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Citation

CHEN, Guoli; CROSSLAND, Craig; and HUANG, Sterling. That could have been me: Director deaths, mortality salience and CEO prosocial behavior. (2019). *Management Science*. 66, (7), 3142-3161.
Available at: https://ink.library.smu.edu.sg/soa_research/1833

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That Could Have Been Me: Director Deaths, CEO Mortality Salience, and Corporate Prosocial Behavior

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March 11, 2019

Accepted for publication at Management Science

Acknowledgements: Authors are listed in alphabetical order and contributed equally. We sincerely thank Department Editor Olav Sorenson, the handling Associate Editor, and three anonymous reviewers for their guidance and support throughout the review process. We also thank David Harrison, Kenneth Huang, Jasjit Singh, Adam Wowak, and audiences at Boston College, Hong Kong University of Science and Technology, Indiana University, London Business School, New York University Shanghai, Peking University, Rice University, University of California at Irvine, University of Connecticut, University of Groningen, University of Hong Kong, University of Michigan, University of Notre Dame, and Shanghai University of Finance and Economics for their helpful comments on earlier drafts of this manuscript. We thank Gilles Hilary, Wei Shi, and Hannes Wagner for sharing some of the data used in this study, and Enlai Wang for assistance with data collection. This study was funded in part by the INSEAD Alumni Fund.

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ABSTRACT

Mortality salience – the awareness of the inevitability of death – is often traumatic. However, it can also be associated with a range of positive, self-transcendent cognitive responses, such as a greater desire to help others, contribute to society, and make a more meaningful contribution in one’s life and career. In this study, we provide evidence of a link between CEO mortality salience – triggered by the death of a director at the same firm – and a subsequent increase in firm-level prosocial behavior, or corporate social responsibility (CSR). We further show that this core relationship is amplified in situations where the death of the director is likely to have been especially salient (i.e., the director was appointed within the CEO’s tenure, or the death was sudden/expected). In supplementary analyses, we find suggestive evidence of increased CEO prosociality in other professional domains, as well as evidence that prosociality appears to be preferentially directed toward ingroups.

1. Introduction

Leonard Woolf: Why does someone have to die?

Virginia Woolf: Someone has to die in order that the rest of us should value life more

-The Hours

Throughout history – across nations, cultures, times, and places – one of the most universal human experiences has been the process of coming to terms with mortality (Lester 1967, Greenberg et al. 1997, Yalom 2008, Gawande 2014). Art, philosophy, popular culture, and the media are replete with examples of humans grappling with the inevitable recognition that their time on Earth is all-too-finite (Choron 1963, Kübler-Ross 1969, Siebert 2013). Mortality salience – one’s “awareness of the inevitability of death” (Greenberg et al. 1997: 61) – represents a singularly powerful influence on human behavior (Pyszczynski et al. 1999; Grant and Wade-Benzoni 2009).

Although the experience is often psychologically traumatic (Kivimäki et al. 2002), heightened mortality salience has also been linked with a series of self-transcendent short-term and long-term cognitive responses. Individuals are more likely to engage in self-reflection, express the desire to better appreciate the time they have left, focus more on social relationships with family and friends, re-evaluate the nature and purpose of their careers, consciously search for greater personal meaning, and investigate ways of making a more lasting contribution to society (e.g., Schwartzberg and Janoff-Bulman 1994, Tedeschi and Calhoun 1995, Bonanno and Kaltman 2001, Grant and Wade-Benzoni 2009).

These responses to mortality cues echo findings from research across a range of academic disciplines that points to a fascinating general link between trauma and prosocial behavior, or “positive forms of social behavior” (Bar-Tal 1976; see also Bowles 2008, Bauer et al. 2014, Pierce et al. 2017). For instance, individuals in wartime exert more effort to reward cooperative behavior and punish non-cooperative behavior (Gneezy and Fessler, 2012), while individuals exposed to violence display more altruistic behavior toward their neighbors (Voors et al. 2012) and are more likely to engage in positive collective action such as voting and community organization (Gilligan et al. 2014). Close proximity to terrorism has similar effects. A recent study by Carnahan and colleagues (2017) found that the 9/11 terrorist attacks enhanced the meaningfulness of *pro bono* work for New York City lawyers (see also Levitt (2006) and Paruchuri and

Ingram (2012) for related arguments). Even the seemingly-innocuous experience of entering the workforce (Bianchi 2013) or adulthood (Bianchi 2014) during an economic recession has been linked with positive subsequent outcomes, such as lower levels of narcissistic behavior and higher career job satisfaction. Finally, lab studies reveal that experimentally-induced mortality salience increases participants' contributions to charity and endorsement of self-transcendent values (Jonas et al. 2002, Joireman and Duell 2005).

Our study contributes to, and helps to integrate, this eclectic body of work by providing some of the very first evidence of a link between individual mortality salience and organizational prosocial behavior in the context of large, for-profit firms and their leaders. We synthesize arguments from several theoretical streams within and outside management to argue that CEOs experiencing the death of a role-relational peer (in this case, a director at the same firm) will respond in part by consciously and unconsciously re-evaluating their priorities, resulting in greater prosocial behavior. The death of a peer or colleague can be expected to trigger mortality salience because people tend to innately categorize such individuals as being similar to themselves (Cooper and Thatcher 2010). Categorization processes and assessments of similarity are basic to human cognition (Rips et al. 2012), with sameness having been identified as “the very keel and backbone of our thinking” (James 1890: 459). Individuals use similarity as a core organizing principle, and tend to assume, with good reason, that similar objects will behave similarly (Tversky 1977, Goldstone and Son 2012). Those occupying similar roles tend to have similar expectations, interpret uncertain environmental stimuli in terms of similar cognitive schemas, and often hold relatively similar worldviews (Biddle 1986, Ebaugh 1988). Therefore, the death of a perceivedly-similar individual is especially salient because it reinforces the distressing insight that “it could have been me.” In turn, we predict that experiencing the death of a director at the same firm will increase the likelihood that a CEO will direct the firm's discretionary resources toward greater levels of corporate social responsibility (CSR) (Aguinis, 2011).

Building on this core relationship and our underlying theoretical logic, we also predict, and find evidence, that the impact of director deaths on CSR will be amplified in two situations where the death is likely to be especially salient for CEOs: 1) when the deceased director had been appointed after the CEO had taken office, which suggests a closer connection between the CEO and director; and 2) when the

director's death was sudden and immediate with little advance warning, which suggests a more acute shock arising from the death event. Examining the moderating impact of death suddenness also helps us to have greater confidence in our causal claims regarding the impact of director deaths on CSR. Sometimes, when a senior corporate leader passes away while in office, there may have been some initial indication that such an event might eventually occur, whether due to longer-term concerns with overall wellbeing, periodic recurring bouts of illness, or a sharp but non-fatal decline in health status more recently (e.g., Nguyen & Nielson, 2010; Shi et al., 2017). In each of these circumstances, the death event itself is still likely to have a substantial impact, as we see in recent research (Quigley et al. 2017); however, the contemporaneous effect may be more muted or diffuse, and the very act of staying in office until death may at times influence director, CEO, and/or firm behavior in endogenous ways. Incorporating the moderating impact of death suddenness in our models helps us to address this potential concern, while still allowing us to use as large a sample of director deaths as possible, especially in light of the stringent matching process we employ. Finally, we provide several additional tests of our theoretical logic via supplementary analyses assessing the impact of director deaths on CEO behavior in other personal and professional domains (CSR on outside boards, non-profit board membership), and the extent to which prosociality is directed toward ingroups versus outgroups.

This study makes several additional broader contributions to the literature. First, we contribute to strategic leadership research on executive experiences (Hambrick and Mason, 1984). This work examines how executives' past experiences differentially influence the ways in which they interpret and evaluate uncertain strategic situations, thus shaping their strategic choices and influencing firms' unique courses of action (Carpenter et al. 2004, Finkelstein et al. 2009: 83-120). For instance, prior studies have linked CEO functional background and firm R&D spending (Barker and Mueller 2002), executive education levels and corporate strategic change (Wiersema and Bantel 1992), and top management team tenure and firm-level strategic persistence (Finkelstein and Hambrick 1990). One of the ongoing challenges with evaluating the impact of executives' experiences, though, is the question of how much those experiences are themselves shaped by executives' underlying dispositions, values, and preferences. To put it another way, does travel

broaden the mind, or are those with broader minds simply more likely to travel? Our study addresses this challenge by examining the impact on executives of a meaningful life experience that is neither chosen by CEOs, nor often expected in the first place.

Second, we contribute to research into the study of death and dying by showing how the death of a peer can have substantial indirect effects, even at the level of an entire organization. Some existing work does consider the direct effects of individual deaths within organizational settings. For instance, the death of a ‘superstar’ scientist leads to a subsequent decline in collaborator publication quality, largely due to the direct loss of human capital in the collaborative network (Azoulay et al. 2010, Oetl 2012). Relatedly, the death of a senior executive has a direct (and increasing) impact on the perceived value of a corporation (Johnson et al. 1985, Quigley et al. 2017). However, little work has examined the indirect socio-cognitive effects of peer deaths within the context of senior corporate executives (see Shi et al. (2017) for a recent exception). In summary, our work makes a novel conceptual and empirical contribution to the management literature.

2. Theory and Hypotheses

2.1 CEO Mortality Salience, Death Reflection, and Organizational Prosocial Behavior

Thanatology – the study of death, dying, and bereavement – is a complex, multidisciplinary field, and a broad and deep literature addresses the question of how people respond to, and cope with, traumatic events such as the death of a close friend, relative, or colleague (Greenberg et al. 1997, Grant and Wade-Benzoni 2009, Meagher and Balk 2013, Dore et al. 2015). Although the experience of categorical stages of grief (e.g., Kuebler-Ross 1969) differs from person to person and varies in the degree to which they are linear, orderly, and exhaustive, prior work has linked mortality salience with two broad types of responses: death anxiety and death reflection (Grant and Wade-Benzoni 2009).

First, especially in the early stages of grief, bereaved individuals often initially experience some degree of death anxiety, resulting in withdrawal behaviors. This is sometimes termed “common grief,” and includes symptoms such as cognitive disorganization, dysphoria, health deficits, and disrupted social and occupational functioning (Bonanno and Kaltman 2001, Burton et al. 2006, Siflinger 2017). Death anxiety

is associated with stress, strain, and emotional exhaustion, resulting in self-protective withdrawal behaviors and behavioral disengagement at work (Kivimäki et al. 2002). CEOs experiencing death anxiety may, at least in the short-term, be less fully engaged in company business, perhaps seeking more of a ‘quiet life’ (cf. Bertrand and Mullainathan 2003, Koetter et al. 2012). Recent evidence shows that CEOs experiencing increased anxiety respond by withdrawing and pursuing lower-risk strategies (Mannor et al. 2016). For example, Shi and colleagues (2017) found that firms led by CEOs experiencing heightened mortality salience became less acquisitive.

A second, but more gradual and long-term, outcome of bereavement is death reflection, resulting in generative, prosocial behavior (Grant and Wade-Benzoni 2009). A stream of work in thanatology examines the phenomenon of posttraumatic growth – the experience whereby trauma, tragedy, and suffering substantively changes one’s priorities and behavior (Tedeschi and Calhoun 1995, Rendon 2015). This general idea, in varying forms, has appeared in religious and philosophical thinking throughout the ages. For instance, the Christian Bible notes: “we rejoice in our sufferings, knowing that suffering produces endurance, and endurance produces character, and character produces hope” (Romans 5:3-5). More recently, scholars have examined this fundamental link between trauma and personal growth across contexts as varied as war-torn societies (e.g., Gneezy and Fessler 2012), post-conflict societies (e.g., Voors et al. 2012, Callen et al. 2014), terrorist attacks (e.g., Levitt 2006, Paruchuri and Ingram 2012), mass shootings (Dore et al. 2015, Pierce et al. 2017), and societal economic downturns (Bianchi 2013, 2014).

Posttraumatic growth appears to be driven by two distinct mechanisms. First, growth can occur indirectly from the effects of coping with psychological distress (Tedeschi and Calhoun 2004). Trauma challenges and undermines individuals’ higher-order schemas – such as those relating to people getting what they deserve, the behavioral bases of events, and assumptions concerning the impact of random circumstances. For instance, research into the “sadder-but-wiser” phenomenon has shown that sadness makes people more likely to engage in careful, deliberative, conscious (“System 2”) thought (Kahneman 2011, Lerner et al. 2013), and lessens the impact of a number of innate cognitive biases, such as overconfidence and overoptimism (Alloy and Abramson 1979).

Second, growth can arise directly as a result of consciously re-evaluating one's own life in light of a particular trauma, including a search for existential meaning (Kashdan and Kane 2011, Meyersburg and McNally 2011). Individuals experiencing trauma are more likely to lose their sense of invulnerability, recognize the inevitability of death, and thereby change their priorities (Tedeschi and Calhoun 1995), sometimes even going so far as to report a changed philosophy of life (Joseph et al. 1993). Bereavement can thus act as a concrete trigger for an individual to reevaluate their own life, especially when the characteristics or circumstances of the deceased make the death highly salient to the individual.

Individuals engaging in death reflection often respond by seeking out opportunities to assist, mentor, and meaningfully connect with others, resulting in prosocial behavior. Although, as noted above, CEOs experiencing heightened mortality salience from the death of a director may initially respond by deprioritizing their work, it is unlikely that these types of successful, motivated, career-oriented individuals – whose personal identities are often closely linked to their corporate roles (Wrzesniewski et al. 1997) – will withdraw completely. Instead, we argue that they are likely to shift their focus toward different types of behaviors. Individuals who experience a heightened awareness of their own mortality often report a desire to improve the lives of other people and make an impact that outlives the individual themselves (e.g., Kotre 1984, Tedeschi and Calhoun 1995).

In particular, mortality cues appear to amplify a general trend in individuals toward increased death awareness over time, and especially in midlife. Death awareness makes individuals more likely to initiate lasting contributions and pursue connections with others (McAdams and de St. Aubin 1992, Grant and Wade-Benzoni 2009). For example, the link between mortality salience and self-transcendent values (cf. Jonas et al. 2002) is stronger for proselves (individuals who originally valued their own well-being more strongly vis-à-vis the well-being of others) (Joireman and Duell 2005). Prosocial behaviors help individuals cope with mortality salience by buffering the perceived impact of death (Greenberg et al. 1997). Behaviors driven by prosocial motivation – the desire to help others, deepen personal relationships, and make a larger contribution to society – attenuate the fear of death because they make it easier for individuals to envision an ongoing influence beyond their own death (Peterson and Stewart 1996). Thus, we expect that CEOs

experiencing peer deaths will display different priorities regarding time and resource allocation in their professional lives, and will be more likely to support and initiate activities consistent with the desire to help or make a positive difference for others and to promote others' welfare (Grant and Wade-Benzoni 2009).

Strategic leadership research is driven by the premise that “strategy is a human construction” (Andrews, 1971: 107), and that organizations are reflections of their top managers (Finkelstein et al. 2009). Variations among corporate leaders in terms of their fields of vision, perceptions, and interpretations of ambiguous situations – driven by underlying differences in dispositions, cognitions, ideologies, and other idiosyncratic experiences – result in commensurate differences in corporate behavior (Hambrick and Mason 1984, Wang et al. 2016). Thus, we predict that a CEO's increased focus on prosocial behavior will be reflected in different firm-level priorities regarding corporate resource allocation, and a change in personal priorities should be reflected in changes in organizational decisions and choices.

Within organizations, an increase in CEO prosocial motivation is most likely to be clearly revealed by an increase in activity related to corporate social responsibility (CSR). CSR can be defined as “context-specific organizational actions and policies that take into account stakeholders' expectations and the triple bottom line of economic, social, and environmental performance” (Aguinis 2011: 855). Although the sources of CSR are multi-faceted and occur across multiple levels of analysis (e.g., institutional, organizational), research points to the central role of managers and senior executives in initiating, supporting, modifying, and abolishing particular CSR initiatives (see Aguinis and Glavas (2012) for a review). CSR has been shown to be influenced by CEO personality characteristics (Petrenko et al. 2016) and experiences (Galaskiewicz 1997). For example, CEO other-regarding values are positively related to stakeholder salience for non-shareholders (Agle et al. 1999). CEOs with a heightened level of mortality salience are likely to influence firm-level resource allocation toward activities that provide tangible benefits to non-shareholding stakeholders – such as improved employee health plans, more environmentally-friendly manufacturing processes, and charitable contributions – and away from activities that may prove more harmful to stakeholders – such as limiting corporate disclosures, persisting with family-unfriendly employment schedules, and polluting the environment. Therefore, we hypothesize:

Hypothesis 1: The death of a company director will be associated with an increase in the firm's level of corporate social responsibility

2.2 Amplification of Mortality Salience

Our core theoretical logic is based on the premise that the impact of director deaths on firm-level CSR will be driven by CEOs' heightened mortality salience, in part by perceptions of similarity with the director, such as having occupied broadly similar roles, having worked in similar domains, and having viewed the world in a similar way. In the same way that a greater cognizance of death is associated with an increased likelihood of purchasing life insurance (Browne and Kim 1993), relational identification with a deceased peer is likely to make a CEO question their own personal mortality (Sluss and Ashforth 2007). If this logic is correct, we expect to find that the core main effect predicted in Hypothesis 1 will be stronger in situations where the director death is likely to be especially salient to the CEO. We consider two such situations.

First, we predict that the impact of a director death will be amplified when the CEO feels a stronger relational connection with the deceased director, which will enhance role identification and subsequent mortality salience. A widely-studied example of professional closeness in the upper echelons of organizations is whether or not a director was initially appointed during the tenure of the CEO (e.g., Hermalin and Weisbach 1998, Hwang and Kim 2009, Fracassi and Tate 2012, Park 2018). Although recent legislative changes have increased the expectations of director independence, most scholars tend to assume that CEOs continue to be partly or heavily responsible for the appointment of new directors during their tenures (Hwang and Kim 2009). CEOs prefer to appoint directors with which they have greater social connections outside the organization (Fracassi and Tate 2012), and a director hired within the CEO's tenure is more likely to be seen as being part of the CEO's own cohort, enhancing the perceived relational connection between the two.

Research in finance and accounting often treats directors appointed by a CEO as being more likely to permit CEO entrenchment and private benefits (Bebchuk and Fried 2003, Park 2018), reasoning that a director's dependence on the CEO creates greater difficulties in monitoring. At the heart of this argument is the assumption that such CEO-director social ties make it more challenging for directors to dismiss or

sanction a CEO if required. Another important implication of this argument, though, is the cognitive impact such a relationship is likely to have on the CEO, which will be driven by social categorization processes (Farh et al. 1998). Individuals subconsciously categorize themselves and others in terms of salient characteristics. These diagnostic features have a disproportionate influence on judgments of similarity (Tversky 1977). CEOs are therefore likely to focus on categorical characteristics of the deceased peer (e.g., being a member of the same corporate cohort), and underplay characteristics that may be arguably more influential in leading to the death (such as weight, health, and exercise habits). And, because this process operates via self-categorization, there is no necessary requirement for CEOs to have been personal friends with the deceased directors (although professional closeness may also be associated with stronger friendship ties (Thomas 1990)). Thus, in situations where a deceased director had been appointed within the tenure of a CEO, the director death is likely to be more salient, amplifying CEOs' death reflection and subsequent preference for prosocial behavior. In contrast, in situations where a deceased director had been hired prior to the CEO's arrival at the firm, CEOs are relatively less likely to see the director as being reflective of an important relational connection, resulting in fewer changes in prosocial behavior. Therefore, we hypothesize:

Hypothesis 2: Director appointment within the CEO's tenure will positively moderate the relationship between director deaths and corporate social responsibility

Second, we predict that the impact of a director death will be amplified when the death event was unexpected, such as via a sudden heart attack, stroke, or accident. Healthy executives are more likely to identify with their peers who show no obvious signs of illness or infirmity, compared with those who have deteriorated in health over a long period of time. Whether or not executives share general negative societal attitudes toward disability (e.g., Chan et al. 2005), healthy executives are likely to see sick or injured directors as being categorically dissimilar to themselves. Further, the psychological impact of bereavement, and trauma more generally, tends to be stronger when the event was unexpected (Lehrman 1956, Siflinger 2017). Individuals facing such situations have no opportunity to prepare themselves or engage in "anticipatory grief" (Lundin 1984), amplifying the effect of the event itself. Thus, unexpected director

deaths will increase the likelihood of CEO death reflection and subsequent prosociality because: 1) CEOs are more likely to identify with seemingly-healthy peers, and 2) the immediacy of the deaths will make the events more psychologically salient, amplifying CEOs' tendencies to reflect on their implications.

Therefore, we hypothesize:

Hypothesis 3: Director death suddenness will positively moderate the relationship between director deaths and corporate social responsibility

3. Data and Methods

3.1 Difference-in-differences Analysis with Coarsened Exact Matching

We tested our hypotheses using a difference-in-differences (DID) analytical model (Donald and Lang 2007), where we treated director deaths as having created a quasi-randomly-assigned “treatment” group (firms where death occurs) and control group (firms where no death occurs). We estimated the following difference-in-differences specification:

$$CSR_{it} = \beta_{0,it} + \beta_{1,it}Post-death_t \times Death\ Group_i + \beta_{2,it}Post-death_t + \gamma'X_{it} + FirmFE + YearFE + \varepsilon_{it} \quad (1)$$

where i and t index firms and time, respectively. CSR represents firm-level corporate social responsibility, and X represents a vector of control variables. $FirmFE$ denotes firm fixed effects, which are included to control for cross-sectional differences in dependent variables across firms. Similarly, $YearFE$ denotes year fixed effects, which are included to account for systematic temporal effects. $Post-death$ was measured as a binary 1/0 (dummy) variable, coded as one in firm-years following the death of a director and coded as 0 otherwise. $Death\ group$ was measured as a binary 1/0 dummy, coded as one if there was a death event in a firm. The β_1 coefficient in Eq. (1) captures the “treatment effect on the treated” (Angrist and Pischke 2008), and provides an estimate of the effect of director deaths on CSR. Note that the main effects of Death group are absorbed by the firm fixed effects. Standard errors were clustered at the firm level.

To create our initial death events sample, we manually searched S&P Executive Register, Factiva, Edgar 8-K filings, and Google using keywords related to director (e.g., “director,” “board”) and death (e.g., “passed away,” “deceased,” etc.) over the period 1990 to 2013. This screen identified a total of 755 death events. We then restricted our sample to only those director deaths that occurred at public firms, and

excluded all firms where we were unable to gather full data on CEO, director, and governance characteristics (from BoardEx, Edgar, and CapitalIQ), financial metrics (from Compustat), and CSR scores (from KLD). This reduced our preliminary sample to 330 death events during the 1999-2013 time period.

Inferences from difference-in-differences specifications rely in part on a parallel trend assumption, i.e., absent the treatment, both treated and control firms would have continued to exhibit similar trends in the outcomes of interest. Although we think it is unlikely that the CEOs in our sample changed their behavior in anticipation of director deaths, we used 1:1 Coarsened Exact Matching (CEM) without replacement to select firms for comparison that were as similar as possible at the time of treatment. We also included several covariate controls to adjust for potential differences in trends over time.

CEM uses Monotonic Imbalance Bounding (MIB) multivariate matching, which reduces causal estimation error, model-dependence, bias, and inefficiency (Iacus et al. 2011). To create the CEM sample, we took the sample of treatment firms that had experienced director deaths, and then identified matching (control) firms for each treatment firm. Choosing a set of matching criteria involves an inherent trade-off between the stringency of the match and the fraction of the sample for which a match can be found (Singh and Agrawal 2011). If too many treated units are discarded as a result of stringent matching criteria, the inferences from CEM may be inefficient. However, stringency in matching is crucial because inferences from matching-based estimates rely upon the “selection on observables” assumption (Heckman and Navarro-Lozano 2004; Bode et al. 2015). Often, the likelihood of ‘treatment’ occurring might also depend on unobservable and/or unmeasurable characteristics. However, improving the quality of observable matching variables can largely reduce – though not completely eliminate – concerns about the effect of unobservable factors on endogeneity issues, as unobservables are usually correlated with observables (Altonji et al. 2005). Thus a more comprehensive and theoretically cogent vector of matching variables can help to improve the quality of causal inferences. Specifically, for each treated firm, we used one-to-one matching based on the pre-treatment board size, average director age, CEO age, firm size, and accounting performance (*ROA*), as these covariates may both affect the likelihood of observing director death and are fundamental board/CEO/firm characteristics that have been used as CEM matching criteria (e.g., Younge

et al. 2015). We also imposed the restriction that our pool of control firms (before CEM matching) could not experience any director deaths during the sample period. We then created a matched sample in the year immediately before each death event using CEM 1:1 matching without replacement, with the optimal level of coarsening determined by Sturges' Rule (Blackwell et al. 2010).

Using this Coarsened Exact Matching procedure, we were able to find a valid matched pair for 104 firms experiencing death events. We further required a balanced panel, with each treatment group firm and control group firm having at least one, and up to four, firm-year observations both before and after the death year. We chose to use a sample of four years post-death in order to allow sufficient time for the phenomena in our study to unfold. For instance, although we believe a director death will act as a mortality cue quite quickly, it may take longer (one or more years) to enact some of the organizational changes triggered by this cue. We required both treatment and control firms to have same number of firm-year observations. This screen resulted in the exclusion of 15 additional cases. Our final sample therefore comprised 89 director death events and 1,254 firm-years (627 firm-years for each of the treatment and control groups).

We used multiple tests to gauge the quality of matching. Panel A of Table 1 reports univariate and multivariate L1 imbalance statistics for our sample before and after CEM matching. Imbalance is a measure of how covariates differ between the treatment and control groups. In the CEM algorithm, imbalance is measured by the L1 statistic—a summary measure of global imbalance calculated by comparing the differences between all the covariates at once (Iacus et al. 2011). The L1 statistic can range from 0 to 1, with higher values representing less balance between the treatment and control groups. When perfect balance between treatment and control groups is achieved, L1 is equal to zero. When there is perfect imbalance, L1 is equal to 1. Thus, our objective in matching is to make the L1 statistic smaller (i.e., make the groups more similar to one another and therefore the comparisons more valid). Panel A of Table 1 shows that both univariate and multivariate L1 statistics declined significantly after CEM matching. Similarly, Panel B of Table 1 reports univariate comparisons of differences in means between treatment and control firms. These data reveal no significant differences in means between the two samples. In supplementary analyses (discussed below), we demonstrate that our results are robust to the use of alternative matching

methods and criteria, including the use of less stringent matching criteria resulting in larger matched samples with more director death events.

Insert Table 1 about here

Of the 89 death events in our final sample, 12 (13.5%) were coded as sudden deaths, based on an assessment of the circumstances surrounding each death taken from relevant news articles, obituaries, and company reports. Following Nguyen and Nielsen (2010: 553), a death was characterized as being sudden if it was unexpected and occurred “instantaneously or within a few hours of an abrupt change in the person’s previous clinical state.” The causes of sudden death were: acute illness (42%), heart attack (25%), stroke, and accidents (8%). This overall incidence of sudden deaths as a proportion of total deaths is below, but generally in line with, comparable figures from recent studies (e.g., Shi and colleagues (2017) report an incidence of 24%). The overall incidence of sudden deaths is also likely to be relatively low because the role of an independent director will tend to be less onerous than that of an executive director or CEO, so occupants may be less likely to resign due to illness or infirmity, thus decreasing the proportion of deaths categorized as sudden.

Although recent work suggests that all director deaths are likely to have a meaningful effect on the phenomena we consider in this study (e.g., Quigley et al. 2017), sudden deaths provide the cleanest possible causal test of our logic because there is less likelihood of an anticipatory response. However, our conservative sampling and estimation approach, including the use of 1:1 Coarsened Exact Matching (CEM) without replacement (described below), substantially reduces our statistical power if we were to only consider sudden deaths. Further, the proportion of deaths categorized as truly sudden or unexpected is likely to have decreased steadily over time in response to general societal improvements in both preventive and curative medical treatment (e.g., Niemeijer et al. 2015, Steg and Ducrocq 2016), potentially making the distinction between sudden and non-sudden deaths somewhat less helpful. We address this challenge through the use of death suddenness as a moderator, which allows us to test our core theoretical mechanism

of mortality salience caused by director death while also taking advantage of a larger sample of meaningful non-sudden deaths.

3.2 Dependent Variables

Corporate social responsibility (CSR) was operationalized as an aggregate measure, comprised of six dimensions from the KLD Social Ratings database: community relations, diversity, employee relations, environment, human rights, and product quality. These dimensions have been widely used in prior CSR research, and appear to be of most interest to stakeholders (e.g., Wang and Choi 2013). Within each dimension are a number of individual items relating to CSR strengths and concerns. We used only the CSR strengths for each dimension, in line with findings from prior work (e.g. Mattingly and Berman 2006, Kacperczyk 2009) showing that CSR strengths and CSR weaknesses in the KLD database lack convergent validity and should therefore not be combined as a net score. The overall CSR measure was therefore the sum of the CSR strengths scores for each of the six dimensions in a given firm-year.

3.3 Moderator Variables

We used two moderators to capture situations where we expected CEO mortality salience would be more acute following a director death. First, to reflect the relational connection between the CEO and the deceased director, we created a 1/0 binary variable (*CEO appointee*) that was coded as one if the deceased director had been appointed within the CEO's tenure. For control firms, we coded this variable as zero. Second, to reflect the added impact of death immediacy, we created a *sudden death* 1/0 binary variable, which was operationalized as described above (Nguyen and Nielsen 2010).

3.4 Control Variables

We included the following firm-year-level controls in our models to improve the efficiency of our estimates. *Firm age* was measured as the natural log of the number of years that a firm had appeared in the Compustat database. *Leverage* was measured as long-term debt plus current debt, divided by total assets (e.g., Aghion et al. 2004). *Diversification* was measured as number of business segments. We also controlled for important governance conditions, including *board independence* (outside director ratio), *CEO duality* (a dummy variable indicating that the CEO also served as the board chair), and *CEO tenure* (in years).

Finally, we included several control variables to account for the possibility that our results were instead being driven by a change in capabilities or talent at the board level following a director death. First, we controlled for *CEO turnover* (a dummy variable indicating that the firm experienced a CEO turnover event in year t). Next, we controlled for the proportion of directors leaving the firm (*Director leave %*) and the proportion of directors joining the firm (*Director join %*) to account for changes in board human capital.

4. Results

4.1. Main Effects

Table 2 contains summary statistics and preliminary univariate comparisons. Panel A reports overall descriptive statistics for the full sample. Panel B reports pre-death and post-death levels of CSR and all control variables, broken down by treatment firms and control firms. This panel also reports p-values from t-tests of changes in CSR from the pre-death to the post-death period. As shown in Panel B, treatment firms exhibited significant increases in CSR following the death events, while control firms did not exhibit significant increases in CSR. The last two columns of Panel B report the results for our main difference-in-differences test comparing changes in CSR for treatment firms relative to control firms; this difference was also significant ($p = 0.011$). Preliminary evidence from these univariate tests is thus consistent with our main hypothesis (H1) that the death of a company director is positively associated with a firm's subsequent level of CSR.

Insert Table 2 about here

Table 3 reports results from estimating Equation (1). Column (1) shows a positive and statistically significant coefficient for *Post-death*Death group* in the absence of any controls (t -stat = 3.01). This specification mitigates “bad control” problems, whereby inclusion of controls that are determined contemporaneously with the dependent variables might bias the treatment coefficient dummy (Angrist and Pischke 2008). As shown, this specification provided support for H1. Figure 1 displays histograms for CSR for the treatment and control firms both before and after the death event. Both a Mann-Whitney test ($p < 0.001$) and a two-sample Kolmogorov-Smirnov test for equality of distribution ($p = 0.002$) indicates that

CSR scores for the treatment group differed between pre-death and post-death periods. This figure also provides evidence that our results do not appear to be driven by outlier observations.

Insert Table 3 and Figure 1 about here

Column (2) in Table 3 reports the full DID model controlling for time-varying firm characteristics. We continue to find a positive and significant association between director death and CSR activities. The estimated effect of death on CSR was 0.372 with a t-statistic of 3.16. This suggests that firms experiencing director deaths exhibited an average increase in CSR of 0.372 (or 57% relative to its mean) in the post-death period relative to the control firms. Column (3) in Table 3 adds CEO fixed effects to control for any cross-sectional differences between managers that might otherwise confound our results. By including firm, year and CEO effects, this test estimates the relation between death and CSR activities using only variation *within* a given year, firm, or manager. The results show that our inference remained unchanged.

To mitigate the potential concern that the differences in CSR among treated and control firms might be driven by differences in industry trends or local business conditions, we re-estimated Eq. (1) after replacing year fixed effects with industry-year joint fixed effects. Industry-year fixed effects are constructed as a unique vector of year fixed effects for each two-digit SIC code. This specification controls for any time-varying industry shocks that might arise as a result of changes within an industry (e.g. changes in industry norms or attitude towards CSR activities) or secular industry trends. Results in Column (4) of Table 3 show that we continued to find a positive relation between director death and CSR activities ($\beta = 0.358$, $t\text{-stat} = 2.30$). Next, to mitigate the concern that our results might be confounded by the characteristics of different strata of control firms, we replaced firm fixed effects with strata fixed effects. We further included *Death group* into this regression as the main effect is no longer absorbed by firm fixed effects. Column (5) of Table 3 shows that our results remained robust ($\beta = 0.382$, $t\text{-stat} = 2.91$). Lastly, we bootstrapped the standard errors by firm with 10,000 iterations. Column (6) of Table 3 shows that our results were robust ($\beta = 0.372$, $t\text{-stat} = 5.72$). See Section 4.3 below for more discussion of robustness tests and supplementary analyses.

Column (5) in Table 3 also allows us to compare the effect size of director deaths on CSR with the effect sizes of other relevant firm-level influences. For instance, we see that highly-leveraged firms are less likely to engage in CSR, which is consistent with prior literature (e.g., Barnea and Rubin 2010). Leverage of one standard deviation above the mean was associated with a reduction in CSR of 0.150, or 23% relative to the CSR mean. This effect was slightly less than half the effect size of director deaths in our sample, as noted above. Alternatively, high diversification (one standard deviation above the mean) was associated with a reduction in CSR of 0.113, or 17%, while high CEO tenure (again one standard deviation above the mean) was associated with an increase in CSR of 0.225, or 35%. This latter effect was a little less than two-thirds the effect of director deaths in our sample.

4.2. Moderating Effects

Our moderating hypotheses (H2 and H3) predicted that the impact of director deaths on CSR would be amplified in situations where one might expect CEOs' identification with the deceased directors, and therefore mortality salience, to have been stronger. To test each of these hypotheses, we modified equation (1) to the following triple-difference specification:

$$\begin{aligned}
 CSR_{it} = & \beta_{0,it} + \beta_{1,it}Post-death_t \times Death\ Group_i + \beta_{2,it}Post-death_t \times Death \\
 & Group_i + \beta_{3,it}Post-death_t + \gamma'X_{it} + FirmFE + YearFE + \varepsilon_{it} \quad (2)
 \end{aligned}$$

Note that these models also included the main effect of the relevant moderator variable. Similar to Eq. (1), though, the main effects of moderating variables and Death group were absorbed by the firm fixed effects.

 Insert Table 4 about here

Table 4 reports the results of our moderating hypotheses. Model 1 shows that CEO appointee (a binary measure of whether the deceased director had been appointed by the CEO) was a positive and significant moderator of the director death-CSR relationship ($\beta = 1.008$, t-stat = 2.79), supporting Hypothesis 2. Model 2 in Table 4 shows that sudden death was a positive and significant moderator of the director deaths-CSR relationship ($\beta = 0.564$, t-stat = 2.07), supporting Hypothesis 3. Overall, therefore, we found support for our moderating hypotheses (H2 and H3) and for the claim that the impact of director

deaths would be stronger in situations where CEOs could be expected to have identified more strongly with the deceased directors.

4.3 Robustness Tests and Supplementary Analyses

We conducted a range of additional tests to assess the sensitivity our primary inferences. As noted above, inferences from DID analyses rely on the assumption that, absent the treatment effect, both treated and control firms would have changed the same. To assess whether this is plausible, we tested whether treated and control firms followed a parallel trend prior to the treatment (Ryan et al. *In press*). We first plotted the average value of CSR between treated and control firms from $t-3$ to $t+3$ where $t=0$ is the year where death occurred (see Figure 2). This figure includes whisker plots of 90% confidence intervals for the treated and control groups. We also report yearly mean differences between treated and control groups. Figure 2 suggests that there were no meaningful differences in CSR between treated and control firms prior to the death, supporting the parallel trend assumption. Further, differences in CSR began to occur in the death event year, providing additional evidence that the behavior of treated firms was being influenced by the event. We also calculated a leads and lags model including binary indicators for each of the three years prior to death and each of the three years post-death. None of the pre-death coefficients were significant, providing additional support for our parallel trend assumption.

Insert Figure 2 about here

Second, we assessed the sensitivity of our results to the particular econometric techniques used. We initially used OLS regression as the main estimation method to facilitate the interpretation of our interaction variables (Ai and Norton 2003). Column (1) of Table 5 reports the results after re-estimating Eq (1) using Poisson regression; our findings were robust to this choice¹. Next, we assessed the sensitivity of our results to the particular matching technique used. We used CEM matching without replacement in the main analysis

¹ We estimated the regression using Stata command `xtpoisson`. Since `xtpoisson` does not allow clustering of standard errors at the firm level, we report bootstrapped standard errors in column (1).

to mitigate the estimation bias that might be introduced by using the same control firms for different treatment groups. This more stringent matching requirement trades off sampling bias with estimation power. Column (2) of Table 5 displays results after conducting CEM 1:1 matching with replacement, while Column (3) displays results after employing an alternative CEM matching scheme that allows for one to multiple matching without replacement. In both cases, the revised matching technique resulted in a larger matched sample, and our results continued to hold in these two samples. We then examined whether our results were robust to the use of reasonable, but less stringent, alternative sets of CEM matching variables. To test this, we created a sample with matching based on only the three CEO- and firm-level variables (CEO age, firm size, accounting performance), but not the two board-level variables (director age, board size), which we instead included as controls. As expected, this resulted in a larger matched sample (223 death events and 2810 firm-year observations), albeit one with less effective matching. Column (4) in Table 5 shows that our results also held in this alternative sample.

Insert Table 5 about here

We also assessed the sensitivity of our results to the level of coarsening (i.e. bin size) used in the CEM analysis. Our main analysis used Sturges' rules to determine the optimal level of coarsening, and our univariate statistics showed significant improvement in imbalancing statistics (see Table 1). We were reluctant to manually re-coarsen because of a lack of theoretical guidance on how to coarsen the variables. A larger bin size (hence a smaller number of groups) will result in a smaller matched sample and the associated reduction in statistical power. Nonetheless, to provide a further conservative test, we re-ran our analyses after coarsening by creating quartile groups for each of the five matching variables; results remained qualitatively similar.

In line with much of the research in strategic leadership that draws on upper echelons theory (e.g., Hambrick and Mason 1984, Wang et al. 2016), we focus in this study on the theoretical link between CEO-level characteristics and outcomes at the CEO's own firm. However, if our assumption of an increased personal focus on prosocial behavior following the death of a director is correct, we expected to also find

corroborative evidence in behavioral domains linked with the individual outside the firm. We examined two such outcomes.

First, we expected that an increased desire to engage in prosocial behavior would be manifested in a CEO's discretionary professional choices at other firms where the CEO served as a director (Carpenter and Westphal 2001). Although the influence of directors on company strategy is more indirect and less unequivocal compared to the influence of CEOs and other senior executives (Pugliese et al. 2016), directors nevertheless have the power to encourage, influence, modify, retard, and even abolish large-scale strategic initiatives based on their own personal preferences (Carpenter and Westphal 2001, Davis et al. 2003, Shropshire 2010). To test this, we created a measure of *CSR outside*, which was operationalized as the mean firm-year-level CSR score at firms where the CEO served as an outside director. Columns (1) and (3) in Table 6 report the results of these tests without, and with, control variables, respectively. As shown in Column (3), the post-death x death group interaction was a positive and significant predictor of CSR outside ($\beta = 0.187$, t-stat = 2.70).

Second, heightened prosocial behavior is likely to be manifested in discretionary personal choices such as an increased engagement with nonprofit organizations. CEOs can use external directorships on nonprofit boards as a form of personal philanthropy, to assist with fundraising and promote the mission of an organization, to symbolically signal their commitment to particular causes, and to provide more explicit guidance and mentorship (Ben-Ner and Van Hoomissen 1994, O'Regan and Oster 2005, Teksten et al. 2005). To test this idea, we gathered data on *Nonprofit boards*, which was operationalized as the number of nonprofit board directorships (e.g., charities, schools, and religious organizations) associated with a particular CEO in a given year in the BoardEx database. Columns (2) and (4) in Table 6 report the results of these tests without, and with, control variables, respectively. As shown in Column (4), the post-death x death group interaction was a positive and significant predictor of CEO nonprofit board membership ($\beta = 0.067$, t-stat = 2.61).²

² Prior research has found that directors selectively disclose non-public directorships in company proxy statements and often withhold or manage voluntary information that appears in the public domain (Gow et al. 2016). Thus it is

Insert Table 6 about here

Finally, we conducted an additional supplementary analysis to explore the question of whether CEOs' prosocial behavior was being preferentially directed toward particular groups or individuals. Although considerable work finds a link between trauma and positive individual behavior (Gneezy and Fessler 2012, Voors et al. 2012, Carnahan et al. 2017), closer examination of this literature reveals that much of the increase in prosociality is directed toward one's ingroup (cf. Hogg and Terry 2000). For example, exposure to war made people more egalitarian but only toward those from the same village (Bauer et al. 2014), while interethnic experiences modified the impact of violence on increased trustworthiness (Becchetti et al. 2014). In fact, a recent study by Pierce and colleagues (2017) that focused on individuals' post-traumatic responses toward strangers (in this case, tipping at restaurants in close proximity to a recent mass shooting tragedy) reported a *negative* impact of trauma on prosociality. Taken together, these findings appear consistent with a preferential link between trauma and prosociality toward ingroups. If mortality salience does indeed become less existentially upsetting when individuals are able to envision an ongoing influence beyond their death (Peterson and Stewart 1996), it makes sense that this ongoing influence will be both more achievable and more meaningful in a concrete, proximal context (i.e., one's ingroup) versus a diffuse, distal context (one's outgroup).

We were able to investigate this idea using our sample, albeit in a somewhat rudimentary manner. We divided the six dimensions of CSR from the KLD database into three dimensions that appear to be more ingroup-focused (employee relations, diversity, product quality) and three dimensions that seem more outgroup-focused (community relations, human rights, and the environment). We then ran our original DID analysis separately using outgroup CSR and ingroup CSR as the dependent variables. As shown in Table 7,

possible that the number of nonprofit boards in our paper is underreported. To partly address this possibility, we constructed an alternative measure of nonprofit boards based on a count of all nonprofit boards that the CEO had served on up to that point in time (instead of the number of nonprofit directorships reported in a given CEO-year). Our results were not sensitive to this choice. Nonetheless, we recommend interpreting these supplementary results with some caution.

the interaction of post-death and death group was a significant predictor of ingroup CSR ($\beta = 0.235$, $t\text{-stat}=2.59$) but not outgroup CSR ($\beta = 0.074$, $t\text{-stat}=1.60$). These coefficients were also significantly different according to the results of a seemingly unrelated estimation, or SUEST, test ($\text{Chi}^2 = 3.38$, $p = 0.066$). For instance, the firm Jones Lang LaSalle (JLL) experienced the death of a director in 2008. Data from KLD show that the firm's CSR strengths score rose from 4 (director death year) to 7 (three years after the death event) and to 11 (four years after the death event). However, this improvement was almost exclusively from changes in the employee relations and work force diversity categories of CSR, with the outgroup-oriented categories of CSR rising much less acutely. We think these results provide additional preliminary support for the idea that trauma-driven prosociality is directed especially toward ingroups.

Insert Table 7 about here

5. Discussion and Conclusion

This study explored the question of how mortality salience influences prosocial behavior, in the context of large, for-profit firms and their leaders. In support of our hypotheses, we showed that CEO mortality salience, proxied by the death of a director at the same firm, was linked with subsequent changes in firm-level corporate social responsibility, and that this relationship was stronger in situations where we would expect the death of a director to be especially salient. We also provided some supplementary evidence that CEOs' increased prosociality was also manifested in other relevant professional domains, and that CEOs' increased prosociality appears to be directed more toward ingroups than outgroups.

Notably, our study shows that deaths of this kind tend to have a widespread organizational impact, which does not seem to be driven by the loss of knowledge, skills, or monitoring capabilities associated with the departure of a single member of a larger board of directors, but instead by the effect that such deaths have on those remaining at the firm. In contrast, most of the existing executive succession literature tends to take a direct, instrumental perspective, in that the departure of an effective senior leader is associated with negative consequences for the firm because of the loss of a certain set of skills and abilities

(e.g., Miller 1993, Shen and Cannella 2002, Huson et al. 2004), or that the departure of an ineffective leader provides substantive and/or symbolic benefits for a firm (e.g., Arthaud-Day et al. 2006). Our results show, however, that certain types of succession events may have an indirect effect because of how the characteristics of the succession impact those remaining at the firm.

A limitation of our study is that we were unable to use a sample entirely comprised of sudden or fully unexpected deaths (cf. Shi et al. 2017). Our desire to ensure the most stringent possible matching between firms experiencing a director death and comparable firms that did not experience a death significantly reduced our available sample, and, by extension, the number of sudden deaths in our sample. This remains a limitation of our work because it is theoretically possible that some of the factors coincident with the eventual death of a director who does not die suddenly may also be linked with some of the changes in firm-level prosocial behavior. However, on balance, we think this is unlikely to have spuriously generated our results. First, we found that our core results were amplified by death suddenness, suggesting that the underlying causal mechanisms we propose were strongest in those situations where death was unexpected. Second, related recent work (Quigley et al. 2017) reinforces the notion that non-sudden deaths are likely to have an impact of firm-level outcomes, but a more muted one, suggesting that our study may actually offer a more conservative test of our core hypothesis. Third, the additional support we provide for the parallel trend assumption suggests that treatment firms in general (the majority of which experienced non-sudden deaths) did not appear to be changing their behavior in meaningful ways prior to the death events.

One natural extension of our work would be to examine the implications of exogenous, unexpected experiences such as CEO peer deaths within other, more specific, strategic domains, such as new market entry, corporate restructuring, or organizational innovation. Salient changes in CEOs' work and non-work priorities are likely to influence the characteristics of strategic decisions more generally. In addition, although the focus of our study is the CEO, we recognize that director deaths might also have an impact on other employees of the firm, notably those members of the firm's TMT who are also inside directors. Work in this area could examine the influence of director deaths (and perhaps the unexpected deaths of senior leaders more generally) on the activities and perspectives of employees at levels below that of the CEO.

Another opportunity for future work concerns the personal and organizational factors that might inhibit or enhance these phenomena. Might certain executives be more impervious, or more susceptible, to these types of events, whether because of firm-level routines, contextual imperatives, dispositional factors, or (other) experiences? For instance, industries characterized by cutthroat product-market competition, or firms where internal and external governance pressures are substantial, might limit the opportunity for CEOs to enact their changed priorities (cf. Hambrick and Finkelstein 1987, Wangrow et al. 2015). In these situations, we might even expect to see an increased likelihood of voluntary departure in the short term.

The results of our study have theoretical implications for several streams of management research, each of which open avenues for future work. First, we contribute to agency theory. Our study provides evidence of a situation where a change in CEO priorities and motivations can override the influence of standard governance mechanisms, such as financial incentives and monitoring (Beatty and Zajac 1994). Research into an executive's pursuit of a quiet life (e.g., Rhoades and Rutz 1982, Bertrand and Mullainathan 2003) has shown that, when external pressures decrease, an agency conflict may arise as firms are more likely to act in ways consistent with CEO disengagement or withdrawal (Shi et al. 2017). We show that a change in CEO priorities may also result in an *increase* in engagement, but one that is directed toward a specific domain – investments in CSR initiatives. Although there exists considerable debate regarding the underlying causal relationship between corporate social responsibility and firm performance (e.g., Choi and Wang 2009, Kang et al. 2016, Lins et al. 2017), the decision to increase CSR by CEOs in our sample seems to have been taken entirely independent of its performance implications. Our results therefore suggest a different type of potential agency conflict, in that CEOs could be said to be 'consuming' CSR as an unmonitored perquisite (cf. Chin et al. 2013) as a result of unexpected changes in their personal preferences.

Next, our work also has implications for research on CEO tenure. Some of this literature examines how the pattern of leaders' actions and attitudes unfolds over the course of their careers (e.g., Miller and Shamsie 2001, Giambatista 2004, Henderson et al. 2006). Grounded in concepts such as the "seasons of a CEO's tenure" (Hambrick and Fukutomi 1991), this work suggests that there are distinct, intrinsic temporal stages to leadership. Our study illustrates one way that the underlying rhythm of these stages might be

disturbed (cf. Meyer 1982), and identifies some of the implications that such a disturbance can have for both CEO-level and firm-level outcomes.

Finally, our study also has implications for research in strategic leadership more generally, which assumes that executives' fields of vision, perceptions, and interpretations are influenced by their underlying cognitions and values (Hambrick and Mason 1984). In response to criticism of the use of demographic proxies to reflect these individual differences (Pettigrew 1992, Carpenter et al. 2004), more recent work has employed a range of creative methodologies to more directly measure executive dispositions (e.g., Chatterjee and Hambrick 2007, Resick et al. 2009, Petrenko et al. 2016) and values (e.g., Agle et al. 1999, Briscoe et al. 2014). Many of these studies adopt the reasonable premise that most individual differences have trait-like, rather than state-like, properties, in that their influences will be largely consistent over an executive's career. At the same time, though, an individual's context and circumstances can influence behavior separate from their underlying traits, values, and preferences (Ross and Nisbett 1991, Fiske 2014). Our study provides one example of how this might occur in the executive suite.

In this way, our work echoes the conclusions of a number of recent studies identifying the impact that powerful personal experiences can have on work-related behaviors. For instance, the birth of a child to a male CEO influences both CEO and employee compensation (Dahl et al. 2012), while the characteristics of a male CEO's marriage (traditional vs. non-traditional) influences their attitudes toward women in the workplace (Desai et al. 2014). Future work could explore how other types of external shocks – both negative (e.g., an accident) and positive (e.g., awards or personal recognition in a non-work sphere) could spark an internal change in CEOs' outlooks and priorities. Studies such as these hold the promise of further integration of the influence of experiences and other individual differences in shaping executive behavior.

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Table 1: Quality of CEM Matching

The final CEM matched sample consists of 89 unique death events. All variables are defined in Section 3 of the paper.

Panel A Univariate and Multivariate L1 Statistics			
	Before CEM	After CEM	
Univariate L1 Statistics			
Firm Size	0.104	0.083	
ROA	0.170	0.104	
CEO age	0.228	0.094	
Board size	0.070	0.021	
Director age	0.236	0.073	
Multivariate L1 Statistics	0.999	0.813	
Panel B t-test difference in mean for CEM matched sample			
	Treated	Control	P-value
Firm Size	7.190	7.224	0.858
ROA	0.142	0.137	0.664
CEO age	65.365	65.375	0.989
Board size	9.688	9.667	0.955
Director age	54.725	54.691	0.948

Table 2: Summary Statistics and Univariate Comparisons for All Variables

The final CEM matched sample consists of 89 unique death events. All variables are defined in Section 3 of the paper. Panel A shows the summary statistics for the main variables and Panel B provides univariate comparisons between treatment and control groups.

Panel A: Summary Statistics								
	N	Mean	Median	Std	Min	Max		
CSR	1254	0.649	0.000	1.285	0.000	11.000		
Leverage	1254	0.202	0.174	0.188	0.000	0.951		
Firm age	1254	3.050	3.045	0.709	0.693	4.357		
Diversification	1254	1.441	1.000	1.199	0.000	5.000		
Board independence	1254	0.794	0.833	0.114	0.250	1.000		
CEO duality	1254	0.625	1.000	0.484	0.000	1.000		
CEO tenure	1254	16.753	15.000	10.607	0.000	44.000		
CEO turnover	1254	0.055	0.000	0.228	0.000	1.000		
Director leave %	1254	0.055	0.000	0.081	0.000	0.417		
Director join %	1254	0.075	0.000	0.116	0.000	1.000		

Panel B: Univariate Comparisons								
	Treated Firms			Control Firms			DID	P-value
	Before	After	P-value	Before	After	P-value		
CSR	0.556	1.006	0.000	0.467	0.555	0.240	0.363	0.011
Leverage	0.220	0.187	0.030	0.207	0.193	0.332	-0.020	0.353
Firm age	3.028	3.161	0.020	2.908	3.096	0.001	-0.055	0.491
Diversification	1.487	1.474	0.886	1.444	1.361	0.398	0.070	0.607
Board independence	0.790	0.791	0.853	0.796	0.799	0.794	-0.001	0.939
CEO duality	0.667	0.639	0.462	0.637	0.561	0.051	0.048	0.375
CEO tenure	16.170	16.944	0.334	16.922	16.956	0.969	0.739	0.538
CEO turnover	0.052	0.069	0.395	0.056	0.044	0.491	0.028	0.274
Director leave %	0.054	0.063	0.181	0.054	0.049	0.411	0.014	0.123
Director join %	0.079	0.074	0.579	0.090	0.059	0.002	0.026	0.045

Table 3: Baseline DID Models

The final CEM matched sample consists of 89 unique death events. All variables are defined in Section 3 of the paper. Standard errors are presented beneath the coefficients within parentheses. *, **, and *** denote two-tailed significance levels at 10%, 5%, and 1% respectively. In column (1) to (5), standard errors are corrected for heteroscedasticity and are clustered at the firm level. In Column (6), we bootstrapped standard errors by firm with 10,000 iterations.

	(1)	(2)	(3)	(4)	(5)	(6)
	CSR	CSR	CSR	CSR	CSR	CSR
Post-death*Death group	0.335***	0.372***	0.427***	0.358**	0.382***	0.372***
	(0.11)	(0.12)	(0.13)	(0.16)	(0.13)	(0.07)
Post-death	-0.188**	-0.203**	-0.205**	-0.143	-0.231**	-0.203***
	(0.08)	(0.08)	(0.08)	(0.11)	(0.09)	(0.07)
Leverage		0.453	0.717**	0.382	-0.865**	0.453**
		(0.29)	(0.34)	(0.48)	(0.34)	(0.22)
Firm age		0.374	0.495	0.279	0.166	0.374**
		(0.36)	(0.41)	(0.49)	(0.13)	(0.19)
Diversification		0.015	0.015	0.075	-0.113*	0.015
		(0.05)	(0.05)	(0.06)	(0.06)	(0.03)
Board independence		-0.895	-0.619	-0.045	-0.940	-0.895**
		(0.66)	(0.84)	(0.68)	(0.62)	(0.42)
CEO duality		0.092	0.025	0.117	0.114	0.092
		(0.08)	(0.11)	(0.12)	(0.10)	(0.06)
CEO tenure		-0.005	-0.011	0.001	-0.015**	-0.005
		(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
CEO turnover		-0.150	-0.214*	0.038	-0.109	-0.150*
		(0.11)	(0.12)	(0.11)	(0.13)	(0.09)
Director leave %		-0.102	-0.090	0.276	0.161	-0.102
		(0.20)	(0.23)	(0.31)	(0.24)	(0.25)
Director join %		-0.487***	-0.461**	-0.640**	-0.507***	-0.487***
		(0.17)	(0.19)	(0.28)	(0.19)	(0.16)
Death group					0.057	
					(0.09)	
Observations	1,254	1,254	1,254	1,254	1,254	1,254
R-squared	0.7752	0.7809	0.8206	0.8821	0.5660	0.7809
Firm FE	Yes	Yes	Yes	Yes	No	Yes
Year FE	Yes	Yes	Yes	No	Yes	Yes
CEO FE	No	No	Yes	No	No	No
Industry*year FE	No	No	No	Yes	No	No
Matched Pair FE	No	No	No	No	Yes	No

Table 4: Moderating Analyses

The final CEM matched sample consists of 89 unique death events. All variables are defined in Section 3 of the paper. Standard errors are presented beneath the coefficients within parentheses. *, **, and *** denote two-tailed significance levels at 10%, 5%, and 1% respectively. Standard errors are corrected for heteroscedasticity and are clustered at the firm level.

	Panel A Relational Connection		Panel B Sudden Death	
	(1)		(2)	
	CSR		CSR	
Post-death*Death group	0.55 (1.60)		Post-death*Death group	0.294** (2.44)
Post-death*Death group*CEO Appointee	1.008*** (2.79)		Post-death*Death group*Sudden	0.564** (2.07)
Post-death	-0.256*** (-2.69)		Post-death	-0.203** (-2.45)
Leverage	0.683* (1.93)		Leverage	0.397 (1.41)
Firm Age	0.296 (0.74)		Firm Age	0.363 (1.09)
Diversification	0.034 (0.60)		Diversification	0.012 (0.25)
Board Independence	-0.648 (-0.83)		Board Independence	-0.900 (-1.36)
CEO Duality	0.173* (1.66)		CEO Duality	0.103 (1.27)
CEO tenure	-0.003 (-0.32)		CEO tenure	-0.005 (-0.53)
CEO turnover	-0.207 (-1.54)		CEO turnover	-0.161 (-1.50)
Director leave %	-0.036 (-0.16)		Director leave %	-0.085 (-0.41)
Director join %	-0.636*** (-3.13)		Director join %	-0.488*** (-2.83)
Observations	1,064		Observations	1,254
R-squared	0.7792		R-squared	0.7834
Firm FE	Yes		Firm FE	Yes
Year FE	Yes		Year FE	Yes

Table 5: Alternative Specifications

This table considers alternative matching techniques. All variables are defined in Section 3 of the paper. Standard errors are presented beneath the coefficients within parentheses. *, **, and *** denote two-tailed significance levels at 10%, 5%, and 1% respectively. In Column (1), we report bootstrapped standard errors. In column (2) to (4), standard errors are corrected for heteroscedasticity and are clustered at the firm level.

	Poisson	1:1 with Replacement	1:n without Replacement	Alternative CEM Matching
	(1)	(2)	(3)	(4)
	CSR	CSR	CSR	CSR
Post-death*Death group	0.399** (2.29)	0.339*** (2.67)	0.324** (2.58)	0.226* (1.67)
Post-death	-0.242* (-1.65)	-0.275*** (-2.76)	-0.200** (-2.40)	-0.172* (-1.94)
Leverage	-0.110 (-0.14)	0.354 (1.05)	0.229 (0.81)	0.029 (0.07)
Firm age	0.945** (2.18)	0.222 (0.61)	-0.010 (-0.03)	-1.132* (-1.87)
Diversification	0.047 (0.74)	0.046 (0.87)	-0.075 (-1.16)	0.008 (0.13)
Board independence	-0.878 (-0.84)	-0.195 (-0.29)	-0.031 (-0.06)	-2.008*** (-2.83)
CEO duality	0.361** (2.18)	-0.019 (-0.18)	0.003 (0.03)	-0.151 (-1.29)
CEO tenure	-0.002 (-0.08)	0.005 (0.54)	0.000 (0.01)	-0.015 (-1.62)
CEO turnover	-0.222** (-2.42)	-0.005 (-0.05)	0.045 (0.45)	0.093 (0.62)
Director leave %	-0.044 (-0.08)	-0.285 (-1.16)	-0.327 (-1.27)	-1.165*** (-2.88)
Director join %	-1.266*** (-3.39)	-0.604*** (-3.28)	-0.628*** (-3.91)	-0.812*** (-2.86)
Board size				0.112*** (2.69)
Director age				0.023 (1.47)
Observations	1,254	1,544	1,723	2,810
R-squared	-	0.7371	0.7920	0.8428
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table 6: Alternative Dependent Variables

The final CEM matched sample consists of 89 unique death events. *CSR outside* was operationalized as the mean firm-year-level CSR score at firms where the CEO served as an outside director. *Nonprofit boards* was operationalized as the number of nonprofit board directorships (e.g., charities, schools, and religious organizations) associated with a particular CEO in a given year in the BoardEx database. All other variables are defined in Section 3 of the paper. Standard errors are presented beneath the coefficients within parentheses. *, **, and *** denote two-tailed significance levels at 10%, 5%, and 1% respectively. Coefficients for the control variables were omitted from the table.

	(1) CSR Outside	(2) Nonprofit Boards	(3) CSR Outside	(4) Nonprofit Boards
Post-death*Death group	0.212*** (2.73)	0.081*** (2.67)	0.187*** (2.70)	0.067*** (2.61)
Post-death	-0.080 (-1.37)	-0.056* (-1.91)	-0.053 (-0.97)	-0.047* (-1.84)
Observations	1,254	1,254	1,254	1,254
R-squared	0.7351	0.4557	0.7443	0.4754
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table 7: Ingroup CSR vs. Outgroup CSR

The final CEM matched sample consists of 89 unique death events. CSR-Ingroup is the CSR strengths count for the following three ingroup-focused dimensions: employee relations, diversity, and product quality. CSR-Outgroup is the CSR strengths count for the following three outgroup-focused dimensions: community relations, human rights, and the environment. All other variables are defined in Section 3 of the paper. Standard errors are presented beneath the coefficients within parentheses. *, **, and *** denote two-tailed significance levels at 10%, 5%, and 1% respectively. Coefficients for the control variables were omitted from the table.

	(1) CSR-Outgroup	(2) CSR-Ingroup
Post-death*Death group	0.074 (0.05)	0.235** (0.09)
Post-death	-0.051 (0.04)	-0.127* (0.07)
Observations	1,254	1,254
R-squared	0.5938	0.7692
Firm FE	Yes	Yes
Year FE	Yes	Yes
Test of difference in coefficient on Post*Death across two subsample		
Chi2		3.38
p-value		0.066

Figure 1: Distribution of Corporate Social Responsibility Strengths Scores Pre- and Post-Death

Figure 1 displays histograms for CSR for the treatment and control firms both before and after the death event.

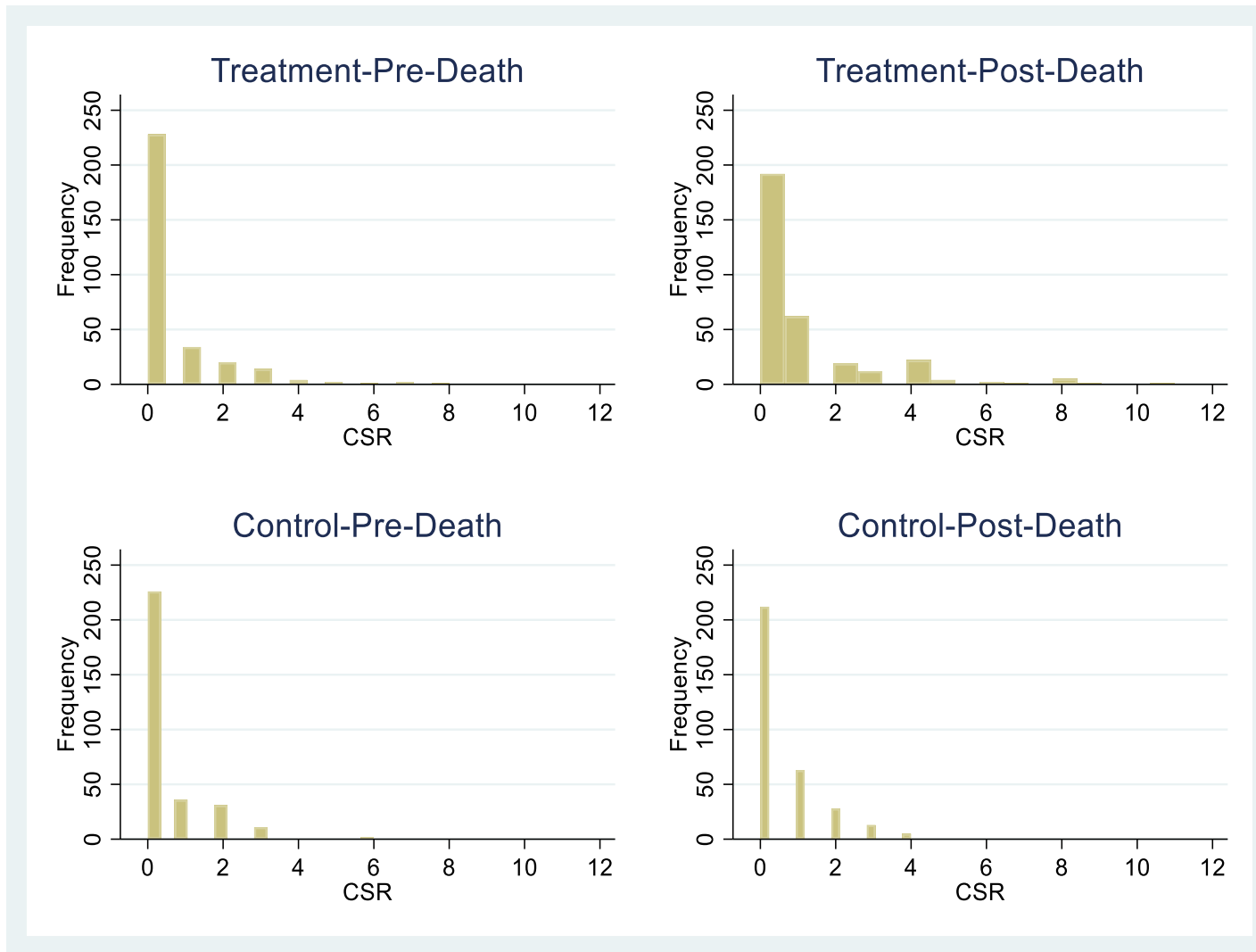
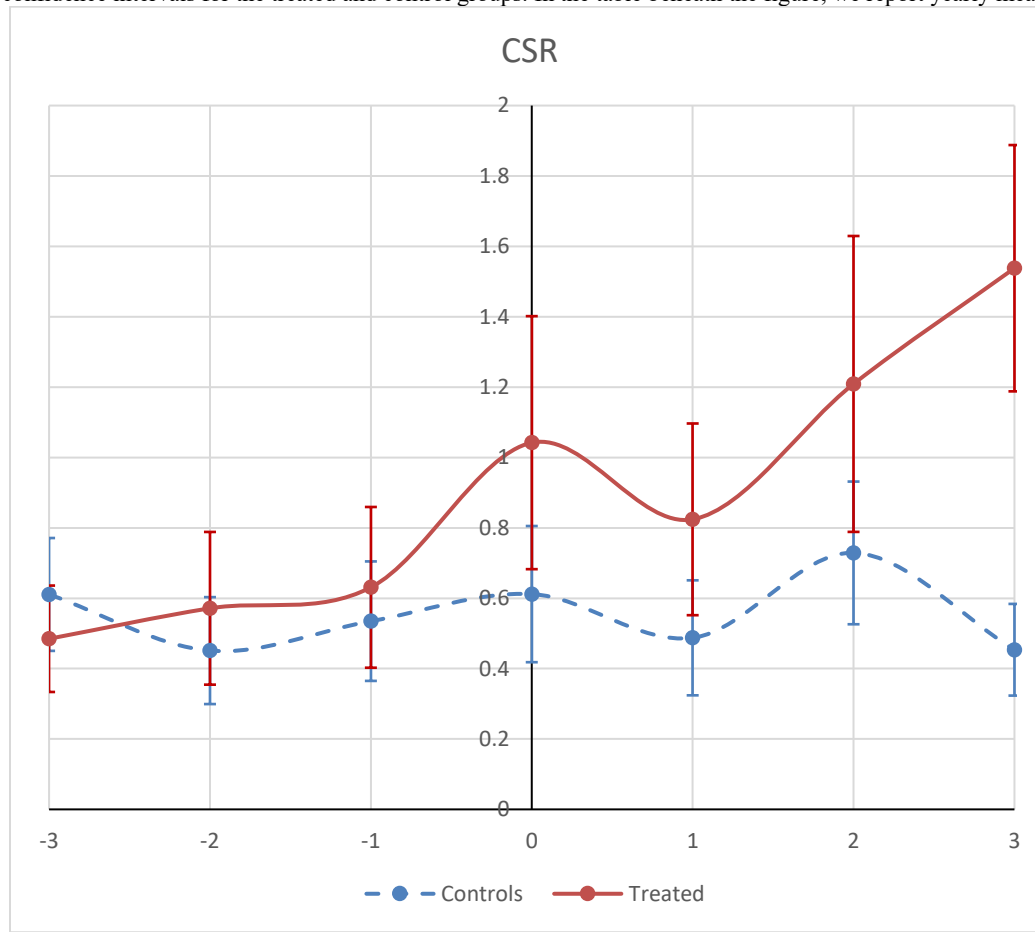


Figure 2: Difference-in-differences Analysis: Parallel Trend Graphs

This figure depicts the average value of CSR across treated and control firms from t-3 to t+3 where t=0 is the year where death occurred. The figure includes whisker plots of 90% confidence intervals for the treated and control groups. In the table beneath the figure, we report yearly mean differences between treated and control groups.



T-test difference in mean between treatment and control firms

Event year	t-3	t-2	t-1	t=death year	t+1	t+2	t+3
t-stat	0.943	-0.746	-0.559	-1.683	-1.691	-1.627	-4.415
p-value	0.347	0.457	0.577	0.094	0.093	0.106	0.000