	1862	189	10.2%	0.02
2011	35	4	11.4	1871	178	9.5%	0.15
2012	27	5	18.5	1812	245	13.5%	0.57
2013	31	6	19.4	1901	270	14.2%	0.66
2014	25	5	20.0	1683	239	14.2%	0.68
Total	303	50	16.5	18,189	2107	11.6%	7.00***

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

provide evidence deonance can be imprinted and influence firm executives' future behaviors.

Using graduate CEOs as a sample of deonance imprinted CEOs increases our construct and face validity. Each graduate CEO spends four to five years during the nascent stages of their adult lives in the service academy environment. Furthermore, service academy graduates spend at least a minimum of 5 years on active duty after graduation. To this end, service academy graduates are consistently, methodically imprinted to possess a heightened level of deonance during a unique 9-year time period (e.g., Hannah et al., 2014). Moreover, our data reflects the experience's uniqueness as all veteran CEOs in our sample are service academy graduates; this diverges from previous studies on military CEOs. This also differs from general military service, as very few service members are service academy graduates. Previous studies contain a broad swath of observations from participants in World War II, the Korean War, and the Vietnam War (Koch-Bayram & Wernicke, 2018; Law & Mills, 2017). Thus, while we submit our phenomenon, theory, and causal mechanisms differ from previous studies, we also believe our study more accurately reflects current veteran CEOs (instead of retired or deceased).

## Sample and Data Sources

Our initial sample consists of the Compustat universe of firm-years from 2004–2014. We require substantial control variable information to control for firm performance, governance, and CEO characteristics. We obtain firm-specific financial information from Compustat Capital IQ data, board governance data from Boardex, CEO characteristic data from MSCI and Execucomp, and restatement data from Audit Analytics for our main tests. We identify each firm-year as a GRAD (the CEO is a service academy graduate)

or non-GRAD (the CEO is not a service academy graduate). We require that each non-GRAD firm-year has at least one GRAD firm-year in its industry and fiscal year group and have complete data for all variables included in our primary models yielding a sample of 18,492 observations. We present our sample distribution by fiscal year (Table 1)<sup>8</sup> and industry (Table 2). Tables 3 and 4 report descriptive statistics and correlations, respectively, for our dependent variables, GRAD firm-year selection model, and our primary regression dependent variables. Non-normal variables are log-transformed (Cohen et al., 2003).

## Independent Variable: Service Academy Graduate CEO

We utilize a research team of five research assistants to conduct Boolean searches through Knowledge Mosaic and a review of over 5,000 electronic documents to identify 303 firm-years (69 unique firms) where a service academy graduate is identified as the firm's chief executive officer ( $GRAD = 1$ ). We code the remaining 18,189 firm-years (2,971 unique firms) as having non-service academy graduates ( $GRAD = 0$ ) as CEO.

<sup>8</sup> It is clear from the fiscal year distribution that restatement reporting changed for graduate CEOs immediately after the financial crisis (2009 and 2010). It is important to note that the difference in restatement reporting returned to the pre-crisis level in 2011 as graduate CEOs continue to report misstatements more frequently than non-graduate CEOs. In regression results, the difference in restatement frequency between graduate and non-graduate CEOs is statistically similar when comparing 2004–2008 with 2011–2014. We hope this allays any fears that our results are robust given the economic environment.

**Table 2** Sample distribution by industry

Industry	GRAD = 1			GRAD = 0			$\chi^2$ Diff
	Obs	Restate	Pct	Obs	Restate	Pct (%)	
Consumer Non-Durable Goods	10	1	10.0%	1054	133	12.6	0.06
Consumer Durable Goods	8	2	25.0%	325	46	14.2	0.74
Manufacturing	72	9	12.5%	2514	276	11.0	0.17
Energy	18	6	33.3%	1078	98	9.1	12.11***
<i>Chemicals and Allied Products</i>							
Business Equipment	56	10	17.9%	4328	549	12.7	1.33
Telecommunications	22	5	22.7%	595	90	15.1	0.94
Utilities	7	3	42.9%	389	37	9.5	8.42***
Wholesale Retail and Other Shopping	27	5	18.5%	2366	276	11.7	1.21
Healthcare and Medical	45	4	8.9%	2461	225	9.1	0
<i>Finance</i>							
Other	38	5	13.2%	3079	377	12.2	0.03
Total	303	50	16.5%	18,189	2107	11.6	7.00***

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

### Dependent Variable: Financial Restatements

We theorize earnings restatements reflect a CEO self-reporting error. Therefore, we only include financial restatements that reflect corrections to financial reports certified by the CEO in question. To ensure this, we delete any restatements filed that result from (a) fraud, (b) an SEC investigation, (c) another regulatory investigation, or (d) that correct errors solely made by the previous CEO. Our financial restatement measure is dichotomous and equals one (1), where the remaining sample firms initiate a financial restatement during the fiscal year and otherwise equals zero (0). We find GRAD firm-years initiate restatements more frequently than non-GRAD firm-years ( $\chi^2 = 7.00$ ,  $p < 0.001$ ).

### Moderating Variables

Consistent with deonance theory, we hypothesize circumstances directly associated with gain and loss attainment will lessen bounded autonomy in CEOs. We state the most salient influences are associated with wealth and employment risk. CEO firm-specific wealth is tied to their ownership stake. However, multiple measures in our models are highly correlated with CEO share value. Instead, we use the *number of CEO shares* owned in the focal firm, as measured by the natural log of the CEO's number of common shares. CEO wealth often reflects the number of shares they own, and while many things may influence the value of owned shares, the quantity of shares does not fluctuate unless the CEO takes direct action to acquire or liquidate shares.<sup>9</sup>

<sup>9</sup> The number of shares is the natural log of the number of shares the CEO held at the end of the fiscal year. While the value of shares varies across firms, the number of shares and the value of shares are highly correlated. In addition, the market value of CEO shares is

This limits the noise associated with market fluctuations of firm equity in our analysis. We further theorize employment risk is highest with institutional ownership. We use a *concentrated institutional ownership* measure, the Herfindahl–Hirschman index of institutional ownership of the firm's common equity, to reflect that concentrated owners have the most power to sanction the CEO.

### Control Variables: Selection Model

We include a selection model in our analysis to account for the possible non-random presence of service academy graduate CEOs in the sample. We account for firm and CEO-specific variables in our selection model. *Size* is the natural log of total assets. *R&D Expenditures* is the firm's annual R&D expense scaled by total assets. *Capital Expenditures* is the firm's annual capital expenditures scaled by total assets. The latter two items control for strategic risk (e.g., Devers et al., 2008; Kish-Gephart & Campbell, 2015), given extant research on military CEOs unequivocally state veteran CEOs are risk-averse (Koch-Bayram & Wernicke, 2018; Law & Mills, 2017).

*CEO Age* is the CEO's age in years. *CEO Duality* equals one (1) for firms where the CEO is also the chairman of the board and otherwise equals zero (0), while *CEO Tenure* is the number of years the CEO has served in their current position. *CEO Salary* is the natural log of the CEO's salary.

Footnote 9 (continued)

highly correlated with market capitalization, total assets, and other CEO compensation variables. Nevertheless, when we substitute the market value of the CEO shares for the number of shares all statistical inferences remain unchanged.



**Table 3** Descriptive statistics

Variable	Cross-sectional sample					Matched sample						
	GRAD=1					GRAD=0						
	Obs	Mean	SD	Mean	SD	Obs	Mean	SD	Mean	SD	Diff	t-stat
Restatement	303	0.165	0.372	0.116	0.320	0.049***	2.65	0.086	0.281	0.079***	2.96	
Total assets (\$MM)	303	5,186.1	10,737.7	4,743.9	10,422.2	442.2	0.73	5,760.8	11,748.4	-574.7	-0.63	
R&D expenditures	303	0.070	0.117	0.053	0.104	0.018***	2.93	0.069	0.124	0.001	0.08	
Capital expenditures	303	0.051	0.061	0.056	0.066	-0.006	-1.47	0.050	0.059	0.000	0.10	
Debt	303	0.219	0.200	0.214	0.210	0.005	0.41	0.243	0.224	-0.025	-1.43	
Market capitalization (\$000)	303	5,860.6	14,487.9	5,710.7	15,405.6	149.9	0.17	6,450.2	15,824.9	-589.6	-0.48	
Book-to-market	303	0.510	0.396	0.511	0.435	0.000	0.00	0.437	0.436	0.073**	2.17	
Return on assets	303	-0.010	0.217	0.015	0.171	-0.025**	-2.50	-0.010	0.211	0.000	0.02	
Negative income	303	0.300	0.459	0.259	0.438	0.041	1.62	0.264	0.442	0.036	0.99	
Big 4 auditor	303	0.898	0.304	0.865	0.342	0.033*	1.66	0.898	0.304	0.000	0.00	
Institutional ownership	303	0.551	0.373	0.618	0.361	-0.067***	-3.19	0.602	0.372	-0.051*	-1.67	
CEO duality	303	0.505	0.501	0.527	0.499	-0.02	-0.77	0.505	0.501	0.00	0.00	
CEO age (years)	303	55.875	6.703	56.403	7.459	-0.528	-1.22	56.198	7.348	-0.323	-0.57	
CEO tenure (years)	303	7.314	5.177	9.435	7.417	-2.122***	-4.96	7.650	5.752	-0.337	-0.76	
CEO salary (\$000)	303	611.0	313.3	671.7	337.3	-60.6***	-3.11	675.9	337.9	-64.9**	-2.45	
CEO bonus (\$000)	303	263.3	615.8	312.8	717.4	-49.5	-1.19	383.6	757.1	-120.3**	-2.15	
CEO other compensation (\$000)	303	1,285.9	2,545.5	1,531.8	3,054.9	-245.9	-1.39	1,683.8	3,345.5	-397.9*	-1.65	
CEO shares (000 s)	303	715.2	1,586.4	935.1	3,261.6	-219.9	-1.17	987.9	3,624.5	-272.7	-1.20	
Board Gender ratio	303	0.901	0.097	0.900	0.097	0.001	0.19	0.897	0.090	0.004	0.57	
Average director tenure	303	7.416	3.799	9.263	4.837	-1.846***	-6.61	8.539	4.263	-1.122***	-3.42	
Director network size	303	7.141	0.442	6.917	0.627	0.225***	6.21	6.990	0.618	0.151***	3.46	
Board size	303	8.551	1.816	8.627	2.138	-0.076	-0.62	8.759	2.167	-0.208	-1.28	
Abnormal accruals	303	0.007	0.113	0.001	0.103	0.006	1.05					
Absolute abnormal accruals	303	0.081	0.089	0.072	0.081	0.009*	1.88					
Probability of misstatement	242	0.232	0.082	0.224	0.081	0.009	1.14					
Audit fees	292	3,128.9	4,100.0	2,550.1	3,710.6	578.8***	2.64					
Nonaudit fees	292	724.5	1,415.2	606.9	1,257.2	117.6	1.58					
Tax paid	278	0.175	0.371	0.183	0.384	-0.008	-0.33					
Tax expense	303	0.196	0.473	0.203	0.469	-0.007	-0.26					

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 4 Correlation for variables in pooled cross-sectional analysis

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
1 Academy graduate (GRAD)	1.00																						
2 Restatement	0.02*	1.00																					
3 Total assets	-0.01	0.01	1.00																				
4 R&D expenditures	0.02*	-0.03*	-0.38*	1.00																			
5 Capital expenditures	-0.01	-0.01	0.08*	-0.16*	1.00																		
6 Debt	0.00	0.04*	0.28*	-0.16*	0.07*	1.00																	
7 Market capitalization	-0.01	-0.03*	0.87*	-0.18*	0.08*	0.07*	1.00																
8 Book-to-market	0.00	0.02*	0.02*	-0.22*	0.02*	-0.14*	-0.28*	1.00															
9 Return on assets	-0.02*	-0.02*	0.35*	-0.56*	0.12*	-0.11*	0.38*	-0.03*	1.00														
10 Negative income	0.01	0.04*	-0.33*	0.36*	-0.09*	0.10*	-0.41*	0.13*	-0.68*	1.00													
11 Big 4 auditor	0.01	0.05*	0.36*	-0.06*	-0.02*	0.11*	0.33*	-0.06*	0.12*	-0.13*	1.00												
12 Institutional ownership	-0.02*	0.01	0.18*	-0.09*	-0.03*	-0.04*	0.21*	-0.01	0.22*	-0.21*	0.15*	1.00											
13 CEO duality	-0.01	-0.01	0.12*	-0.12*	0.04*	0.04*	0.10*	0.00	0.11*	-0.10*	0.03*	-0.01	1.00										
14 CEO age	-0.01	-0.01	0.12*	-0.13*	0.01	0.06*	0.06*	0.05*	0.06*	-0.08*	-0.02*	0.01*	0.20*	1.00									
15 CEO tenure	-0.04*	0.00	-0.04*	0.00	0.04*	-0.02*	-0.02*	0.01	0.06*	-0.07*	-0.05*	0.08*	0.30*	0.34*	1.00								
16 CEO salary	-0.01	0.00	0.23*	-0.09*	-0.03*	0.010*	0.18*	0.01	0.07*	-0.09*	0.12*	0.18*	0.03*	0.06*	0.04*	1.00							
17 CEO bonus	0.01	-0.03*	0.05*	-0.04*	0.09*	0.00	0.08*	-0.07*	0.07*	-0.09*	0.01	-0.05*	0.06*	-0.017*	-0.01*	0.05*	1.00						
18 CEO other compensation	-0.01	0.00	0.27*	-0.08*	0.00	0.07*	0.22*	0.05*	0.09*	-0.10*	0.09*	0.16*	0.01	0.06*	0.01	0.27*	-0.30*	1.00					
19 Quantity of CEO shares	0.06*	-0.02*	0.13*	-0.07*	0.04*	0.00	0.10*	0.03*	0.11*	-0.11*	0.06*	0.06*	0.09*	0.04*	0.17*	0.04*	0.11*	-0.03*	1.00				
20 Ratio of male directors	0.00	-0.02*	-0.27*	0.08*	0.07*	-0.04*	-0.27*	0.06*	-0.07*	0.09*	-0.18*	-0.05*	-0.02*	0.01*	0.10*	-0.09*	0.05*	-0.12*	0.02*	1.00			

Table 4 (continued)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
21 Average director tenure	-0.05*	-0.03*	0.12*	-0.16*	-0.01	-0.06*	0.12*	0.05*	0.20*	-0.22*	0.03*	0.15*	0.09*	0.25*	0.35*	0.09*	0.03*	0.02*	0.13*	0.00	0.00	1.00
22 Director network size	0.05*	0.02*	0.35*	0.11*	-0.10*	0.05*	0.37*	-0.13*	-0.02*	0.02*	0.21*	0.05*	-0.01	-0.13*	-0.14*	0.08*	-0.05*	0.16*	0.02*	-0.27*	-0.23*	1.00
23 Board size	0.00	-0.01	0.60*	-0.19*	-0.02*	0.17*	0.54*	-0.05*	0.14*	-0.17*	0.27*	0.06*	0.01	0.08*	-0.10*	0.19*	0.03*	0.17*	0.08*	-0.33*	0.08*	0.55*

N = 18,426. \*p < .05

*CEO Bonus* is the natural log of the CEO’s annual bonus compensation. *CEO Other Compensation* is the natural log of CEO compensation value that is not salary or bonus (e.g., stock-based compensation). Measures are log-transformed to ensure observations are normally distributed as required. All variables are measured one year before those used in the second stage regression.

**Control Variables: Second Stage Regression Model**

Our main regression model includes each variable from our selection model except for *Size* (the natural log of total assets), which serves as an exclusionary variable for the two-stage regression model (Certo et al., 2016; Greene, 2012; Semadeni et al., 2014). Additional financial variables for our second-stage model include *Debt*, the annual long-term debt scaled by total assets, *Market Capitalization*, the natural log of the market value of the firm’s common equity, *Return on Assets*, income before extraordinary items scaled by total assets, *Book to Market*, the firm’s book value of common equity scaled by its common equity market value, and *Negative Income*, which equals one for firms that report negative income before extraordinary items and otherwise equals zero.

In addition to the first-stage CEO-specific characteristic variables, we also include internal and external governance measures to control for their influence on financial restatement reporting. *Board Size* is the number of directors on the firm’s board; we include the *Ratio of Male Directors*. *Director Tenure* is the average number of years board members are with the firm, while *Board Network* averages the natural log of board members’ network size within the BoardEx database. Auditor quality is measured dichotomously, whereby *Big 4 Auditor* signifies the firm uses PricewaterhouseCoopers, KPMG, Ernst and Young, or Deloitte as their auditor of record and otherwise equals zero. Table 5 summarizes our control variables and their use.

**Empirical Models**

We estimate our models using a two-stage treatment effects probit model (Busenbark et al., 2017; Oliver et al., 2018). We select a two-stage model because we recognize that hiring a service academy graduate may represent an endogenous choice by the board of directors, thus introducing selection bias (Certo et al., 2016; Greene, 2012; Semadeni et al., 2014). In other words, an unobserved factor may exist that influences the decision to hire a graduate CEO and restate previous financial reports. Two-stage treatment effects are similar to two-stage least squares regressions (2SLS) such that the first stage model predicts a binary variable and inserts a hazard lambda, the inverse Mills ratio (IMR), in the second stage to correct for the endogeneity associated

with the independent variables in the second stage equation (Baum, 2006; Shaver, 1998). The inverse Mills ratio models the error terms' correlation between each stage and the standard deviation of the error term in the second stage (Baum, 2006; Busenbark et al., 2017). We use a second-stage probit model to test whether a firm issues a restatement and include our independent variables and moderators, control variables, and the inverse Mills ratio (excluding our exclusionary variable, firm *size*). We report robust standard errors clustered on each firm to account for the non-independence of each observation (Busenbark et al., 2017) and include industry and firm-year dummy variables to account for industry fixed effects and contemporaneous correlation. While our model accounts for the same firm being used in multiple years, we also model our observations as panel data using STATA 15 *xtlogit* and *xtgee* (generalized estimated equations using a logit link function) and produce similar effect sizes and significance levels. Variable and model VIFs fall below 2.7, indicating multicollinearity does not influence our results' interpretation (Cohen et al., 2003). We report statistical significance as one-tail tests given we hypothesize directional relationships (Cohen et al., 2003).

## Results

### Financial Restatements

We report first-stage model results concerning selecting a graduate CEO in Appendix Table 8 and examine whether firms led by graduate CEOs are more likely to initiate a financial restatement and present results from our second-stage probit regression in Table 6. Model 1 presents the cross-sectional sample results, including only control variables (including IMR) and industry and year indicator variables. Model 2 presents results when including graduate CEO in the regression.<sup>1</sup> We test Hypothesis 1 and find *GRAD* is positively related to financial restatements ( $b = 0.20$ ,  $p < 0.05$ ). Firms with a service academy graduate as CEO are more likely to initiate financial restatements than those that do not have a service academy graduate as CEO. This result provides evidence that graduate CEOs are more likely to self-report errors.

### Moderating Effects

Hypothesis 2 states CEO equity ownership negatively moderates the relationship between graduate CEOs and financial restatements. Our results reveal that CEO equity ownership negatively moderates ( $b = -0.05$ ,  $p < 0.01$ ) a graduate CEOs propensity to issue financial restatements. Hypothesis 3 states institutional ownership concentration negatively moderates the relationship between graduate

CEOs and financial restatements (Fig. 1). We also find support for this hypothesis as institutional ownership concentration negatively moderates a graduate CEO's propensity to issue financial restatements ( $b = -0.51$ ,  $p < 0.01$ ). Figure 2 shows graduate CEOs are less (more) likely to issue financial restatements (in line with non-GRAD CEOs) when they have more (less) equity ownership. Figure 3 shows graduate CEOs are less (more) likely to issue financial restatements (in line with non-graduate CEOs) when there is a higher (lower) concentration of institutional ownership.

Our results support our theory that CEOs' past experiences can imprint decision-making heuristics that influences organizational outcomes such a financial reporting. We hypothesize and find support that deonance, an "ought force" that leads to "doing the right thing," can be imprinted in executives through their professional development experiences. We find additional support for deonance theory propositions stating that an individual's bounded autonomy is not absolute. Gain/loss attainment can transition individuals from bounded autonomy to more "free behaviors" that protect personal interests.

## Sensitivity Analysis

### Matched Sample

As an alternative model, we propensity-score match (PSM) each GRAD firm-year to one (unique) non-GRAD firm-year using the fitted value from our selection model. Given the inability to reliably test for within-firm effects to account for counterfactuals, propensity score matching provides a method for testing comparative samples (Chang & Shim, 2015). In addition to our propensity score, we exact match industry, fiscal year, CEO duality, and Big 4 auditor, which yields 303 GRAD firm-years matched with 303 non-GRAD firm-years within 0.01 caliper width for all but 4 GRAD firm-years (caliper width  $< 0.04$ ). We include robust standard errors clustered on firms to account for the non-independence of each observation (Busenbark et al., 2017).

In Table 3, we present descriptive statistics for the matched sample. Similar to the cross-sectional sample, we find that GRAD firm-years more frequently issue financial restatements than non-GRAD firm-years ( $t = 2.96$ ,  $p < 0.01$ ). Model 4 through Model 6 replicate the empirical tests for our matched sample (see Table 6). Results provide further support for Hypothesis 1 as we find graduate CEOs are more likely than their matched sample peers to issue a financial restatement ( $b = 0.48$ ,  $p < 0.001$ ).

### Robustness Tests of Alternate Explanations

Our main results provide evidence that GRAD CEOs more frequently initiate restatements than their non-GRAD CEO

**Table 5** Summary of control variables

Variable	Control for...	References
Size (total assets)	Influences disclosure policies	Benmelech and Frydman (2015), Kish-Gephart and Campbell (2015), Law and Mills (2017)
CEO age	Influences risk-taking propensity and decision-making	Benmelech and Frydman (2015), Bertrand and Schoar (2003), Brouthers et al., (2000), Devers et al., (2008), Kish-Gephart and Campbell (2015) Law and Mills (2017)
CEO duality	Corporate governance mechanism that influences strength of oversight and found to be previously related to misstatements	Koch-Bayram and Wernicke (2018)
CEO tenure	Influences corporate policies pursued, including disclosure policies. Longer tenured CEOs may also have more discretionary power	Finkelstein (1992), Kish-Gephart and Campbell (2015), Koch-Bayram and Wernicke (2018), Law and Mills (2017), Lewis et al., (2014)
CEO salary	Influences manager decision-making behavior, including those related to financial statements	Connelly et al., (2010a), Harris and Bromiley (2007), Kish-Gephart and Campbell (2015), Ndofo et al., (2015)
CEO other compensation		
R&D expenditures	Related to firm risk-taking activities	Benmelech and Frydman (2015), Kish-Gephart and Campbell (2015), Law and Mills (2017), Shi et al., (2017)
Capital expenditures		
Debt	Financial pressure might influence decisions and conduct surrounding financial statements	Arthaud-Day et al., (2006), Benmelech and Frydman (2015), Gomulya and Mishina (2017), Harris and Bromiley (2007), Kish-Gephart and Campbell (2015), Koch-Bayram and Wernicke (2018), Law and Mills (2017), Ndofo et al., (2015)
Market capitalization		
Return on assets		
Book-to-market		
Negative income		
Board size	Corporate governance mechanisms that influence firm behaviors and firm outcomes. Board characteristics also influence board inputs	Coles et al., (2008), Hillman and Dalziel (2003), Johnson et al., (2013)
Ratio of male directors		
Director tenure		
Board network		
Big 4 auditor	Corporate governance mechanism that influences strength of oversight	Francis and Yu (2009), Plumlee and Yohn (2010)

Table 6 Second-stage probit regressions

	PSM restatements					
	Cross-section sample restatements			PSM restatements		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	
Lambda	2.89 (1.06)***	2.78 (1.05)***	2.51 (1.05)**	1.45 (3.41)	1.11 (3.43)	1.06 (3.53)
R&D expenditures	1.18 (0.79)	1.08 (0.79)	0.87 (0.79)	1.86 (2.43)	1.62 (2.45)	1.51 (2.53)
Capital expenditures	-2.07 (0.73)***	-1.99 (0.73)***	-1.81 (0.73)**	0.05 (2.53)	0.25 (2.68)	0.32 (2.76)
Debt	0.23 (0.07)***	0.23 (0.07)***	0.23 (0.07)***	0.85 (0.33)	0.97 (0.34)**	0.95 (0.35)***
Market capitalization	-0.07 (0.01)***	-0.07 (0.01)***	-0.06 (0.01)***	0.02 (0.06)*	0.04 (0.06)	0.03 (0.06)
Book-to-market	0.05 (0.04)	0.05 (0.04)	0.05 (0.04)	0.31 (0.19)	0.28 (0.20)	0.27 (0.19)
Return on assets	-0.19 (0.12)	-0.19 (0.12)	-0.19 (0.12)	0.43 (0.57)	0.37 (0.60)	0.37 (0.60)
Negative income	0.10 (0.04)**	0.11 (0.04)***	0.11 (0.04)***	0.17 (0.25)	0.19 (0.26)	0.19 (0.26)
Big 4 Auditor	0.31 (0.05)***	0.31 (0.05)***	0.31 (0.05)***	0.19 (0.32)	0.24 (0.32)	0.25 (0.32)
Institutional ownership	0.10 (0.04)**	0.10 (0.04)**	0.11 (0.04)**	-0.52 (0.23)	-0.50 (0.24)**	-0.44 (0.33)
CEO duality	0.01 (0.04)	0.01 (0.04)	0.00 (0.04)	-0.05 (0.19)	-0.03 (0.19)	-0.03 (0.19)
CEO age	0.25 (0.17)	0.23 (0.17)	0.20 (0.17)	0.33 (0.67)	0.37 (0.69)	0.39 (0.68)
CEO tenure	-0.31 (0.13)**	-0.30 (0.13)**	-0.26 (0.13)**	-0.13 (0.41)	-0.10 (0.40)	-0.08 (0.42)
CEO salary	-0.03 (0.02)*	-0.03 (0.02)*	-0.02 (0.02)	0.02 (0.06)*	0.04 (0.06)	0.04 (0.06)
CEO bonus	-0.01 (0.00)***	-0.01 (0.00)***	-0.01 (0.00)***	-0.03 (0.01)**	-0.03 (0.01)**	-0.03 (0.01)**
CEO other compensation	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.01 (0.02)**	-0.01 (0.02)	-0.01 (0.02)
Quantity of CEO shares	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.05 (0.02)**	-0.06 (0.02)***	-0.05 (0.02)**
Ratio of male directors	-0.25 (0.16)	-0.25 (0.16)	-0.24 (0.16)	0.91 (0.83)	1.08 (0.84)	1.10 (0.85)
Average director tenure	-0.01 (0.00)***	-0.01 (0.00)***	-0.01 (0.00)***	-0.02 (0.02)**	-0.01 (0.02)	-0.01 (0.02)
Average director network size	0.04 (0.03)	0.04 (0.03)	0.04 (0.03)	0.33 (0.15)	0.29 (0.16)*	0.30 (0.16)*
Board size	-0.01 (0.01)	-0.01 (0.01)**	-0.01 (0.01)	-0.08 (0.04)**	-0.09 (0.04)**	-0.09 (0.04)**
GRAD	0.20 (0.10)*	0.20 (0.10)*	1.02 (0.26)***	0.48 (0.14)***	0.74 (0.36)**	0.74 (0.36)**
GRAD x Quantity of CEO shares			-0.05 (0.02)**			-0.02 (0.03)
GRAD x Institutional ownership			-0.51 (0.26)**			-0.14 (0.41)
Constant	-8.49 (2.70)***	-8.18 (2.69)***	-7.56 (2.68)***	-8.70 (8.68)	-8.59 (8.67)	-8.76 (8.84)
Total observations	18,492	18,492	18,492	606	606	606
Pseudo R <sup>2</sup>	0.03	0.03	0.03	0.12	0.14	0.15

Table 6 (continued)

Cross-section sample restatements		PSM restatements			
Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)	<i>b</i> (SE)
360.31***	363.48***	383.88***	91.76***	115.93***	118.94***
Wald $\chi^2$					

Probit coefficient estimates and their robust standard errors (in parentheses) are reported. Robust standard errors are clustered on each unique firm. Significant results are in bold and are reported as one-tailed tests per our directional hypotheses. All observation years and industries dummy variables are included

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

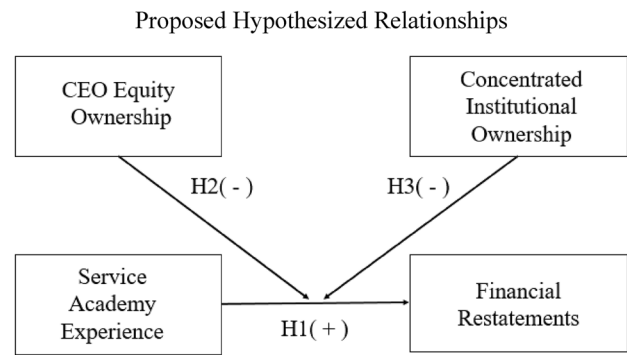


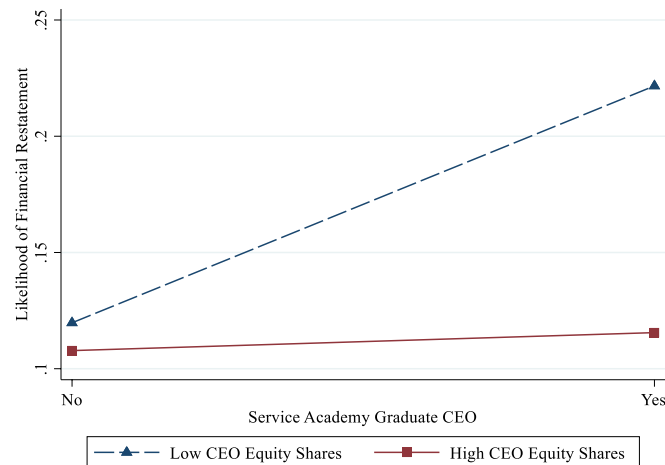
Fig. 1 Proposed Hypothesized Relationships

counterparts. An inherent challenge in this analysis is that we only observe the outcome – issuing a restatement – and cannot observe all underlying factors that may also influence restatements. Therefore, we control for many factors such as firm performance, corporate governance, and auditor quality. In our additional tests, we address seven factors that may also influence our observed results. We examine whether GRAD-led firms exhibit (1) a higher probability of a prior misstatement, (2) higher abnormal accruals, (3) differences in auditor effort, (4) differences in strategic risk, (5) tax avoidance, (6) differences in CEO gender, and (7) CFO compensation characteristics. The first two tests examine whether GRAD firm-years exhibit lower-quality financial reporting, in general, which would cause a spurious correlation to the issuance of restatements unrelated to imprinted deonance. The third additional test examines whether GRAD firm-years employ less conscientious auditors, reducing financial reporting’s external monitoring. The fourth and fifth additional test examines strategic risk-taking and tax avoidance as a proxy for risk-taking since GRAD CEOs may generally be more risk-averse, which could also explain their propensity to issue restatements. Finally, we examine whether graduate CEOs may have different gender representation or CFO compensation characteristics, which may also explain their propensity to issue financial restatements.

We only use observations with complete data for each analysis and find no statistically significant differences in total assets and market capitalization between the sample and excluded observations in any of our additional tests. Table 7 summarizes the results from our robustness tests. Appendix A provides a full econometric explanation of our empirical tests, and Table 9 displays our results. The positive statistical relationship between being a graduate CEO and financial restatements remains robust when controlling for each alternate explanation.

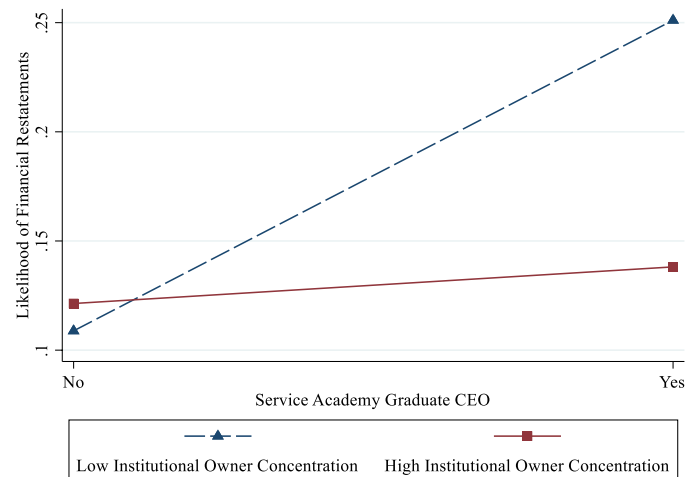
**Fig. 2** Influence of Service Academy Graduate CEO Status on Likelihood of Financial Restatement among Levels of CEO Equity Ownership

Influence of Service Academy Graduate CEO Status on Likelihood of Financial Restatement among Levels of CEO Equity Ownership



**Fig. 3** Influence of Service Academy Graduate CEO Status on Likelihood of Financial Restatement among Levels of Institutional Ownership

Influence of Service Academy Graduate CEO Status on Likelihood of Financial Restatement among Levels of Institutional Ownership



### Probability of Misstatement

The probability that the previous fiscal year includes a financial misstatement, *probability of misstatement*, uses explanatory variables commonly used in prior literature (Beneish, 1999; Dechow et al., 2011). We estimate the probability that a prior period was misstated using our unmatched observations for each observation in our matched sample. Four hundred seventy-six of our 606 matched sample observations contain sufficient data to calculate misstatement probability within our matched sample. Univariate ( $t = -1.14$ ,  $p > 0.10$ ) and multivariate ( $b = 0.004$ ,  $p > 0.10$ ) analyses shows GRAD CEOs do not have a higher probability of error in reporting. We also substitute the probability of misstatement as a control variable in our propensity-matched sample

regressions and find results consistent with Hypothesis 1 (Model 7:  $b = 0.29$ ,  $p < 0.05$ ).

### Earnings Management

In our second test of financial reporting quality, we examine whether GRAD firm-years exhibit higher earnings management levels. Earnings management refers to a company's deliberate use of accounting techniques to make its financial reports look better (Dechow & Dichev, 2002). We measure earnings management using the abnormal accrual model developed by Dechow and Dichev (2002). We find no statistical difference in univariate ( $t = 1.05$ ,  $p > 0.10$ ) or multivariate ( $b = 0.002$ ,  $p > 0.10$ ) analysis. Inclusion of abnormal accruals as a control variable in our primary empirical



**Table 7** Summary of results

	Hypothesis	Result	Implication <sup>a</sup>
Hypothesis 1	Firms led by GRAD CEOs are more likely to issue financial restatements	Supported	Evidence of deonance imprinting at upper echelons
Hypothesis 2	The quantity of equity owned by a GRAD CEO moderates the likelihood they self-report error. The likelihood of GRAD CEOs issuing financial restatements is reduced as the number of firm shares owned increases	Supported	There are limits to bounded autonomy concerning CEO wealth
Hypothesis 3	Institutional ownership moderates the likelihood of GRAD CEO self-reporting errors. The likelihood of a GRAD CEO issuing financial restatements is reduced the higher the firm's concentration of institutional ownership	Supported	There are limits to bounded autonomy concerning employment risk
Propensity-Score Matched Sample	Retest of Hypothesis 1	Results unchanged	Evidence of deonance imprinting at upper echelons
Probability of misstatement	Retest of Hypothesis 1 (test to determine if GRAD CEOs are error-prone)	Results unchanged	GRAD CEOs are not more error-prone
Auditor Effort	Retest of Hypothesis 1 (test to determine if auditor fees influence reporting)	Results unchanged	Firms with GRAD CEOs have higher audit fees in multivariate analysis. This does not influence our results
Abnormal Accruals	Retest of Hypothesis 1 (test to determine if GRAD CEOs exhibit higher earnings management)	Results unchanged	GRAD CEOs do not engage in more or less earnings management
Strategic Risk-Taking	Retest of Hypothesis 1 (test to determine if GRAD CEOs are risk-averse)	Results unchanged	GRAD CEOs appear to be risk-averse compared to their peers in multivariate analysis. This does not influence our results
Tax avoidance	Retest of Hypothesis 1 (test to determine if GRAD CEOs are risk-averse)	Results unchanged	Counter to findings of Law and Mills (2017), there is no statistical difference in income tax expense or income tax paid for firms lead by GRAD CEOs
CEO Gender	Retest of Hypothesis 1 (test to determine if CEO gender explains results)	Results unchanged	GRAD CEOs (all-male sample) more frequently issue restatements than male non-GRAD CEOs
CFO Compensation	Retest of Hypothesis 1 (test to determine if CFO compensation explains results)	Results unchanged	GRAD CEOs more frequently issue restatements than non-GRAD CEOs after controlling for CFO compensation

<sup>a</sup>Inferences for alternate explanations are based upon multivariate analysis described in Appendix A. These results are excluded but can be obtained from the corresponding author.

model reveal results consistent with Hypothesis 1 (Model 8:  $b = 0.20$ ,  $p < 0.05$ ).

### Strategic Risk-Taking and Tax Avoidance

Extant literature on military CEOs provides evidence that veterans are risk-averse (Koch-Bayram & Wernicke, 2018; Law & Mills, 2017). Therefore, we examine differences in strategic risk-taking (Devers et al., 2008; Kish-Gephart & Campbell, 2015) and tax avoidance as proxies for CEO risk aversion. We find no difference in strategic risk-taking between GRAD and non-GRAD CEOs ( $t = 1.06$ ,  $p > 0.10$ ) in the univariate analysis of our cross-sectional

sample. However, our multivariate analysis supports previous literature on military CEOs and risk-taking ( $b = -0.130$ ,  $p < 0.05$ ). Nevertheless, the inclusion of strategic risk-taking as a control variables does not change our statistical inferences for Hypothesis 1 (Model 9:  $b = 0.21$ ,  $p < 0.01$ ).

We also assess tax avoidance, noting that aggressive tax avoidance results from estimations and the aggressive (but legal) application of the U.S. and foreign tax laws.<sup>10</sup>

<sup>10</sup> Tax avoidance is when a firm takes an aggressive, but clearly legal tax position on issues where judgment and estimates are used in applying U.S. tax law. These aggressive tax positions are not criminal and instead are efforts to reduce the company's tax burden. Companies vary in their willingness to invest the time and effort to avoid

Univariate analysis reveals GRAD firm-years exhibit statistically similar amounts of tax expenses ( $t = -0.26, p > 0.10$ ) and taxes paid ( $t = -0.33, p > 0.10$ ) as peer firms. Multivariate analysis also show similar results for tax expense ( $b = 0.020, p > 0.10$ ) and taxes paid ( $b = 0.027, p > 0.10$ ). We find tax avoidance does not influence our statistical inferences associated with Hypothesis 1, as GRAD CEO remains positive and significant when we include effective tax rates in our regression analysis (Model 10:  $b = 0.18, p < 0.05$ ).

### Auditor Effort

Auditor effort may influence the discovery and reporting of accounting errors. In univariate analysis, we find that GRAD firm-years exhibit higher audit fees ( $t = 2.64, p < 0.001$ ) and higher non-audit fees ( $t = 1.58, p < 0.10$ ) than peer firms. Moreover, in multivariate analysis, GRAD firms paid more in audit fees ( $b = 0.197, p < 0.05$ ) while the relationship is non-significant for non-audit fees ( $b = 0.334, p > 0.10$ ). These results provide evidence that auditor effort, rather than manager self-reporting, could partially explain our main result. While more significant auditor effort (higher fees) may lead to the more frequent discovery of financial misstatements, the inclusion of audit fees and non-audit fees as control variables still yields support for Hypothesis 1 (Model 11:  $b = 0.20, p < 0.05$ ). Thus, while GRAD firm-years incur higher audit fees, this association does not explain our main result.

### CEO Gender

We also acknowledge that women CEOs may exhibit different financial reporting characteristics from their counterparts and further note that within our GRAD firm-years, all are CEOs are men (where gender data is available). To alleviate concerns that the absence of women CEOs among GRAD firm-years may explain our results, we retest our sample of non-GRAD firm-years to those where the CEO is male. All our analysis is robust, and all statistical inferences remain the same using this more limited sample of firm-years.

Footnote 10 (continued)

taxes and their willingness to take risky positions that could result in a subsequent fine. More or less aggressive tax positions are not right or wrong, but reflect aggressiveness and risk-taking. Deonance could apply to tax evasion – which is the willful misapplication of tax laws and other criminal behavior to avoid taxes. However, tax evasion represents fraud in financial reporting and the decision to engage in tax evasion is morally unambiguous.

### CFO Characteristics

Finally, while the CEO holds ultimate authority in issuing financial restatements, company CFOs also bear a substantial financial risk with restatements since the CFO certifies financial statements. Therefore, when we include CFO compensation information (salary, bonus, stock options) in our second stage regression, we find that CFO compensation does not influence our main results nor hypothesized boundary conditions.

### Discussion

When and why people behave in a forthright fashion is an ongoing question in organizational studies and business ethics research. Past studies commonly view financial restatements as evidence of managerial opportunism as CEOs can leverage their information advantage when reporting the firm's financial health. We offer that such reporting (or lack thereof) is also a reflection of managerial disclosure choices by the CEO. Financial reporting errors represent information that CEOs can withhold from external stakeholders. We show self-reported error in the form of financial restatements can reflect desirable, forthright behavior that is more likely to occur when firm executives believe minimizing information asymmetry between executives and stakeholders is "*the right thing to do*."

Self-reporting error reflects an imprinted deontic mental schema that emphasizes an "*ought force*" promoting forthright decisions and discourages opportunistic behaviors. We show a CEO's past life experiences develop a bounded autonomy that influences decision-making. In addition, we address 'sins of omission,' namely the nondisclosure of information within the latitude of a CEO's discretion that is not necessarily fraudulent. We further show an imprinted CEO's desire to lessen information asymmetry among important stakeholders influences their disclosure of complete information. Given this, the accurate reporting of a firm's actual financial condition is a matter of principled leadership by the CEO. We also find contingencies related to self-interest, specifically wealth retention and employment risk, which are salient factors that mitigate a person's imprinted deonance. Nevertheless, graduate CEOs are imbued with a deontic mental schema in a total institution environment (e.g., each service academy) that reflects a subsequent "*special trust and confidence*" that will be conferred upon them as future military officers to "*do the right thing*" (Heinl, 1956).

## Theoretical Implications

Our study has several theoretical implications. First, our study builds upon emerging deonance research. Our study complements prior deonance research at the lower level of the organization (e.g., Eva et al., 2020; Hannah et al., 2014; Moss et al., 2020) by examining how a CEO's sense of obligation can impact their professional decision-making. We demonstrated that deonance research also enhances our understanding of executive decision-making, especially when such decisions carry a risk for the CEO. Finally, our study contributes to deonance research by finding that certain executives, those imprinted with a duty orientation early in their lives, possess a heightened sense of obligation. This sense of duty influences important firm decisions (i.e., Folger et al., 2013; Hannah et al., 2014).

Our study also affirms the proposition that deonance is malleable (Folger et al., 2013; Hannah et al., 2014). Deonance theorists have proposed that specific circumstances related to loss avoidance or gain attainment can attenuate an individual's bounded autonomy and provide an instrumental basis for engaging in behaviors misaligned with what "ought" to be done (Folger et al., 2013). Our findings affirm these propositions. There are limits to behavioral imprinting, especially when more significant financial considerations and employment risk emerge, showing critical environmental contexts can lessen the influence of imprinted attributes such as deonance. While we may not subscribe to the notion that increased monitoring may lead to *more* malfeasant behavior in CEOs (Connelly et al., 2017), our findings complement their theory. Specific financial incentives and employment risk influence decrease the association between executives imbued with deonance and duty-bound behavior. This study is the initial foray in deonance research to identify boundary conditions that promote behavioral expansion.

Our study also contributes to research that focuses on contextualized organizational phenomena. For example, Johns (2018) noted that specific contexts could provide instances where the results are new and unexpected, and unique contexts help further explore boundary conditions of existing theoretical perspectives. He likewise notes the increasing popularity of context-specific research across various management journal outlets (Johns, 2017). Whereas this contextualization has occurred in various literature such as CEO effects (Hambrick & Quigley, 2014), entrepreneurship (Shepherd et al., 2019; Welter, 2011; Zahra, 2007), workplace commitment (Wasti et al., 2016), followership (Benson et al., 2016), and transformational leadership (Willis et al., 2017), we offer that our study contextualizes deonance research. Indeed, research suggests that the deontological topic of duties and responsibilities is a central component of service academies' education (Baker, 2012). Given the essential components of deonance theory (i.e., duty and

bounded autonomy), we believe that highlighting the unique context of military service academies enhances this particular theory's richness.

Our paper also complements business ethics literature on executive ethicality. Whereas prior research has focused on micro-level outcomes, we extend extant research by examining macro-level outcomes. For example, Jordan et al. (2013) show that executive ethicality influences their direct reports' ethical behavior. However, our study demonstrates executive ethicality via deonance impacts doing the right thing at a macro-level (i.e., issuing financial restatements). Subsequently, our research enhances our understanding of why and when CEO ethicality makes a difference in organizations.

## Practical Implications

Companies face new challenges in the business environment, including globalization, hypercompetition, and economic instability that provide ample opportunity for CEOs to commit errors in financial reporting. We provide evidence duty-bound CEOs are trained to meet these challenges head-on and protect the interest of stakeholders as they navigate organizational challenges (Benmelech & Frydman, 2015; Koch-Bayram & Wernicke, 2018). In addition, we provide empirical evidence that graduate CEOs possess a higher likelihood of ensuring firm stakeholders are up-to-date on the firm's financial health than their peers.

The overarching implication is firms should seek deonance imprinted CEOs. One could hire more service academy graduates as executives to increase the likelihood of forthright financial reporting. But, of course, this is untenable, as reflected by the sparse representation of graduate CEOs in our data. Instead, firms might focus on identifying senior managers with a similar sense of duty and obligation. The key to identifying executives imbued with deonance is whether they have such sustained, intense experiences in their past aligned with duty and obligation. While the intensity of the imprinting process *might* differ, we offer other non-government sponsored military academies (e.g., The Citadel, Virginia Military Institute, New Mexico Military Academy, California Maritime Academy, etc.), non-academy graduate officer sources (e.g., Officer Candidate School, Reserve Officer Training) and veterans as fertile sources of similarly imbued professionals. After all, Chopik et al. (2021) found high resilience in soldiers is associated with their character and is a stable trait.

One might identify such executives through their behaviors, utterances, and familial interactions akin to how Chick-fil-a selects their owner-operators. Many would also point to religious or professional backgrounds as a waypoint for such experiences (i.e., Weaver & Agle, 2002). Indeed, high levels of deonance may be imprinted in persons who operate in professions that require a higher level of accountability (such

as medicine, public servants) as they too would be subject to duty-bound obligations (Hannah et al., 2014). While service academies may exemplify character development processes within higher education institutions (Callina et al., 2019), we are confident that similar human experiences exist or can be attained.

## Limitations

As with all studies, our paper has limitations that present an opportunity for future research. One limitation of this study is our inability to use a validated measure for this psychological state. Other studies can use a duty orientation survey instrument as a proxy for deonance (Eva et al., 2020; Hannah et al., 2014; Moss et al., 2020) when studying employees and lower-level managers. Because our empirical setting is the upper echelons, we must use a proxy to allow credible C-suite research, given that CEOs are not inclined to engage in survey research. Indeed, if they do so, CEOs have a heightened incentive to provide biased responses.<sup>11</sup> Our positioning of graduate CEOs as duty-oriented individuals is consistent with deonance theory (e.g., Folger et al., 2013; Hannah et al., 2014).

Another issue of note is how past studies have framed military service at the upper echelons level. Given the breadth of their sampling (CEOs born as early as the 1920s in some instances), their studies will include veteran CEOs without service academy experience. Their samples include broader military service because it encompasses executives who were young men during three large-scale wars (e.g., World War II, the Korean War, and the Viet Nam War). Our sample derives from a population where military service was wholly voluntary and relatively large-scale conflicts did not occur. Since firm executives are more likely to ascend to the C-suite if they possess an elite education (see Finkelstein, 1992, Appendix A), service academy graduates are practically the sole source of veteran senior executives (namely CEOs and CFOs) within this population.

Consequently, we cannot distinguish the influence of military service from the service academy experience when interpreting our results. After all, CEOs of publicly traded firms are a narrow subset of the population of firm executives, and the military sources officers imprinted with varying levels of deonance from many other commissioning programs (e.g., Reserve Officer Training Corps, Officer Candidate School, etc.). While this may be seen as a theoretical issue, we suggest it is not a practical one as veteran (military) CEOs and graduate CEOs are virtually the same

population and will continue to be so into the foreseeable future.

Gender may also influence a sense of obligation. Unfortunately, women did not graduate from service academies until 1984, and a critical mass of graduates did not occur until the twenty-first century across all service academies. Thus, there are no women service academy graduates in our sample to discern the influence of gender on a service academy graduate's likelihood of issuing a financial restatement. However, these data limitations provide an opportunity to open a line of inquiry on middle managers and their behaviors related to deonance. In addition, this population will be demographically diverse and have a broader, more diverse set of professional/educational experiences to assess deonance.

A final limitation we would like to note is the difference between rule-following, ethicality, and deonance. Our study solely measures behavior, the probability the CEO reports an error, and provides deonance theory as an explanation. It is impossible to know when the CEO identifies the error to determine the motivating factor in reporting an issue. We attempt to address this limitation in our robustness test by determining whether graduate CEOs were more or less likely to follow other accounting guidelines. While information transparency concerning shareholders may be considered ethical behavior, we do not claim that graduate CEOs are more (or less) ethical than their peer CEOs. Deonance is about being duty-bound to "do the right thing." *The right thing* is subject to individual interpretation and manifests heterogeneous ways (e.g., political leanings, religion, etc.). The context of our paper is intentionally narrow. We solely focus on obligations to report accurate information in the face of accountability to make specific contributions that integrate deonance, upper echelons, and imprinting theories. Any other interpretations, inferences, or conjectures should be made in reference to this narrow context.

## Conclusion

Our paper informs upper echelon research by incorporating deonance scholarship to address managerial decisions related to financial restatements. Our findings suggest that managers who possess impactful deontic experiences may have a mental schema that guides their strategic decision-making. Cognitions developed during the formative years of adulthood may have an enduring influence on future behavior. We hope our findings not only add to the burgeoning literature on deonance by empirically examining its underlying propositions, but we also hope to move governance scholarship toward the study of circumstances that produce positive outcomes.

<sup>11</sup> See the research on impression management (e.g., Patelli and Pedrini, 2014) and social desirability in self-reported measures (Armocost et al., 1991; Hill et al., 2014).

## Appendix A

### Model Equations and Results of Additional Analysis

#### Selection Model Regression

We control for selection bias by modeling the choice of a service academy graduate in the CEO role as a function of both financial and CEO characteristics as the first stage of a two-stage least squares regression using the following probit regression.

$$\begin{aligned} \text{GRAD}_{i,t} = & b_1 \times \text{Size}_{i,t} + b_2 \times \text{RD}_{i,t} + b_3 \times \text{CAPEX}_{i,t} + b_4 \times \text{CEOAge}_{i,t} \\ & + b_5 \times \text{CEODuality}_{i,t} + b_6 \times \text{CEOSalary}_{i,t} \\ & + b_7 \times \text{CEOTenure}_{i,t} + b_8 \times \text{CEOOtherComp}_{i,t} \\ & + b_9 \times \text{CEOBonus}_{i,t} + \text{Constant} + \text{IndustryIndicators} \\ & + \text{YearIndicators} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

*Size* is the natural log of total assets, *R&D* is the annual research and development expenditures scaled by total assets, and *CAPEX* is the annual capital expenditures scaled by total assets. *CEO Age* is the natural log of the CEO's age in years. *CEO duality* equals one for firms where the CEO is also the chairperson of the board and otherwise equals zero, while *CEO Tenure* is the natural log of the number of years the CEO has served in their current position. *CEO Salary* is the natural log of the CEO's salary, *CEO Bonus* is the natural log of the CEO's annual bonus compensation, and *Other Compensation* is the natural log of the value of CEO compensation that is not salary or bonus (e.g., stock-based compensation).

#### Regression Analysis

In our primary model, we examine whether GRAD is associated with the propensity for a firm to initiate a financial restatement using the following model:

$$\begin{aligned} \text{Restatement}_{i,t} = & b_1 \times \text{CEOShares}_{i,t} + b_2 \times \text{MarketCap}_{i,t} \\ & + b_3 \times \text{BTM}_{i,t} + b_4 \times \text{R\&D}_{i,t} \\ & + b_5 \times \text{CAPEX}_{i,t} + b_6 \times \text{Debt}_{i,t} \\ & + b_7 \times \text{Loss}_{i,t} + b_8 \times \text{CEOAge}_{i,t} \\ & + b_9 \times \text{CEODuality}_{i,t} + b_{10} \times \text{CEOSalary}_{i,t} \\ & + b_{11} \times \text{CEOTenure}_{i,t} + b_{12} \times \text{CEOOtherComp}_{i,t} \\ & + b_{13} \times \text{CEOBonus}_{i,t} + b_{14} \times \text{BoardGenderRatio}_{i,t} \\ & + b_{15} \times \text{BoardTenure}_{i,t} + b_{16} \times \text{BoardNetwork}_{i,t} \\ & + b_{17} \times \text{BoardSize}_{i,t} + b_{18} \times \text{InstOwn}_{i,t} \\ & + b_{19} \times \text{Lambda}_{i,t} + b_{20} \times \text{Big4Audit}_{i,t} \\ & + b_{21} \times \text{GRAD}_{i,t} + \text{Constant} + \text{IndustryIndicators} \\ & + \text{YearIndicators} + \varepsilon_{i,t} \end{aligned} \quad (2)$$

*Restatement* equals one where the firm initiates a financial restatement during the fiscal year and otherwise equals zero. *CEO Shares* is the natural log of the number of common shares held by the CEO. *Market Capitalization* is the natural log of the market value of the firm's common equity, while *Book to market ratio* is the ratio of the firm's book value of common equity to the market value of the firm's common equity. *Debt* is the annual long-term debt scaled by total assets.

*Loss* equals one for firms that report negative income before extraordinary items and otherwise equals zero. *Board Size* is the number of directors on the firm's board, and *Gender Ratio* is the ratio of male board members to all board members. *Director Tenure* is the average number of years board members are with the firm, while *Board Network* averages the natural log of board members' network size within the BoardEx database. *Institutional Ownership Concentration* is the Herfindahl–Hirschman index of institutional ownership of the firm's common equity. Auditor quality is measured dichotomously, whereby *Big 4 Auditor* is one of the firms that use PricewaterhouseCoopers, KPMG, Ernst & Young, or Deloitte as their auditor of record.

## Propensity Matched Sample

We propensity-score match each GRAD firm-year to one (unique) non-GRAD firm-year using the fitted value from equation one and maximum caliper width of 0.10. We exact match on industry 3-digit SIC, fiscal year, and CEO duality, which yields 303 GRAD firm-years and 303 non-GRAD firm-years using the following propensity score model:

$$\begin{aligned} GRAD_{i,t} = & b_1 \times Size_{i,t} + b_2 \times R\&D_{i,t} + b_3 \times CAPEX_{i,t} + \\ & b_4 \times CEOAge_{i,t} + b_5 \times CEODuality_{i,t} + b_6 \times CEOSalary_{i,t} \\ & + b_7 \times CEOTenure_{i,t} + b_8 \times CEOOtherComp_{i,t} + \\ & b_9 \times CEOBonus_{i,t} + Constant + Industry\ Indicators + \\ & Year\ Indicators + \varepsilon_{i,t} \end{aligned}$$

## Robustness Tests of Alternate Explanations

We test whether being a graduate CEO is related to abnormal accruals, probability of misstatement, auditor fees, strategic risk-taking, and income tax expense by regressing each alternate explanation onto our GRAD CEO variable in using the following model:

$$\begin{aligned} Dependent\ Variable_t = & b_1 \times CEOShares_{i,t} + \\ & b_2 \times MarketCap_{i,t} + b_3 \times BTM_{i,t} + b_4 \times ROA_{i,t} \\ & + b_5 \times R\&D_{i,t} + b_6 \times CAPEX_{i,t} + b_7 \times Debt_{i,t} + \\ & b_8 \times Loss_{i,t} + b_9 \times CEOAge_{i,t} + b_{10} \times CEODuality_{i,t} \\ & + b_{11} \times CEOTenure_{i,t} + b_{12} \times BoardGenderRatio_{i,t} \\ & + b_{13} \times BoardTenure_{i,t} + b_{14} \times BoardNetwork_{i,t} + \\ & b_{15} \times BoardSize_{i,t} + b_{16} \times InstOwn_{i,t} + b_{17} \times Lambda_{i,t} + \\ & b_{18} \times Big4Audit_{i,t} + b_{19} \times GRAD_{i,t} + Constant + Industry \\ & Indicators + Year\ Indicators + \varepsilon_{i,t} \end{aligned}$$

ROA is the firm's return on assets. We describe our models to calculate the probability of misstatement and earnings management below. Please refer to Devers et al. (2008) and Kish-Gephart and Campbell (2015) to calculate the strategic risk-taking variable.

## Probability of Misstatement

Using a two-stage out-of-sample estimation model, we model the propensity to misstate financial reports using explanatory variables commonly used in prior literature (Beneish, 1999; Dechow et al., 2011). We estimate the

**Table 8** First-stage probit regression

Service academy graduate	b (SE)
Total assets	-0.01 (0.04)
R&D expenditures	0.82 (0.36)***
Capital expenditures	-0.76 (1.00)
CEO age	0.14 (0.41)
CEO duality	0.03 (0.11)
CEO salary	-0.02 (0.01)
CEO tenure	-0.14 (0.05)***
CEO other compensation	0.00 (0.01)
CEO bonus	-0.00 (0.01)
Constant	-2.17 (1.67)**
Industry fixed effects	Yes
Year fixed effects	Yes
Clustered errors	Yes
Total Observations	18,492
Total GRAD Observations	303
Wald $\chi^2$	56.82**

Probit coefficient estimates and their robust standard errors (in parentheses) are reported. Significant results are in bold

\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

equation out-of-sample from the universal of Compustat firm-years not included in our final sample.  $P(\text{Misstatement})$  is the fitted value from the regression estimates applied to within-sample firm-year parameters in the *prior* year.

## Earnings Management

We measure abnormal accruals as the residual from the model presented by Dechow and Dichev (2002):

$$CACC_t = OCF_{t-1} + OCF_t + OCF_{t+1} + \Delta Revenue_t + PPE_t$$

CACC is working capital accruals, OCF is operating cash flows,  $\Delta Revenue$  is the change in revenue, and PPE is property plant and equipment. We scale all variables by lagged total assets (see Tables 8, 9).

**Table 9** Robustness tests

	Misstatements	Earnings Management	Strategic Risk-Taking	Tax Avoidance	Auditor Effort/Influence
	Model 7 <i>b</i> ( <i>SE</i> )	Model 8 <i>b</i> ( <i>SE</i> )	Model 9 <i>b</i> ( <i>SE</i> )	Model 10 <i>b</i> ( <i>SE</i> )	Model 11 <i>b</i> ( <i>SE</i> )
Lambda	-2.02 (4.43)	2.48 (1.11)**	1.75 (1.11)	2.86 (1.21)**	0.34 (1.14)
R&D expenditures	-1.24 (3.16)	0.83 (0.83)	0.26 (0.83)	1.24 (0.92)	-0.43 (0.86)
Capital expenditures	4.10 (3.32)	-1.86 (0.77)**	-1.44 (0.75)*	-1.99 (0.83)**	0.05 (0.79)
Debt	0.87 (0.40)**	0.22 (0.08)***	0.02 (0.12)	0.22 (0.08)***	0.14 (0.07)*
Market capitalization	0.03 (0.07)	-0.07 (0.02)***	-0.10 (0.02)***	-0.07 (0.02)***	-0.12 (0.02)***
Book-to-market	-0.27 (0.31)	0.06 (0.04)	0.01 (0.04)	0.05 (0.04)	0.00 (0.04)
Return of assets	0.37 (0.76)	-0.24 (0.13)*	-0.19 (0.12)	-0.38 (0.14)***	-0.13 (0.13)
Negative income	0.05 (0.32)	0.10 (0.04)**	0.10 (0.04)**	0.09 (0.05)**	0.08 (0.04)**
Big 4 Auditor	0.52 (0.40)	0.32 (0.05)***	0.30 (0.05)***	0.32 (0.05)***	0.24 (0.05)***
Institutional ownership	-0.79 (0.25)***	0.10 (0.04)**	0.10 (0.04)**	0.09 (0.04)**	0.07 (0.04)
CEO duality	-0.06 (0.24)	0.01 (0.04)	-0.02 (0.04)	0.00 (0.04)	-0.04 (0.04)
CEO age	0.04 (0.82)	0.22 (0.17)	0.10 (0.17)	0.19 (0.18)	-0.13 (0.18)
CEO tenure	0.29 (0.52)	-0.26 (0.14)	-0.17 (0.14)	-0.30 (0.15)**	0.02 (0.14)
CEO salary	0.05 (0.07)	-0.03 (0.02)	-0.02 (0.02)	-0.03 (0.02)	0.00 (0.02)
CEO bonus	-0.02 (0.02)	-0.01 (0.00)***	-0.01 (0.00)***	-0.01 (0.00)***	-0.01 (0.00)***
CEO other compensation	-0.04 (0.02)	0.00 (0.00)	-0.01 (0.00)	0.00 (0.00)	-0.01 (0.00)*
Quantity of CEO shares	-0.07 (0.02)***	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Ratio of male directors	0.94 (0.97)	-0.29 (0.17)*	-0.25 (0.16)	-0.23 (0.16)	-0.19 (0.16)
Average director tenure	-0.02 (0.03)	-0.01 (0.00)***	-0.01 (0.00)***	-0.01 (0.00)***	-0.01 (0.00)**
Average director network size	0.43 (0.18)**	0.03 (0.03)	0.04 (0.03)**	0.05 (0.03)*	0.00 (0.03)
Board size	-0.12 (0.05)***	0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)*
GRAD	0.29 (0.16)*	0.20 (0.11)*	0.21 (0.10)**	0.18 (0.11)*	0.20 (0.10)**
Probability of misstatement	6.48 (3.62)*				
Abnormal accruals		0.01 (0.18)			
Tax expense				0.05 (0.04)	
Tax paid				-0.02 (0.03)	
Audit fees					0.21 (0.03)***
Non-audit fees					0.00
Strategic risk-taking			0.05 (0.02)**		
Constant	-0.68 (10.96)	-7.39 (2.84)***	-5.37 (2.85)*	-8.27 (3.09)	-3.69 (2.88)
Total observations	481	17,689	18,492	17,506	18,244
Wald $\chi^2/F$ -statistic	108.97***	360.73***	372.23***	369.79***	403.97***
$r^2$ /Pseudo $r^2$	0.19	0.03	0.03	0.03	0.04

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## Declarations

**Conflict of interest** We assure this manuscript is not published, submitted, or under review elsewhere. There are no declarations of interest.

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