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CEO EMPATHY, CORPORATE POLICIES, AND FIRM VALUE

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CEO Empathy, Corporate Policies, and Firm Value

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CEO Empathy, Corporate Policies, and Firm Value

CUI Li, The Hong Kong Polytechnic University

Abstract

Building on neuroscience studies, this paper proposes an innovative measurement to proxy for CEO empathy based on their emotional mimicry in TV interviews. I then examine how CEO empathy is associated with corporate policies and firm values. I find that CEO empathy is positively related to workplace safety and firm value. The findings suggest that empathetic CEOs are more likely to make corporate decisions that benefit employee welfare and increase firm value.

Acknowledgement

Drawing inspiration from Albert Camus' philosophy that "to rebel is to exist," this thesis represents my own pursuit of questioning, challenging established norms, and exploring the complexities within an innovative field of study. I would like to express my deepest gratitude to my supervisor, Zhao Jingran, for her exceptional guidance and unwavering support throughout my PhD journey. To those who have quietly been by my side, offering constant support and understanding—your presence has been a steady and calming influence. In moments of uncertainty, you have provided me with strength, reminding me of the importance of perseverance and the value of both the journey and the destination. Your belief in me, even when I could not fully believe in myself, has been an immeasurable gift, and I will forever be grateful. This achievement is as much yours as it is mine, a testament to the power of shared strength and the beauty of believing together in the pursuit of the unknown.

Content

1. Introduction

Empathy, defined as the ability to understand and share others' mental states and emotions (Singer and Fehr 2005), has been identified as a key to the construct of emotional intelligence (Goleman 2000). In this paper, I focus on CEOs who engage in CNBC interviews and pioneer an innovative method to identify their empathy in social interactions. I ask two questions: First, is CEOs' empathy associated with corporate policies? Second, does CEOs' empathy relate to firm performance?

Answering the above questions is important for several reasons and is related to two streams of research.

Firstly, research in social psychology has long argued that empathy, as an integral part of human social cognition, is a natural tendency for humans because it serves a vital role in social communication and understanding (Zaki, Jamil, and Ochsner 2012). Empathy enables individuals to resonate with the emotional states of others, which is essential for cooperation and the formation of social bonds (Decety and Jackson 2006). Previous studies document the social and psychological welfare benefits of empathy, such as improved interpersonal relationships, enhanced cooperation, and the promotion of prosocial behaviors (Decety and Jackson 2006, Eisenberg, Nancy, and Miller 1987). Moreover, empathy-driven behaviors have been linked to the development of robust social networks and the enhancement of job-related skills, as they facilitate cooperation and collaboration among individuals (Flynn, 2003; Rodell, 2013). Despite its well-documented psychological and social welfare benefits, the economic consequences of

empathy, particularly in the corporate context, have been less explored. Secondly, economic theory assumes that managers vary in managerial skills (Murphy and Zabojnik 2004), and a growing literature in accounting and finance suggests that CEO's managerial heterogeneity maps into corporate behavior and performance (e.g., Rotemberg and Saloner 1993; Bertrand and Schoar 2003; Adams, Almeida, and Ferreira 2005). Empathy, recognized as an important keystone in the leadership process, is increasingly regarded as a critical managerial skill in the leadership literature (Baron-Cohen and Wheelwright, 2004; Goleman 1995). However, despite this recognition, there remains a dearth of research exploring the micro-behavioral structures constituting empathy and its economic consequences. In this paper, I focus on the behavioral aspect of CEO empathy conducted in face-to-face interactions since CEOs are pivotal decision-makers within corporations, often engaging in complex and challenging dialogues with diverse stakeholders and making decisions that can significantly impact both the stakeholders and the firm's operations.

Building on neuroscience studies, I use micro-level behavioral measurement, emotional mimicry, of CEOs in CNBC interviews to identify their empathy. My approach relies on neuroscience evidence that higher individual empathy exhibits strong emotional mimicry (Holland, O'Connell, and Dziobek 2020). Emotional mimicry, defined as the unconscious imitation of another's emotional expressions, is posited as a foundational mechanism for fostering social connections and understanding (Hatfield, Carpenter, and Rapson 1994). Different theoretical approaches support the notion that mimicry is perceived as an index of empathy (Walter, 2012). For example,

Lipps' theory (1997) suggests that mimicry serves to initiate an empathic process while subsequent research suggests its role in communicating empathy (Bavelas, Black, Lemery, and Mullett 1986; Blairy, Gilis, Davis and Grahe 1996). In social science literature, the relationship between emotional mimicry and empathy is extensively documented. Hofelich and Preston (2012) categorize their participants into high- and low-empathic groups based on their trait empathy scores. The high-empathic group demonstrated enhanced congruence in facial responses to emotional stimuli, indicative of a more robust empathic resonance. Ponari et al. (2012) document the evidence of impaired emotion recognition when facial mimicry is inhibited, relative to conditions allowing spontaneous mimicry. In sum, inter-individual differences in empathy correlated with emotional mimicry ability. Align with previous literature, I posit that mimicry is indicative of empathy.

To capture CEO empathy, I obtain 1,566 CEO interview videos on the CNBC website during 2013-2017. I apply machine learning algorithms on those videos to construct empathy scores for 500 CEOs in these video interviews. I find that the measure is largely unrelated to firm fundamentals near the interview time, consistent with the view of empathy as an innate individual characteristic. Thus, I treat the empathy measure as a time-invariant manager-fixed effect. I validate the measure of empathy level by examining its association with Glassdoor CEO ratings. After controlling for industry and year fixed affect, I find the CEO with a higher empathy score significantly receives higher ratings on Glassdoor.com, providing some validation that the measure captures perceived empathy from rank-and-file employees.

I then investigate whether a CEO's empathy is associated with company policies and values. CEOs with higher levels of empathy are better at recognizing and understanding the emotions of stakeholders, particularly internal employees. This ability can influence their decision-making process, making them more likely to implement policies that benefit employee welfare, which can, in turn, impact the company's value. To test these predictions, I examined the relationship between CEO empathy and workplace safety. I find a significant negative correlation between the CEO's empathy score and the injury rate, suggesting that more empathetic CEOs are more likely to implement policies that enhance employee welfare. Additionally, I find a significant positive correlation between CEO empathy and the company's Tobin's Q, indicating a positive impact of CEO empathy on company value.

This study contributes to the literature in the following ways. First, this study contributes to the literature emphasizing the role of CEOs' personal traits in explaining company policies and values (Rotemberg and Saloner 1993; Bertrand and Schoar 2003; Adams, Almeida, and Ferreira 2005). While CEOs' soft skills are often cited as key factors in their compensation growth (Deming 2017), the specific components of these skills have been difficult to pinpoint due to data and survey self-bias limitations. This research addresses these limitations by directly observing CEOs' social interactions, specifically examining the relation between empathy, a crucial soft skill, and company firm values. Second, this study contributes to the emerging literature on video analysis in accounting and finance. Existing research has analyzed video disclosure to measure aspects such as emotion (Flam, Green, and Sharp 2020), physical attractiveness

(Blankespoor, Hendricks, and Miller 2017), and trustworthiness (Banker, Ding and Huang, 2023). To my knowledge, this study is the first to use video analysis to infer CEOs' traits. In the age of big data and machine learning, this approach offers a potential solution to the limitations of traditional, indirect methods of measuring personal traits.

2. Literature Review and hypothesis development

2.1 Literature review

2.1.1 Empathy in Leadership Process

Over the past century, empathy has been extensively studied within the fields of social neuroscience, which is early defined as the ability to enter the private perceptual world of the other and become thoroughly at home in it (Rogers 1975). Later work regards empathy as a complex intrapsychic and interpersonal process (Bennett, 1995). The multifaceted nature of empathy, comprising multi-phased processes and systems, has led to a multiplicity of definitions. It would go beyond the scope of this research to give a full account of existing definitions of empathy (for overviews see Batson, Fultz, and Schoenrade 1987; Decety and Jackson, 2004; Decety and Lamm, 2007). In sum, the literature very often refers to the ability to understand others as our capacity for human empathy.

In this paper, I focus on one aspect of empathy defined by Singer and Fehr (2005): the ability to understand and share other's emotions. Economics and game theory assume that individuals are capable of predicting others' actions, an assumption that is often obeyed in reality. Consequently, neuroeconomics theories highlight the relevance of forecasting others' mental states and decision-making. Moreover, this economic

theory paper not only emphasizes the epistemic role of empathy (the ability to understand and share others' emotions) but also acknowledges its motivational and social functions. Aligns with the prosocial view, Goleman (1995) identifies empathy as a key element of emotional intelligence, with its impact in the workplace and management drawing considerable academic attention.

My emphasis on empathy is motivated by a wealth of psychology literature that documents the relationship between empathy, managerial style, and leadership. For example, the effectiveness of a leader is often enhanced by their skill in identifying and responding to the emotions of followers (e.g., George, 2000; Pescosolido, 2000). Indeed, extant research indicates that empathy among leaders in an organization can affect leader member exchange quality (Mahsud, Yukl, Prussia 2010) and such organizational outcomes as job satisfaction and organizational commitment (Skinner, Spurgeon, 2005). This has led some to suggest that empathy may be essential for effective organizational leadership (Stefano, Wasylyshyn 2005). Also, empathy is often considered a pivotal factor that differentiates various leadership styles and managers' characteristics. For example, a key component of transformational leadership involves a leader's capacity to provide personalized attention to their followers (Bass, 1985) and to accurately recognize others' emotions (Rubin, Munz, and Bommer 2005). The factor that distinguishes participatory from autocratic managerial styles is whether leaders empathize with their employees (Rotemberg and Saloner, 1995). Generally, empathy is perceived as being central in effective organizational leadership since empathetic leaders are better at managing social relations (Bass and Riggio, 2006; Stefano,

Wasylyshyn 2005). However, previous literature has primarily measured managers' empathy based on the perceptions of employees or other stakeholders but has overlooked what behaviors initially drove these perceptions. Little is known about the more fine-granular behavioral components of empathy. In the following, I therefore explain why emotional mimicry is regarded as an index of empathy.

2.1.2 Emotional mimicry and empathy

Mimicry is defined as the tendency to imitate or match the nonverbal behaviors of others (Hess, Philippot, and Blairy 1999), including facial expressions (Hess and Fischer 2013), postures (Bavelas, Black, Lemery, and Mullett 1986), gestures (Chartrand and Bargh) or vocal pitch (Karthikeyan and Ramachandra, 2016). This article focuses on the mimicry of facial expressions (or emotional mimicry) since one distinctive physical feature that sets humans apart from other species is the remarkable expressiveness of the human face (Prochazkova and Kret 2017). Human tend to react to the emotional expressions of others through spontaneous imitation, a process recognized as "facial mimicry (or emotional mimicry)". This matching of facial expressions to those of another's conveyed emotion is considered a key mechanism in the facilitation of social interactions (Hess and Fischer 2013).

Previous studies have extensively documented the relationship between mimicry and empathy, providing evidence that mimicry can predict empathetic behavior. From a neuroscience perspective, empathy and emotional mimicry are closely linked processes that rely on similar neural circuits and serve for emotional understanding

(Singer and Tusche 2014). I cannot fully present this richness of literature as it would exceed the scope of this article. However, I must still highlight some key connections proposed by ongoing studies. Although the relationship between mimicry and empathy is mediated by complex neural circuits and mechanisms that are still under investigation, importantly, regardless of the exact mechanisms involved, I rely most on research demonstrating that emotional mimicry can predict empathy tendency and shares similar prosocial functions. Specifically, starting with Freud (1921), mimicry has been proposed as a path toward empathy (Hoffman, 1984) as well as a means to express empathy (Bavelas, Black, Lemery, and Mullett, 1986; Rogers 1975). Figure 1 presents a schematic representation of empathy development to show the path from mimicry to empathy. In figure 1, Mimicry facilitates emotional contagion, where individuals unconsciously imitate others' emotional expressions, leading to shared emotional experiences—a foundational element for developing empathy (Hoffman, 1984). Empirical studies and experimental evidence show that individuals who engage in higher levels of mimicry tend to score higher on empathy measures (Chartrand and Bargh, 1999), and display greater empathic concern Dimberg et al., 2000) and prosocial behaviors (Sonnby-Borgström, 2002). Moreover, the role of mimicry and empathy in social interactions exhibit a convergence of prosocial functions, such as increased rapport (Rogers 1957), mutual linking (Cappella, 1993) or more positive impressions of the person who imitates (Bates, 1975). In sum, different approaches of theories support the notion that mimicry is perceived as an index of empathy.
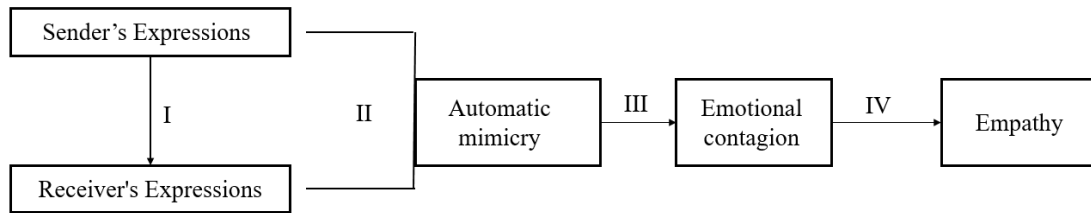
Fig. 1. Schematic Representation of Empathy Development: (I) The sender's emotional state is reflected in her nonverbal motor movements (II) Observing someone's state immediately fires up the observer's neural representations that are active during their own experience of that state (shared neural activation), leading to automatic mimicry. (III) Provoking emotional responses in the observer through physiological and motor feedback (emotional contagion) (IV) This facilitates understanding the sender's mental state.

A noteworthy conjecture forwarded in this literature is that mimicry and empathy are related and both serve for emotional understanding because both are linked to mirror neurons. Figure 2 provides a schematic outline of this literature. Mirror neurons, first discovered in the premotor cortex and inferior parietal lobule of monkeys, are activated both when an individual performs an action and when they observe the same action performed by others. Thus, the mirroring mechanism builds the biological foundation of mimicry, underlying the ability to understand and empathize with the emotional states of others (Rizzolatti and Craighero, 2004; Iacoboni, 2009). Furthermore, the insula, a brain region involved in emotional processing, integrates sensory feedback from mimicry behaviors to generate affective experiences. When individuals mimic the emotional expressions of others, the insula processes this feedback, leading to shared emotional experiences (Decety and Jackson, 2004). In terms of functionality, the extensive neural network that encompasses the regions of mirror neurons, the insula, and the limbic system is likely responsible for generating a form of empathy that operates through simulation (Goldman 2006, Goldman & Sripada 2005). In conclusion,

the interplay between mimicry and empathy through shared neural circuits underscores the foundational role of mimicry in empathic processes. Thus, this account would predict a correlation between the tendency to imitate others and the ability to understand others' mental states (empathy).
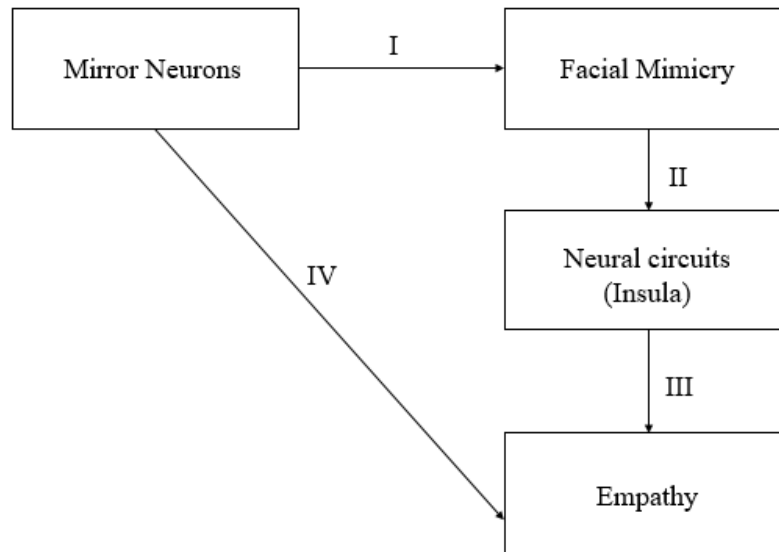
Fig.2. The relation between facial mimicry, mirror neurons and empathy
Underlying studies:
Mechanism [I]: Mirror Neurons ➜ Facial mimicry (Rizzolatti and Craighero, 2004; Iacoboni, 2009)
Mechanism [II]: Facial Mimicry ➜ Neural circuits (Decety and Jackson 2004; Singer and Lamm 2009; Carr, Iacoboni, Dubeau, Mazziotta, and Lenzi 2003)
Mechanism [III]: Neural circuits ➜ Empathy (Wicker, Keysers, Plailly, Royet, Gallese, and Rizzolatti 2003; Sinder, Critchley, and Preuschoff 2009; Walter 2012)
Mechanism [IV]: Mirror Neurons ➜ Empathy (Iacoboni 2009)

2.2 Hypothesis Development

Previous literature suggests that CEOs imprint their personality trait on the firm they manage, thereby influencing the corporate decision-making process by "setting the tone at the top" (Bertrand and Schoar, 2003). A more empathetic CEO has a better understanding of others' emotions and mental states, and will exhibit more empathy in

social interactions with stakeholders, especially internal employees. This enhanced empathy fosters increased prosocial behavior, which can lead to the creation of a distinctive workplace climate from the top down. Specifically, the policies implemented by such companies are more likely to prioritize and enhance stakeholders' welfare, in turn, affect firm value.

2.2.1 CEO empathy and workplace safety

This study examines the association between CEO empathy and company policies through the lens of workplace safety, as it is intrinsically linked to employee well-being (Bradley, Mao, and Zhang 2022). Companies invest a substantial portion of their profits each year to comply with regulatory safety requirements. Previous literature suggests that the budget and policies for safety measures are determined by the upper echelons of the company's decision-making system (Cohn and Wardlaw 2016). Media reports on serious workplace injury incidents have highlighted the significant influence of CEOs on workplace safety. I predict that the CEO's empathy will ensure workplace safety by promoting a culture of safety and timely increasing investments in safety measures. Empathetic CEOs exhibit more prosocial behavior, making them less likely to compromise workplace safety by increasing employee workloads to meet earnings targets (Caskey and Ozel 2017). CEOs with higher empathy are more attuned to others' feelings and better able to recognize changes in employees' tones, subtle pleas for help, or facial expressions (Salovey & Mayer, 1990). As a result, they are more likely to identify early emotional cues related to workplace safety and promptly increase preventive investments in workplace safety. Additionally, CEOs with higher empathy

are better at managing social interactions, leading to increased rapport (Rogers, 1957) and mutual liking (Cappella, 1993). Consequently, they foster an environment where employees feel more social support and less emotional stress, which is crucial for workplace safety (Derdowski and Mathisen 2023). Thus, I state the first hypothesis as:

H1: Workplace injury rates are lower with a more empathetic CEO.

2.2.2 CEO empathy and firm value

Firm value relies on two critical factors: expected future financial performance and firm risk. These factors serve as potential avenues through which empathetic CEOs can exert their influence on the overall value of a company.

On one hand, empathetic CEOs influence firm performance. Their focus on fostering positive relationships, encouraging teamwork, and valuing employee well-being contributes to a cohesive and motivated workforce, eventually forming valuable organizational capital. Prior studies suggest that employee welfare and employee-related CSR activity are positively associated with long-term stock performance, as employees are related to firm innovation and product quality (Edmans 2012). More empathetic CEOs improve employee well-being by implementing more employee-friendly policies and creating a less toxic workplace climate. Thus, I expect CEO empathy improve firm value.

On the other hand, empathetic CEOs are associated with lower firm risk, which can affect firm value through changes in the cost of capital. Inadequate investment in safety can result in significant consequences for the firm, including losses in labor productivity,

legal expenses related to injury or death cases, regulatory fines, and reputational costs (Bradley et al., 2022). Empathetic CEOs are expected to have a positive impact on workplace safety, fostering a secure and supportive work environment, thus helping to prevent direct capital cost and indirect reputation costs. In short, empathetic CEOs induce firm risk that is associated with deterioration in firm performance.

In sum, CEO empathy can influence firms' value through future performance and related risk. However, empirical evidence on the association between firm performance and employee-related CSR activities is mixed (Kitzmueller and Shimshack 2012).

Hence, I state the second hypothesis below:

H2: All else being equal, firm value is not associated with CEOs' empathy.

3. Data and Sample

3.1 Measuring CEO Empathy from CNBC Interview

Due to the subtlety and difficulty of observing facial expressions, social neuroscience literature has investigated the relationship between facial mimicry and empathy using electromyographically (EMG)-recorded activity of facial muscles in experimental settings or by scoring Facial Action Coding System (FACS) in video recordings with facial coding systems. Previous research indicates that individuals with higher empathy traits exhibit stronger facial mimicry abilities, suggesting that facial mimicry can serve as an index for measuring empathy (Hess, 1998). This method offers a potential solution to overcome the self-bias inherent in traditional Empathy Quotient questionnaires.

To identify CEO empathy tendencies, I apply the Facial Action Coding System (FACS) and machine learning algorithms to measure the facial mimicry abilities of CEOs from CNBC CEO interviews. CNBC's CEO interview videos are particularly well-suited for our research setting for several reasons. (1) According to the Context Model of facial mimicry, emotional mimicry is not simply blind replication of expressions but occurs to convey intentions under specific emotional contexts, especially when there is an intention to build rapport. CEO interviews on CNBC are considered a form of information disclosure in their interest, where CEOs share similar emotional intentions to leave a positive impression on investors. (2) The interview videos capture CEO's prompt facial expression response in the communication scenarios, offering opportunities to analyze CEOs' imitation abilities. (3) CNBC hosts and interview formats remain relatively consistent, ensuring a highly comparable measurement.

I estimate CEO empathy based on their emotional mimicry when they answer questions from the host in interviews. For all CEOs who appear on CNBC interviews, I construct an empathy score that is aggregated across all CNBC interview videos. Specifically, I first use large language models (LLM) to match the questions (by the host) and answers (by the CEO) in each video. Next, I use a machine learning approach to separately identify the dynamic emotional scores of the host and CEO in each QA pair. By calculating the similarity between the CEO's emotional responses when answering questions and the host's emotions when triggering the questions, I assess the CEO's empathy score for each QA pair. This approach ensures that the CEO's emotions

are triggered by the host's emotions, as emotional mimicry requires the input of emotional information from a sender. Then I aggregate all QA-pair scores (the aggregate equation is stated in part 3.1.3) in each video to obtain a video-level empathy score. Eventually, I construct an empathy score that is aggregated across all interviews, computed as equal-weighted average Video Empathy based on all interview videos for each CEO. I describe the detailed procedure below.

3.1.1 Video processing

I first obtain CEO televised interview videos from the "CEO Interviews" link on the CNBC TV website menu (https://www.cnbc.com/video-ceointerviews/) from 2013-2017. First, I clip the videos so that only the speaker's face is shown when they are talking, ensuring that the subsequent emotional analysis corresponds to the speaker. Since this research is interview-driven, then I segment the conversations into question-answer pairs to ensure that the CEO's emotional mimicry is triggered by the host's emotions. I employ the following machine learning approach to distinguish between the interviewer and the interviewee in the videos. I use a powerful general-purpose speech recognition model of OpenAI, Whisper (Radford et al., 2023) to get the transcripts in English. Then I use Pyannote.audio (Bredin et al., 2019) to identify the speakers, and divide the transcripts into clips with a silent spacer as a separator. The handled transcripts include the timestamp, speaker, and corresponding text information for each sentence. Then I use ChatGPT's gpt-4-0125-preview to help judge the interviewees. With the development of large language models (LLM), Artificial Intelligence (AI) can help us determine which speaker is the interviewer and which is

the interviewee with high accuracy (Ray, 2023). I categorize each sentence in the "question" or "answer" part. And I remove meaningless parts (like the pleasantries before or during the interview videos) by assigning them to "nothing" to make sure the question-answer-pairs are informative. After integration, I obtain the start and end times of each question-answer-pair for each video, as well as the textual information. Three helpers help to check the effectiveness of the machine and make manual changes if there is a mistake to guarantee accuracy.

3.1.2 Q-A pair Emotion Coding

In this step, I use machine learning algorithms to assign emotional scores to each QA pair. Specifically, I extract 24 frames per second from the video using Python and select one frame from each second. Following methodologies commonly used in facial expression coding (FACS), I use the Python Facial Expression Analysis Toolbox, Py-Feat (Cheong et al., 2023), to score seven basic emotions (angry, disgust, fear, happy, sad, surprise, and neutral) for each frame, with each emotion expressed as a value between 0 and 1. Then, I represent the emotional scores for each question and answer pair by averaging the emotion values of each frame within the corresponding time intervals for the question and answer part. After the above procedure, I obtain the emotion scores for each question and answer pair as follows. For each QA pair *n* of a video *i*, $Score_{i,n,e}^{Q}$ represents the score of the host emotion *e*, $Score_{i,n,e}^{A}$ represents the score of the CEO emotion *e*, where *e* is one of the seven emotion categories.

3.1.3 Constructing the Measure of Empathy Score

In this step, I aggregate the deviation of Question and Answer part emotion scores to construct the measure of empathy. Firstly, I use the absolute value of the difference between $Score_{i,n,e}^{Q}$ and $Score_{i,n,e}^{A}$ to measure the deviation of CEO emotion from hosts. Therefore, each QA pair n of video i has a distance score for each of the seven emotions ($Diff_{i,n}^{happy}$, $Diff_{i,n}^{sad}$, $Diff_{i,n}^{anger}$, $Diff_{i,n}^{disgust}$, $Diff_{i,n}^{fear}$, $Diff_{i,n}^{surprise}$, and $Diff_{i,n}^{neutral}$).

I then aggregate these seven scores into one overall score of CEO empathy using the equation:

$$FEADiff_i =$$

$$\frac{1}{\sqrt{7}}\sqrt{(\frac{\sum_n Diff_{i,f}^{happy}}{\sum n})^2 + (\frac{\sum_n Diff_{i,f}^{sad}}{\sum n})^2 + (\frac{\sum_n Diff_{i,f}^{anger}}{\sum n})^2 + (\frac{\sum_n Diff_{i,f}^{disgust}}{\sum n})^2 + (\frac{\sum_n Diff_{i,f}^{fear}}{\sum n})^2 + (\frac{\sum_n Diff_{i,f}^{surprise}}{\sum n})^2 + + (\frac{\sum_n Diff_{i,f}^{neutral}}{\sum n})^2}$$

$$(1)$$

Where n is the number of pairs in each video. I apply a linear transformation to the aggregate score ($1 - FEADiff_i$) to ensure that the scores align with the direction of empathy. After this procedure, I obtain a Video-level empathy score for each CEO interview. In the last step, I average across all interviews for CEOs who attend more than one interview to compute the aggregate *Empathy* score based on all videos. Thus, I treat *Empathy* as a time-invariant manager fixed effect, since social neuroscience studies suggest that mimicry is considered as a stable behavior tendency.

3.1.4 Validating the Measure of Empathy Score

I validate the empathy measure by examining its association with Glassdoor CEO ratings. The ratings on Glassdoor.com reflect the satisfaction of rank-and-file

employees with their company. One specific rating is for the CEO. Since employees are involved in the company's daily operations and may even have direct interactions with the CEO, their ratings reflect their assessment of the CEO's quality, particularly in terms of soft skills. According to internal research reports from Glassdoor, a significant factor influencing CEO ratings is the culture of the company they lead. CEOs are seen as the ultimate stewards of the company's ecosystem, and employees are more likely to give higher ratings to CEOs who foster a collaborative, inclusive, and friendly work environment. Additionally, previous literature indicates that CEO ratings reflect employees' perceptions of the CEO's morality and fairness (Lee, Ng, Shevlin, and Venkat 2021). Therefore, rank-and-file employee ratings of the CEO can be viewed as one aspect of perceived CEO empathy. Social science research shows that individuals who are better at facial mimicry are more likely to be liked and to increase mutual liking within an organization. Therefore, I expect that CEOs with higher empathy scores will receive higher ratings. In untabulated analyses, I estimate a regression of CEO empathy scores on CEO ratings on Glassdoor.com. After controlling for industry and year fixed affect, I find the CEO with a higher empathy score significantly receives higher ratings on Glassdoor.com. Taken together, the results suggest that more empathetic CEOs are rated higher by internal employees with whom might they interact personally, consistent with the idea that the empathy I measure captures their soft social skills.

3.2 Sample selection and other variables

To measure CEO empathy, I collect a total of 3,480 videos on CNBC website from 2013-2017. For each video, I extract CEO name, company name, date of interview, and

transcript of interview. Then I manually match CEO name and company name with the Execucomp database to obtain executive identifying key. I require that each firm have non-missing CRSP, I/B/E/S, CRSP and Execucomp data. The matched sample includes 1,556 CEO-video observations from 500 unique CEOs. For these 500 CEOs, I construct an empathy score that is aggregated across all interview videos they attend and treat the empathy score as a time-invariant manager fixed effect. For all CEOs appear in CNBC interview, I construct a sample of their employment history from 1992 to 2022 using the Execucomp database and create several additional variables. Specifically, I collect CEO characteristic information from Execucomp on the number of years that they have held their current position (*CEO Tenure*), their gender (*Male*), their age (*CEOAge*), their tendency to hold in-the-money stock options (Overconfidence), whether they were a founder (*Founder*). I collect Firm characteristic information on Assets, Operating Cash Flows (*Prof*), Leverage, market to book ratio (*MTB*), and Tobin's Q (*Q*) from Compustat. I use CRSP data to compute the annual return on the stock (*Fiscal Return*) and the standard deviation of daily returns (*Vol*).

To examine corporate policies on employee welfare, I obtain data on workplace injuries from the Occupational Safety Health Administration (OSHA). From 1996 to 2011, OSHA, under the OSHA Data Initiative, collected detailed records of work-related injuries and illnesses from around 80,000 private sector establishments. This information was utilized by OSHA to determine the incidence rates of injuries and illnesses for each establishment. The dataset included key details such as the establishment's name, address, employee count, hours worked, industry sector, total

case rate (TCR), days away, restricted and transfer (DART) case rate, and days away from work injury and illness (DAFWII) case rate. This study period commences in 2002 due to a significant change in OSHA's data collection methodology, making earlier data structurally different and incompatible with later data (Caskey and Ozel, 2017). I match the establish-level workplace data with firm-level financial data I construct for 500 CEOs who appear on interviews. After excluding observations with insufficient data, my final sample consists of 12,053 establishment-year observations from 132 unique firms during the period 2002-2011. I use the injury rate *Injury/Hour* as main measure of workplace safety, which is calculate as the total number of annual injury cases scaled by total hours in the establishment during the year (Cohn and Wardlaw 2016). I control for establishment size (*Estab Size*), employee working hour (*Hours/Emp*), labor strike dummy (*Strike*), seasonality of working force by including the seasonal worker dummy (*Seasonal*), disaster dummy (*Disaster*) as establishment-level control variables (Caskey and Ozel, 2017). I also include firm characteristic control variables mentioned above.

Finally, I use Tobin's Q (*Q*) to measure firm value. After excluding observations with insufficient data, my final sample for testing H2 consists of 4,472 firm-year observations. More detailed definitions of variables are presented in Appendix B.

Panel A and Panel B of Table 1 table presents descriptive statistics for CEO sample. The sample includes 4,370 CEO-year observations from 1992-2022. I winsorize all continuous variables at the 1 percent and 99 percent levels. The average empathy score for CEO is 0.84. In the sample, the vast majority of CEOs are male, with 11% of them being the founders of their companies. The average size of the companies in the sample

is larger than those in previous studies, consistent with evidence that CEOs who appear

on television tend to be from more prominent and larger companies.

Table 1 Summary Statistics

Panel A: Executive Variables

	P25	Mean	P75	Std. Dev.
Empathy	0.82	0.84	0.87	0.05
CEO Age	52	56.53	61	7.44
CEO Tenure	9	15.12	19	9.57
Male	1	0.95	1	0.21
Overconfidence	0	0.70	1	0.46
Founder	0	0.11	0	0.31

Panel B: Firm-Level Variables

	P25	Mean	P75	Std. Dev.
Q	1.23	2.26	2.55	1.83
Log AT	7.82	9.14	10.41	1.91
Prof	0.05	0.10	0.14	0.09
Leverage	0.13	0.30	0.42	0.25
MTB	1.58	3.86	4.66	37.54
Fiscal Return	-0.11	0.15	0.31	0.55
Vol	0.02	0.020	0.030	0.01

This table presents descriptive statistics for the sample of CEO and firm-level variables over the 1992-2022 sample period. Panel A reports summary statistics for the sample of unique 488 CEOs (4,370 CEO-year) for whom I could estimate Empathy score. Panel B reports summary statistics for the 461 unique firms (4,370 firm-year)

4. Characterizing CEO Empathy

In this section, I provide additional descriptive statistics to better understand the

measure of CEO empathy at interview video level. To ensure that the empathy score

measured in this study is stable and not merely reflecting the characteristics of a single

interview video, I examined what factors at the video level might drive the empathy

score. First, theoretical research in social neuroscience indicates that mimicry is

considered a stable behavior that helps trigger and communicate empathy. Second, in

our sample, the empathy scores calculated for CEOs who participated in multiple interview videos were relatively consistent. This evidence suggests that our video-based measure may be a strong proxy for empathetic tendencies. However, I have not yet ruled out the possibility that the empathy score might capture some omitted fundamental variables related to the interview context. To address this concern, I perform the following regression analysis:

$$Video\ Empathy = \beta_1 Ret_{t-63,t-2} + \beta_2 Ret_{t-1,t+1} + \beta_3 Ret_{t+2,t+63} + \beta_4 MBE +$$
$$\beta_5 Surprise + \beta_6 Loss + \beta_7 CEO\ Char + Qtr + Manager + \varepsilon\ (2)$$

$Video\ Empathy$ is the video-level empathy score based on the winsorized value of the empathy estimates from the procedure described in section 3.1 and Appendix A. I control for the returns in the quarter prior (past two to 63 trading days) to the interview ($Ret_{t-63,t-2}$), the returns around (three-day window) to the interview ($Ret_{t-1,t+1}$), and the returns over the subsequent quarter (subsequent two to 63 trading days) to the interview ($Ret_{t+2,t+63}$). MBE is a meet-or-beat indicator equal to 1 if the firm meets or beats consensus analyst forecast of the most recent quarter. $Surprise$ is the quarterly earnings per share (EPS) of the firm minus consensus analyst forecast (scaled by the beginning stock price). $Loss$ is negative earnings indicator. $CEOChar$ is a vector that includes all the CEO characteristics: *CEO Age, CEO Tenure, Overconfidence, Male,* and *Founder*. All variables are defined in Appendix B. All continuous variables are standardized to have a mean 0 and variance 1. All specifications include Quarter effect.

Table 2 Determinants of Interview Video Empathy

Dependent Variables	Video Empathy		
	(1)	(2)	(3)
$Ret_{t-63,t-2}$	0.030	0.028	0.038
	(1.22)	(1.13)	(0.68)
$Ret_{t-1,t+1}$	-0.021	-0.022	-0.035
	(-0.81)	(-0.82)	(-0.75)
$Ret_{t+2,t+63}$	-0.035	-0.035	-0.012
	(-1.34)	(-1.35)	(-0.20)
MBE	0.019	0.020	0.116
	(0.25)	(0.26)	(0.66)
Surprise	-0.026	-0.024	-0.133*
	(-0.79)	(-0.72)	(-1.68)
Loss	-0.106	-0.095	-0.519
	(-0.86)	(-0.76)	(-1.26)
CEO Tenure		0.022	
		(0.79)	
CEO Age		0.007	
		(0.29)	
Male		0.157	
		(1.19)	
Overconfidence		0.025	
		(0.47)	
Founder		0.055	
		(0.61)	
Quarter FE	Yes	Yes	Yes
Manager FE	No	No	Yes
Observations	1,556	1,556	1,556
R-squared	0.018	0.021	0.653

This table presents the effect of interview, firm, and manager characteristics on Empathy score, measured from CEO interview emotional responses (see Equation (2)). All columns include quarter-fixed effect. Colum (3) adds manager fixed effect. The sample includes CNBC CEO interview video obtained from CNBC website over 2013-2017 period that can be matched with Execucomp, CRSP and I/B/E/S. All continuous variables are standardized to have a mean 0 and variance 1. T-statistics are estimated using robust standard errors. *, **, *** indicates significance at the 10%, 5%, and 1%, levels respectively.

Column (1) of Table 2 reports the results of Equation (1) for the CEO sample before including CEO characteristics variables and manager fixed effect. I find no evidence that firm fundamentals influence Empathy. Other CEO characteristics also could not explain the variance of Empathy tendency as stated in Column (2). Adding manager-fixed effect in column (3) results in R^2 jumping from 2.1% to 65.3%, consistent with

the notion that Empathy score is persistent at the manager level.

5. Empirical Results

5.1 Testing H1-CEO Empathy and Workplace Safety

I begin investigating the effects of empathy on workplace safety using the following panel regression:

$$Injury/Hour_{j,t} = \beta_0 + \beta_1 Empathy_{i,t-1} + \gamma EstablishmentChar_{j,t} +$$

$$\delta FirmChar_{i,t-1} + \omega CEOChar + Industry\ FE + Year\ FE + \varepsilon \qquad (3)$$

Where j denotes establishment, i denotes firm, t denotes year, $Industry\ FE$ denotes industry fixed effect, $Year\ FE$ denotes year fixed effect.

The primary measure of workplace safety is the injury rate ($Injury/Hour$) in the establishment during the fiscal year. $EstablishmentChar$ is a vector of establishment-level variables that includes $Hours/Emp$, $Estab\ Size$, $Strike$, $Shutdown$, $Seasonal, Disaster$. $FirmChar$ is a set of firm characteristic that includes $LogAT$, MTB, $Leverage$, $Prof$, and $Fiscal\ Return$. $CEOChar$ is a vector that includes all the CEO characteristics in specifications 2 of Table 2. All continuous variables are standardized to have a mean 0 and variance 1. All specifications include year-fixed effects and industry-fixed effects.

Table 3 CEO empathy and workplace safety

Dependent variables	Injury/Hour		
	(1)	(2)	(3)
Empathy	-0.041**	-0.085***	-0.097***
	(-2.01)	(-3.13)	(-3.52)
Hours/Emp		-0.000***	-0.000***
		(-2.86)	(-2.86)
Estab Size		-0.040***	-0.039***
		(-3.42)	(-3.35)
Strike		0.421	0.453
		(1.11)	(1.20)
Seasonal		0.158**	0.157*
		(1.98)	(1.96)
Disaster		0.032	0.028
		(0.30)	(0.26)
LogAT		-0.347***	-0.321***
		(-4.76)	(-4.07)
Leverage		0.055*	-0.019
		(1.79)	(-0.50)
MTB		-1.306***	-1.337***
		(-6.58)	(-6.59)
Prof		0.061	-0.035
		(0.92)	(-0.44)
FiscalReturn		-0.005	-0.015
		(-0.13)	(-0.37)
Ln (CEO Age)			-0.069*
			(-1.92)
Overconfidence			0.448***
			(2.66)
Founder			0.479*
			(1.79)
Male			-3.161***
			(-7.29)
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	12,053	12,053	12,053
Adjusted R-squared	0.245	0.279	0.283

This table presents the results of the relation between CEO empathy and workplace safety from 2002-2011. Industry and year fixed effect are included in all regressions. All continuous variables are standardized to have a mean 0 and variance 1. T-statistics are estimated using robust standard errors. *, **, *** indicates significance at the 10%, 5%, and 1%, levels respectively. Variable definitions are documented in Appendix B.

I report the results of this analysis in Table 4 with a set of nested models. In column

(1), I only include the CEO empathy score and fixed effects but do not include any of

the control variables. In column (2), I add establishment- and firm-level controls. Lastly,

I add CEO characteristic control variables in column (3). The estimated coefficients for

the control variables are largely in line with previous literature. Consistent with Caskey

and Ozel (2017), the coefficient of Hours/Emp is significantly negative whereas the coefficient of Seasonal is significantly positive. Notably, the coefficient of CEO overconfidence is negative and significant, consistent with the view that CEO overconfidence has a detrimental effect on workplace safety (Chen, Ofosu, Veeraraghavan, and Zolotoy 2023).

The coefficient of *Empathy* reported in column (3) is significantly positive, suggesting that CEO empathy improves workplace safety. Moreover, the documented economic effect of CEO empathy on the injury rate is not trivial. Specifically, the coefficient of -0.097 implies that for each standard deviation increase in CEO empathy scores, the companies they lead will experience a reduction of 8.85% in the injury rate.

5.2 Testing H2 – CEO Empathy and Firm Value

To test H2, I use all firm-year available data from 1992 to 2022 and estimate the following regression:

$$Q_{j,t} = \beta_0 + \beta_1 Empathy_{i,t-1} + \gamma FirmChar_{i,t-1} + \delta CEOChar +$$

$$Industry\ FE + Year\ FE + \varepsilon \tag{4}$$

Where j denotes firm, t denotes year, $Industry\ FE$ denotes industry fixed effect, $Year\ FE$ denotes year fixed effect.

I control for firm size (*Log AT*), Operating Cash Flows (*Prof*), growth opportunities (*MTB*), leverage (*Leverage*), stock return during the year (Fiscal Return), and return volatility during the year (*Vol*). $CEOChar$ is a vector that includes all the CEO characteristics in specifications 2 of Table 2. All continuous variables are standardized

to have a mean 0 and variance 1. All specifications include year-fixed effects and

industry-fixed effects.

Table 4 CEO Empathy and Firm Value

VARIABLES	Tobin's Q		
	(1)	(2)	(3)
Empathy	0.051**	0.059***	0.054**
	(2.35)	(2.77)	(2.54)
Log AT		-0.354***	-0.328***
		(-7.28)	(-6.85)
Prof		0.377***	0.389***
		(7.13)	(7.38)
Leverage		0.158***	0.162***
		(3.27)	(3.37)
MTB		0.039	0.041
		(0.98)	(1.05)
Fiscal Return		-0.038	-0.044
		(-1.25)	(-1.42)
Vol		0.049	0.037
		(1.07)	(0.78)
Ln (CEO Age)			-0.110***
			(-4.22)
Ln (CEO Tenure)			0.045*
			(1.81)
Overconfidence			0.152***
			(3.07)
Founder			0.114
			(1.09)
Male			0.065
			(0.40)
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	4,370	4,370	4,370
Adjusted R-squared	0.096	0.310	0.325

This table presents the results of the association between CEO empathy and the firm value. The sample period is 1992-2022. In The dependent variable, Q, is the firm's Tobin's Q in year t, and other control variables are detailed described in Appendix B. All continuous variables are standardized to have a mean 0 and variance 1. T-statistics are estimated using robust standard errors. *, **, *** indicates significance at the 10%, 5%, and 1%, levels respectively.

Table 4 presents the results from the estimate of Equation (4). The results suggest

that CEO empathy is positively associated with firm value. The coefficient on the control variables are largely consistent with previous literature.

6. Robustness tests

6.1 Alternative Measures of CEO Empathy

In untabulated analyses, I use alternative methods to measure CEO Empathy score. First, social neuroscience suggests that human mimicry behavior reflects emotional valence rather than discrete emotions. Therefore, when calculating the emotional similarity between CEOs and hosts, I considered only the most salient emotion in each QA pair as the first alternative measure. Second, when aggregating the emotion scores, I used the median instead of the mean as the second alternative measure. Retesting Table 2 to Table 4 with these alternative measures yielded robust results.

6.2 Alternative Measures of Workplace Safety

I also examine three alternative workplace safety measures proposed in previous literature (Cohn and Wardlaw, 2016; Caskey and Ozel, 2017). Specifically, I use the *DAFWInj/Hour* (calculated as the number of cases that resulted in days away from work in an establishment-year divided by total hours worked and then multiplied by 200,000) and *Injury/Emp* (calculated as the number of injuries recorded in an establishment-year divided by the total number of workers) to replace injury rate. The result remains negatively significant.

7. Conclusion

Little is known about the micro-level behaviors that constitute a CEO's empathy in the workplace and how this empathy influences their decision-making and company policies. Building on social neuroscience, this study proposes an innovative method to measure CEO empathy through their emotional mimicry in videos and validates its effectiveness. This research examines the association between CEO empathy and policies related with stakeholders' well-being, particularly internal employees. The results indicate that CEOs with higher empathy improve workplace safety. Additionally, the study finds evidence that CEO empathy may enhance firm value, although this finding should be interpreted cautiously, as it does not necessarily imply a causal relationship.

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Appendix A: Procedure of Constructing CEO Empathy Score

Panel A: Measure the Emotion values of Each QA Pair

$Score_{i,n,e}^{Q}$	Average aggregate each emotion of each frame during the question time interval
$Score_{i,n,e}^{A}$	Average aggregate each emotion of each frame during the answer time interval

Panel B: Measure the Deviation of Emotion values between the CEO and Host of Each QA Pair

Emotion	Equation
Happy	$Diff_{i,n}^{happy} = Abs(Score_{i,n,happy}^{A} - Score_{i,nhappy}^{Q})$
Sad	$Diff_{i,n}^{sad} = Abs(Score_{i,n,sad}^{A} - Score_{i,n,sad}^{Q})$
Angry	$Diff_{i,n}^{angry} = Abs(Score_{i,n,angry}^{A} - Score_{i,n,angry}^{Q})$
Disgust	$Diff_{i,n}^{disgust} = Abs(Score_{i,n,disgust}^{A} - Score_{i,n,disgust}^{Q})$
Fear	$Diff_{i,n}^{fear} = Abs(Score_{i,n,fear}^{A} - Score_{i,n,fear}^{Q})$
Surprise	$Diff_{i,n}^{surprise} = Abs(Score_{i,n,surprise}^{A} - Score_{i,n,surprise}^{Q})$
Neutral	$Diff_{i,n}^{neutral} = Abs(Score_{i,n,neutral}^{A} - Score_{i,n,neutral}^{Q})$

Panel C: Aggregate Deviation of QA Pair in Each video using the following equation to obtain *Video Empathy*

$FEADiff_i$	$\frac{1}{\sqrt{7}}\sqrt{(\frac{\sum_n Diff_{i,f}^{happy}}{\sum n})^2 + (\frac{\sum_n Diff_{i,f}^{sad}}{\sum n})^2 + (\frac{\sum_n Diff_{i,f}^{anger}}{\sum n})^2 + (\frac{\sum_n Diff_{i,f}^{disgust}}{\sum n})^2 + (\frac{\sum_n Diff_{i,f}^{fear}}{\sum n})^2 + (\frac{\sum_n Diff_{i,f}^{surprise}}{\sum n})^2 + +(\frac{\sum_n Diff_{i,f}^{neutral}}{\sum n})^2}$
Video Empathy	$1 - FEADiff_i$ (Linear transformation to the aggregate score to ensure that the scores align with the direction of empathy)

Panel D: Aggregate *Video Empathy* for Each CEO

Procedure	Average aggregate transformed *Video Empathy* of CEOs who attend several interviews

Notes: This Appendix presents the procedure of constructing CEO empathy. Panel A presents the measurement of emotion scores of each QA Pair. For each QA pair *n* of a video *i*, $Score_{i,n,e}^{Q}$ represents the score of the host emotion *e*, $Score_{i,n,e}^{A}$ represents the score of the CEO emotion *e*, where *e* is one of the seven emotion categories. Panel B to D presents the procedure to measure CEO emotional mimicry from hosts, and aggregate them at video and CEO level in order to obtain CEO Empathy score

Appendix B: Variable Definition

Measures of CEO Empathy

- *Video Empathy* = The empathy score of a CEO based on his or her emotional mimicry response during a CNBC interview. For each interview video, the empathy score is computed following the procedure described in Appendix A (Panel A to Panel D).
- *Empathy* = Equal average of *video empathy* by each CEO

Dependent Variables
- Q = (Total assets + market value of equity - book value of equity)/total assets. [Source: Compustat]
- *Injury/Hour* = Total number of annual cases of injuries recorded scaled by total hours worked in the establishment during the year and multiplied by 200,000. [Source: OSHA]

Control Variables
- *Estab Size* = Natural logarithm of the number of employees in an establishment. [Source: OSHA]

- *Hours/Emp* = Total hours worked in an establishment divided by the size of employees in a year. [Source: OSHA]

- *Strike* = An indicator equal to one if an establishment experienced a labor force action in a year, and zero otherwise. [Source: OSHA]

- *Seasonal* = An indicator equal to one if an establishment employed seasonal workers in a given year, and zero otherwise. [Source: OSHA]

- *Disaster* = An indicator equal to one if an establishment observed a natural disaster in a year, and zero otherwise. [Source: OSHA]

- *AT* = total assets [Source: Compustat]

- *Leverage* = Sum of long-term debt and short-term debt scaled by total assets [Source: Compustat]

- *MTB* = Market value of equity divided by book value of equity. [Source: Compustat]

- *Prof* = Annual cash flows from operations scaled by assets as of the end of the prior fiscal year [Source: Compustat].

- *Fiscal Return* = Buy and hold return during the fiscal year [Source: CRSP]

- *Vol* = The standard deviation of daily returns over the past 60 months [Source: CRSP].

- *CEO Tenure* = The number of years the executive has held the same position at the firm [Source: Execucomp]

- *CEO Age* = The age of CEO when he or she holds the position.

(Continued)

- *Male* = An indicator variable equal to 1 if the executive is a male [Source: Execucomp].
- *Founder* = An indicator variable equal to 1 if the year the current executive first became CEO [Source: Execucomp] is within one year of when the firm went public [Source: CRSP].
- *Overconfidence* = An indicator equal to one if the CEO holds options at least twice when there is a stock price increase of 67% or more, starting from the first year this behavior is exhibited by the CEO, and zero otherwise. [Source: ExecuComp; Compustat].

Appendix C: Prompt for QA-pair construct

Prompt for judging interviewees and interviewers:

'The following text contains 2-6 people's conversation in text, the conversation is typically an interview, the people are interviewer, interviewee or other uncertain persons, each sentence will be labled by [00:01:048.38 --> 00:01:051.90] [SPEAKER_00], [00:01:046.61 --> 00:01:046.99] [SPEAKER_01], [00:00:023.99 --> 00:00:028.43][SPEAKER_02] etc, in the first bracket, the number means time, in the second bracket, the label means the speaker, can you help me to distinguish which speaker is interviewee? Please answer like this format: Based on the given text, the speakers can be labeled as follows: [SPEAKER_0x] - Interviewer, [SPEAKER_0x] - Interviewee, [SPEAKER_0x] - Uncertain/Other persons, Note: The labels [SPEAKER_01], [SPEAKER_02], and [SPEAKER_00] are assigned based on the order of appearance in the text. The text is shown as follows: '

Prompt for judging questions or answers:

This is a text message of a Q&A interview with a CEO, {interviewee[0]} is the interviewee, {interviewer[0]} is the interviewer. Each line is a quote from the interviewer/interviewee. For each quote, please judge whether it is a question, answer, or nothing. 'Question' is a question posed by the interviewer to the interviewee, typically asking the CEO's opinion on the company's growth or the market; 'Answer' is the interviewees response based on the interviewer's question, generally a specific opinion on something;'Nothing' is the message unrelated to questions and answers. Each line please returns a value, 'Question', 'Answer' or 'Nothing'. lines of {interviewee} cannot return 'Question', lines of {interviewer} cannot return 'Answer'! There is an example output: 1. Question, 2. Nothing, 3. Answer, 4. Answer, 5. Answer, 6. Answer. Return as many responses as there are lines. Please do not return to other formats"