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Leading safely: The impact of generalist CEOs on workplace safety

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ABSTRACT

Businesses are expected to operate as responsible corporate entities, with employee safety serving as a cornerstone of this responsibility. Executives, as corporate leaders, bear moral and ethical obligations to ensure the well-being of their workforce. Drawing on human capital and upper echelons theories, we examine the influence of executives' transferable skills on workplace safety outcomes. We find that chief executive officers (CEOs) with general managerial human capital significantly contribute to the creation of safer work environments. The relation is more pronounced in firms facing financing constraints or intense market competition. These CEOs improve safety outcomes by making more prudent labor investment decisions, reducing employee workloads, and maintaining high information quality. Overall, our study underscores the pivotal role of CEOs' general managerial human capital in promoting employee well-being and mitigating the potential adverse consequences of occupational hazards on firm performance. JEL classification: J28; M12; M54

1. Introduction

Businesses are expected to act responsibly, with ensuring employee safety being a fundamental aspect of this responsibility. CEOs, as strategic leaders, have both ethical obligations to safeguard their workforce and a strategic role in aligning safety practices with long-term business goals. Prioritizing employee safety yields direct benefits for shareholder returns and firm value (Edmans, 2011; Cohn and Wardlaw, 2016). However, the extent to which CEOs prioritize safety may vary depending on their individual managerial skills and experiences.

Company executives accumulate human capital through their professional experiences, which play a critical role in the success and performance of business operations (Hambrick, 2007; Helfat and Martin, 2015; Nasirov et al., 2021). According to upper echelons theory, the characteristics and experiences of top executives shape their decision-making and organizational outcomes. In today's ever-changing business landscape, there is an increasing demand for generalist executives with broad experiences, as they possess the adaptability to thrive in diverse environments and tackle complex challenges (Custódio et al., 2013). Generalist executives are better equipped to approach problems from multiple perspectives and draw on a wide range of skills to make informed decisions across various functional areas (Custódio et al., 2013). However, how these attributes influence workplace safety remains underexplored. Our research aims to address this gap by investigating the impact of CEOs' general managerial skills on workplace safety outcomes.

Workplace safety has substantial ethical and social implications since it is directly linked to human physical suffering. According to the International Labor Organization (ILO), each year, over 2.9 million fatalities are attributed to work-related diseases and injuries globally, with more than 395 million workers sustaining non-fatal work injuries (International Labor Organization, 2023). Additionally, failing to maintain a safe working environment can have significant financial consequences.[1] The importance of workplace safety has been further magnified by the COVID-19 pandemic, which has underscored health and safety concerns.[2] From a firm's perspective, workplace safety not only reflects how employees are treated but also indicates the effectiveness of the company's operational risk management and corporate ethical culture. This, in turn, can influence employee morale and directly impact operational outcomes.

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[1] According to the European occupational safety and health administration, workplace accidents' economic costs amount to 3.3 % of GDP (EU-OSHA, 2017).

[2] A recent survey conducted by Deloitte reported that 75 % of employees prioritized well-being, underscoring the growing importance of workplace safety. The Deloitte's survey detail is available at: https://www2.deloitte.com/employee-wellness-in-the-corporate-workplace.html (retrieved on August 20, 2024).

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Anecdotal evidence suggests that some generalist CEOs have successfully led companies with outstanding safety records. A notable example is David Cote, who served as CEO of Honeywell from 2002 to 2017. As a generalist with a diverse background, Cote held various prior roles at General Electric, TRW Inc., and AlliedSignal, gaining experience across multiple industries. Under his leadership, Honeywell consistently ranked among the top companies for safety performance, earning recognition from several reputable sources such as the National Safety Council and Occupational Safety and Health Administration (Honeywell, n.d.). However, the relationship between generalist CEOs and workplace safety is not universally positive. For instance, SpaceX, under the leadership of the renowned generalist Elon Musk, has faced scrutiny over its safety record (Taylor, 2023). This contrast highlights the need for further empirical investigation into the impact of generalist CEOs on workplace safety.

In this study, we examine the impact of CEOs' general managerial skills on workplace safety. Our empirical analyses reveal that generalist CEOs are associated with lower injury and illness rates. This effect is both statistically and economically significant. Specifically, firms led by generalist CEOs exhibit 12.72 % lower rates of work-related injuries and illnesses compared to those led by non-generalist executives, based on the sample mean. We employ several methods to address potential endogeneity concerns and ensure the robustness of our findings. Furthermore, the effect is more pronounced for firms facing intense market competition or stricter financial constraints.

To investigate how generalist CEOs improve workplace safety, we examine three potential mechanisms: (i) optimizing labor investments, (ii) alleviating employee workloads, and (iii) maintaining high information quality. Generalist CEOs' diverse skills and experiences enable effective hiring practices, decreasing injuries by reducing the number of inexperienced new hires. Efficient labor investment strategies also alleviate workloads, lowering physical stress and injury rates. Additionally, their broad career experiences help mitigate information asymmetry through extensive social networks (Hu and Liu, 2015). This enhances the flow of information within the organization, allowing managers to better assess the costs and benefits of workplace safety, access valuable data for work planning, and improve investment efficiency (Hope, Wang, Yue, and Zhao, 2022). Collectively, these factors contribute to safer workplaces. Our findings support these channels, highlighting the importance of generalist CEOs' skills in promoting safety.

We further examine the economic implications of workplace safety, particularly the adverse effects of injuries and illnesses on innovation, productivity, and firm value. We find that generalist CEOs mitigate the value-destructive impact of such injuries and incur fewer penalties related to safety and healthcare violations.

Our research contributes to the literature in several ways. First, we extend the literature on managerial human capital and its impact on firm performance, which highlights the significant influence of corporate leaders on firm policies and outcomes (e.g., Bertrand and Schoar, 2003; Cronqvist and Yu, 2017). We empirically demonstrate the importance of executives' general managerial skills in the ethical context of employee well-being. Specifically, our study provides new insights into the generalist versus specialist CEO debate, aligning with Custódio, Ferreira, and Matos (2019), who emphasize the role of generalist CEOs in fostering corporate innovation. Additionally, we identify a pathway through which generalist CEOs enhance innovative outcomes: by reducing employee injuries and illnesses.

Second, we contribute to the growing body of research on the factors influencing workplace safety, specifically to the strand of literature examining CEO-related factors (Chen, Ofosu, Veeraraghavan, and Zolotoy, 2023; Qian, Balaji, Crilly, and Liu, 2024). While prior literature has explored workplace safety from CEOs' financial incentive perspectives (Chircop, Tarsalewska, and Trzeciakiewicz, 2025; Wu, Li, and Yu, 2023) and psychological perspectives (Chen et al., 2023; O'Sullivan, Zolotoy, Veeraraghavan, and Overbeck, 2024), our study makes a significant contribution by examining it from the perspective of CEOs' career experiences and skillsets. In doing so, we extend the understanding of how senior executives impact workplace outcomes and respond to the call by Babalola et al. (2022) for further empirical research on business leadership.

Our findings offer significant practical implications for executive hiring and leadership development. Companies seeking to maintain high standards of workplace safety should prioritize candidates with diverse managerial backgrounds, as their broad skill sets equip them to effectively address complex challenges while fostering a culture of workplace safety. Furthermore, leadership training programs should focus on developing versatile managerial skills, enabling executives to integrate safety considerations into strategic decision-making processes. By investing in leaders with generalist expertise, companies can not only enhance workplace safety but also drive stronger economic performance and achieve more sustainable organizational outcomes.

The remainder of the paper is structured as follows. Section 2 reviews the related theories and develops the hypotheses. Section 3 describes the data, sample selection, and variable construction. Section 4 presents the empirical findings. Section 5 provides a discussion of the results. Finally, Section 6 concludes the paper.

2. Literature and hypothesis

2.1. Workplace safety

Research on workplace safety suggests that improving safety is not only a moral imperative but also carries significant economic costs and benefits. Wu et al. (2023) find that safer workplaces reduce employees' psychological burnout, whereas unsafe workplaces are associated with job dissatisfaction and higher turnover intentions (Danna and Griffin, 1999; McCaughey et al., 2013). While the existing literature has primarily examined the negative financial implications of workplace safety on firm value (Amin et al., 2016), other potential economic consequences remain underexplored. In Section 4.7, we provide further insights into the broader implications of workplace safety, particularly its relationship with innovation output and productivity.

Due to the substantial ramifications, researchers have a keen interest in investigating the factors that impact workplace safety. For instance, Caskey and Ozel (2017) highlight that the pressure to meet earnings expectations can result in increased workloads, leading to a higher incidence of workplace injuries and illnesses. Similarly, Cohn and Wardlaw (2016) emphasize that financing constraints may compromise workplace safety, as maintaining safety often requires substantial financial resources. External monitoring mechanisms, such as analysts, have also been shown to enhance workplace safety, particularly in firms with weak internal governance and low union representation (Bradley et al., 2022). Additionally, Heese et al. (2023) introduce an unconventional factor, suggesting that regulators' mood, as influenced by sunny weather, can affect their assessments of workplace safety violations. Other factors such as local religiosity (Amin et al., 2021), private equity buyouts (Cohn et al., 2021), and higher shareholder litigation threats (Gong et al., 2023) have been identified as contributors to improved worksite safety. However, certain executive equity incentives may encourage safety-related violations (Chircop et al., 2025), while CEOs with inside debt are more financially aligned to prioritize safety (Wu et al., 2023). Furthermore, companies with strong organizational cultures tend to exhibit better safety levels (Haga et al., 2024). Collectively, these studies underscore the multifaceted nature of financial and non-financial factors that shape workplace safety outcomes.

2.2. Theoretical framework

The human capital and upper echelons theories can serve as potential theoretical frameworks for our study. Human capital theory, initially proposed by Becker (1962), posits that individuals' knowledge, skills,

and experiences function as investments akin to physical capital, enhancing their productivity and economic value. Managers possess a distinct combination of human capital essential for navigating complex organizational environments. Research demonstrates that variations in managerial human capital can lead to significant differences in firm performance and outcomes (e.g., Finkelstein, 2009; Gruber, MacMillan, & Thompson, 2013). As Helfat and Martin (2015) emphasize, managerial capabilities, deeply rooted in human capital, are critical in shaping corporate strategies and driving organizational success.

General managerial skills are a crucial component of managerial human capital, encompassing a wide range of competencies that extend beyond firm-specific knowledge. As Campbell, Coff, and Kryscynski (2012) and Lazear (2012) emphasize, the versatility of these skills enables leaders to address diverse challenges effectively. The value of this breadth of expertise is reflected in the market, with generalist CEOs often receiving higher compensation than their specialist counterparts (Custódio et al., 2013). Empirical evidence further supports this, showing a positive association between general managerial ability and corporate performance (Kaplan, Klebanov, & Sorensen, 2012). Additionally, generalist CEOs are more likely to drive innovation (Custódio et al., 2019) and implement significant organizational changes due to their diverse industry perspectives (Kwak, 2002). Therefore, general managerial skills represent a vital component of managerial human capital, contributing to enhanced organizational performance.

Hambrick and Mason (1984) developed the upper echelons theory, which posits that the characteristics and experiences of top executives play a crucial role in shaping organizational outcomes. According to this theory, senior leaders' strategic decisions are influenced by their individual backgrounds, such as career experiences and personal histories, that act as cognitive filters through which they interpret information and make choices (Hambrick, 2007). These attributes ultimately shape organizational strategies and performance, suggesting that organizations are, in many ways, a reflection of their top managers. For instance, companies led by CEOs with early-life disaster experiences tend to exhibit enhanced socially responsible corporate behavior, as these CEOs often undergo psychological growth through trauma, developing a stronger sense of responsibility toward others and a greater desire to maintain strong relationships (O'Sullivan et al., 2021). This aligns with the upper echelons theory, illustrating how personal experiences shape executive decision-making and organizational outcomes.

In line with the upper echelons theory, managerial characteristics play a crucial role in influencing workplace safety (e.g., Haga et al., 2022). The attitudes managers hold toward safety (Rundmo & Hale, 2003) and the safety policies they implement (Sawacha, Naoum, & Fong, 1999) are pivotal in shaping safety outcomes. Furthermore, management's actions regarding safety are identified as a key factor in shaping workers' commitment to a safety culture (Cox & Tomas, 1998). Recent literature suggests that regulatory-focused CEOs contribute to safer workplaces (Qian et al., 2024), and CEOs who are perceived as greedy tend to uphold better workplace safety standards to mitigate potential reputational and financial risks associated with safety failures (O'Sullivan et al., 2024).

Moreover, executives influence the behavior of others within the company, which can solidify a strong safety culture (Tucker, Ogunfowora, & Ehr, 2016). Research indicates that CEOs' structural power and leadership style can significantly enhance the effectiveness of safety policies (Haga et al., 2022). For instance, CEO humility is associated with a leadership style that promotes ethical practices, potentially leading to better safety outcomes (Cortes-Mejia, Cortes, & Herrmann, 2022; Parboteeah & Kapp, 2008). Conversely, traits like CEO overconfidence have been linked to diminished workplace safety due to increased employee workload and a weaker safety culture (Chen et al., 2023).

In the context of our study, the upper echelons theory and human capital theory offer insights into how general managerial skills might influence workplace safety. According to upper echelons theory, the broad range of managerial skills and experiences that generalist CEOs bring from various industries can shape their strategic decisions and leadership style. Human capital theory further reinforces this by highlighting that these diverse skills and experiences represent a form of valuable managerial human capital, enhancing the CEO's ability to address complex challenges. A generalist CEO's comprehensive and versatile approach to management, grounded in their rich human capital, may enable more capable safety management.

2.3. Hypothesis development

Considering the relevant literature on executives' general managerial skills, we expect that generalist CEOs can better safeguard employees for several reasons. First, CEOs with broader career experiences are likely to have better access to external financing (Hu and Liu, 2015). Since financing plays a critical role in improving workplace safety (Cohn and Wardlaw, 2016), these CEOs can leverage their networks to secure funding for safety initiatives. This enables them to invest in advanced safety measures, training programs, and audits, ultimately fostering a safer work environment for employees.

Second, generalist executives' diverse career experiences contribute to improved cognitive flexibility, which allows them to consider a wider range of perspectives when making decisions (Furr et al., 2012). This adaptability is particularly relevant in safety-related contexts where risk assessment is crucial. Overconfidence is a common cognitive bias that can lead to risky decisions (Lee et al., 2023). By being more open to alternative perspectives and adaptable in their decision-making, generalist CEOs are more likely to approach safety-related decisions with caution, carefully assess risks, and consider input from various stakeholders. This reduces the likelihood of overconfident behavior that could compromise workplace safety, as documented by Chen et al. (2023).

Furthermore, effective communication and coordination result in safer workplaces (Gittell, 2002; Pagell et al., 2015), and generalist CEOs are likely to have developed better interpersonal skills through exposure to different professional settings (McCall, 2004). These skills enable them to foster collaboration and open communication, leading to the swift implementation of safety protocols and improved workplace safety standards. Thus, we present the first hypothesis:

H1: CEOs with general managerial skills significantly improve workplace safety levels.

Next, we explore factors that can influence this relationship. Ensuring safe working environments necessitates management's focus and sufficient financial resources. Market competition is a factor that can lead to corporate unethical behavior (Shleifer, 2004). When companies face competition risks, worker productivity is prioritized at the sacrifice of worker well-being (McManus and Schaur, 2016). In addition, Aghion et al., (2013) propose that heightened market competition can raise executives' career concerns, as increased competition reduces the probability of success. Consequently, intense market competition may cause executives to shift their focus away from workplace well-being. However, generalist CEOs have a broader range of career options (Custódio et al., 2019) and may be less affected by market competition compared to non-generalists.

Furthermore, financing constraints are crucial factors impacting safety levels at workplaces (Cohn and Wardlaw, 2016). The easing of financial constraints contributes to higher levels of corporate social responsibility (Attig, 2024), and can potentially enable executives to enhance safety-related investments. As indicated by Hu and Liu (2015), generalist CEOs tend to have superior access to external financing. Consequently, when non-generalist executives encounter limitations in financial resources, generalists are better positioned to secure financing and make essential safety-related investments. Therefore, we develop the second hypothesis:

H2: The relationship between generalist CEOs and workplace safety is moderated by market competition and financing constraints.

3. Data and methodology

3.1. Workplace injury and illness measures

We obtain work-related injuries and illness data from the U.S. Occupational Safety and Health Administration (OSHA). OSHA established an annual OSHA Data Initiative (ODI) program, which collected reportable injury data from workplace establishments in the U.S. from 1996 to 2011.[3] The program was discontinued in 2012 due to federal funding cuts. Additionally, OSHA significantly changed its injury reporting standards in 2002, making data from prior years incomparable. As a result, our sample period covers the years 2002–2011.[4]

OSHA's injury data is collected at the establishment level. An establishment refers to a specific physical operational site of a company, such as a factory or a warehouse. A single company may operate multiple establishments. Each year, OSHA collects injury reports from approximately 80,000 private sector establishments. The data includes relevant information about each establishment, such as its name, location, number of employees, total hours worked, and indicator variables for employee strikes, production shutdowns, seasonal businesses, and natural disasters.

Our main dependent variable of interest, the total case rate (TCR), is calculated as the sum of injury and illness incidents divided by the total hours worked by all employees in a given establishment per year, multiplied by 200,000.[5] Thus, the TCR represents the injury and illness rate per 100 full-time workers. This measure is officially recognized and used by OSHA.

We also consider an alternative measure of workplace injuries, the DART rate, which captures the rate of severe injury cases that result in days away from work, restricted duty, or job transfer.[6] We use injury rates rather than the total number of injury cases as dependent variables because the total number heavily depends on establishment size and may not accurately reflect injury trends (Amin et al., 2021; Bradley et al., 2022). Furthermore, to conduct a comprehensive analysis, we examine workplace injury measures (i.e., TCR and DART) at both the establishment level and the firm level, with firm-level measures representing the average values across all establishments within a firm.

3.2. Generalist CEO measures

The general scope of the CEO's human capital is measured based on the breadth and transferability of their prior work experiences (Custódio et al., 2013). Following Custódio et al. (2013), we construct the General Ability Index (GAI) using five independent variables: (i) the number of positions, (ii) firms, and (iii) industries the CEO has worked in, (iv) a CEO experience dummy, which equals one if the executive has worked as a CEO previously at another company, and (v) a conglomerate experience dummy, which equals one if the CEO has worked for a conglomerate firm. The GAI is calculated using the following equation:

$$GAI_{i,t} = 0.268 \times X1_{i,t} + 0.312 \times X2_{i,t} + 0.309 \times X3_{i,t} + 0.218 \times X4_{i,t} + 0.153 \times X5_{i,t} \quad (1)$$

Each of the five independent variables serves as a proxy for general managerial skills. CEOs with broader experiences develop more general and transferable skills through exposure to different business environments and by dealing with diverse challenges. Custódio et al. (2013) derive the beta weights using principal component analysis and employ the regression scoring coefficients as betas. A higher general ability index (GAI) indicates a higher level of generalist skills.[7] Following Custódio et al. (2013), we classify CEOs with a GAI above the annual median as generalists and the remaining as non-generalists. This GAI median dummy serves as the primary explanatory variable. Unlike the raw GAI index, the median dummy measures generalists on a relative scale.

In addition, we use the industry-adjusted GAI as an alternative explanatory variable. The adjusted value is calculated as the difference between the GAI and the annual industry mean, scaled by the annual industry standard deviation. Since injury levels can vary across industries, the industry-adjusted measure facilitates cross-industry comparisons.

3.3. Firm-level control variables

We first link the establishment name in the OSHA injury data to its parent firm using the linking file provided by Caskey and Ozel (2017).[8] We then merge the financial data from Compustat with the injury dataset based on firm identifier and year. We include relevant control variables following the workplace safety literature to isolate the effect of the primary independent variable. Specifically, as Cohn and Wardlaw (2016) suggest, financing constraints significantly impact workplace safety as financial resources are essential for making safety-related expenditures and investments. We, therefore, include several variables that represent financing constraints, such as firm size, leverage ratio, cash holdings, dividends, and free cash flows. In addition, employees in production involving physical assets may be more susceptible to injuries than those in service industries (e.g., Cohn and Wardlaw, 2016). Thus, asset tangibility and capital expenditures are included as additional control variables. The market-to-book ratio reflects the firm's growth rate, and faster growth may be associated with employee inexperience and worker shortages, potentially increasing injury rates. The asset turnover measures asset utility, which reflects potential employee workload and work pressure, can be associated with workplace safety, and hence serves as another control variable (Amin et al., 2021; Bradley et al., 2022). These variables are scaled by total assets, consistent with the literature (e.g., Liang, Qi, Zhang, and Zhu, 2023). In addition, as Bradley et al. (2022) note, the number of analysts following a firm has a meaningful impact on workplace safety. Therefore, we add the analyst coverage variable into the regressions as a relevant control variable. We source analyst coverage data from the IBES Institutional Brokers' Estimate System database. Overall, our control variables align with prior literature (e.g., Amin et al., 2021; Cohn and Wardlaw, 2016).

3.4. Sample selection and descriptive statistics

Our sample period spans from 2002 to 2011, determined by the availability of OSHA's workplace survey data. The sample comprises companies from the Standard & Poor's 1500 index, which represents over 90 % of the U.S. equity market. To reduce the influence of micro-cap firms, we exclude observations with fiscal year-end closing stock prices below $1, consistent with the approach used by Pham (2020). Following prior literature (e.g., Cohn and Wardlaw, 2016; Caskey and

[3] The data from OSHA are available on the agency's official website: https://www.osha.gov/ords/odi/establishment_search.html.

[4] Several recent studies also employ this dataset from OSHA (e.g., Amin et al., 2021; Bradley et al., 2022; Caskey and Ozel, 2017).

[5] TCR's sum of injuries and illnesses incidents is the sum of columns G, H, I, and J in the OSHA ODI's data spreadsheet. The rationale for multiplying by 200,000 is that an average worker works approximately 40 hours per week and 50 weeks per year, totaling 2000 hours annually.

[6] DART (Days Away, Restricted, or Transferred) is calculated similarly to TCR, except that the injury incidents consist only of columns H and I in the OSHA's data.

[7] Their measure has been intensively verified in several subsequent studies (e.g., Betzer et al., 2020; Chen et al., 2020; Ma et al., 2021).

[8] We thank Bugra Ozel for sharing the data. The establishment name and gvkey linking file is available at: https://sites.google.com/view/bugraozel/data .

Ozel, 2017), we also exclude firms in the utility and financial industries.[9] This exclusion is further justified by the fact that OSHA's injury survey does not cover financial firms, as they are classified as low-hazard workplaces. In line with common practice, we winsorize all continuous variables at the 1 % and 99 % levels to minimize the potential impact of outliers. After applying these filters, the final sample consists of 64,530 establishment-year observations and 4969 firm-year observations with sufficient data on general ability measures.

Table 1 presents the summary statistics. Detailed explanations of the variables are available in Appendix A1.[10] The TCR, which measures the injury rate per 100 full-time employees, has a mean of 7.7 cases at the establishment level. When aggregated to the firm level, the mean TCR for parent firms is 5.6 cases. The DART injury rate, which accounts for severe injuries, has a mean of 5.2 at the establishment level and 3.5 at the firm level. On average, an establishment in our sample has approximately 280 employees and 1927 annual working hours per employee. These statistics align with those reported in prior studies (Amin et al., 2021; Haga, Huhtamäki, and Sundvik, 2022). The GAI index in our sample has a mean value of 0.055 and a standard deviation of 0.892.

Appendix A2 provides industry-level sample information based on the Fama-French 12 industry classification. We observe that the wholesale and retail sector has the highest number of establishment-year observations. The table also reports the TCR injury and illness rate, along with the general ability index for each industry. Notably, the healthcare sector has the highest TCR injury and illness rate while exhibiting a very low CEO general ability index. If we exclude observations from healthcare sector, the baseline regression results remain robust.

[INSERT Table 1 ABOUT HERE]

3.5. Baseline regression model

We employ the following equation in our baseline OLS regressions:

$$Injury\ Rates_{i,t} = \alpha_0 + \beta_1\ Generalist\ CEO\ Measures_{i,t} + \beta\ Control\ Variables_{i,t} + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon_{i,t} \quad (2)$$

In this equation, for firm i and time t, injury rates are measured using either the TCR (Total Case Rate) or the industry-adjusted TCR.

We utilize several measures to capture the presence of generalist CEOs, including (i) the GAI (General Ability Index) median dummy variable, (ii) the raw GAI, and (iii) the industry-adjusted GAI. We control for industry- and year-fixed effects following prior literature (Qian et al., 2024). Industry fixed effects account for potentially omitted and unobserved characteristics specific to each industry, such as industry-specific safety regulations. Year fixed effects capture overall safety trends common across all companies, as we observe a gradual decline in injury levels over time, as illustrated in Fig. 1. These year fixed effects are essential because the gradual change in safety levels is not explicitly modelled by other independent variables in the regressions. In the context of fixed effects, the constant term, α_0, refers to the intercept associated with each group. This intercept provides a baseline value for the regression line when all independent variables are zero. Across all models, we use robust standard errors clustered by establishment-year (for establishment-level models) or firm-year (for firm-level models) to ensure accurate estimates of standard errors.

4. Results

4.1. Univariate analysis

To provide a preliminary overview, we present a visual representation of injury rates over time and across various levels of CEO general ability.Fig. 2 displays injury rates by year, revealing a consistent decline from 2002–2011. Specifically, the TCR injury rate dropped from 8.7 in 2002–3.8 in 2011.

Fig. 2 presents injury rates by GAI quartiles. The GAI quartiles are calculated annually to account for temporal variations in GAI values. Both TCR and DART rates are lower in higher GAI quartiles, suggesting that firms managed by CEOs with higher general ability indexes tend to have lower employee injury rates. The differences in injury rates between the highest and lowest GAI quartiles are statistically significant at the 1 % level. Specifically, the highest GAI quartile has, on average, 0.93 fewer TCR injuries and 0.61 fewer DART injuries per establishment compared to the lowest quartile. Overall, the univariate analysis results provide preliminary evidence of a negative relationship between CEOs' general skills and workplace injury rates.

4.2. Baseline regression results

Table 2 presents the results of the baseline regression equation (2), which estimates the relationship between CEOs' general managerial skills and workplace injury rates. Panels A and B report the results for the establishment-level and firm-level analyses, respectively.[11] We present two sets of models: one includes only the key independent variables of interest without controls (models 1, 3, and 5), and the other includes all control variables (models 2, 4, and 6). Overall, all three measures for generalist CEOs exhibit negative relationships with the injury measures in both the establishment-level and firm-level analyses. The relationship is statistically significant at the 1 % level. While statistical significance indicates the likelihood that the relationship is not due to chance, economic magnitude emphasizes the scale of the impact.

To elaborate on the economic magnitude, Column (2) of Panel A suggests that, on average, establishments led by generalist CEOs are associated with 0.981-unit lower TCR injury rates compared to those led by non-generalist CEOs. This reduction of 0.981 TCR units corresponds to a 12.72 % decrease relative to the sample mean or a 0.148 standard deviation improvement in TCR.[12] The magnitude of this effect is economically meaningful and comparable to the impact of other determinants documented in the literature. For instance, Liang et al. (2023) find that public listing on an exchange reduces establishments' TCR by 1.147 units. Similarly, Gong et al. (2023) demonstrate that safety levels deteriorate following the enactment of Universal Demand (UD) laws, which limit shareholders' ability to sue company executives. Specifically, in states without such laws, TCR is, on average, 0.95 units lower, representing a 10.0 % reduction relative to their sample mean.

Additionally, according to Column (4) of Panel A, a one-unit increase in the general ability index (GAI) is associated with a 0.497-unit decrease in the TCR injury rate. Given that the GAI's standard deviation is 0.892, a one-standard-deviation increase in the GAI leads to approximately 0.443 fewer reported cases per one hundred full-time employees.[13] Since the mean TCR injury rate is 7.713 at the establishment level, this reduction of 0.443 cases corresponds to an

[9] Utility firms have the standard industry classifications (SIC) between 4900 and 4999; financial firms have SIC codes between 6000 and 6999.

[10] OSHA's injury data and establishment information are at the establishment level, while the Compustat financial variables, generalist CEO measures, and the transformed firm injury data are at the firm level. For a comprehensive investigation, we consider the workplace injury measures at both the establishment level and firm level, where the firm-level measures are the average values across establishments in a firm.

[11] Firm-level TCR injury rate is the simple mean of reported establishments' values.

[12] 12.72 % = 0.981/ 7.713 (the sample average); 0.148 = 0.981 / 6.637 (the sample standard deviation).

[13] This number is calculated as follows: 0.443 cases = 0.497 × 0.892 (where 0.892 is the standard deviation of GAI).

Table 1
Summary statistics.

	N	Mean	Std. Dev.	P25	Median	P75
Establishment-level safety variables						
TCR (Establishment)	64,502	7.713	6.637	2.671	6.164	11.01
DART (Establishment)	64,503	5.150	5.112	1.185	3.735	7.606
Firm-level safety variables						
TCR (Firm)	4969	5.649	4.812	1.985	4.435	8.345
DART (Firm)	4969	3.514	3.494	0.882	2.471	5.138
Firm-level generalist variables						
GAI General Ability Index	4969	0.055	0.892	−0.603	−0.106	0.612
GAI Median Dummy	4969	0.491	0.500	0	0	1
GAI Industry Adjusted	4900	0.000	0.970	−0.728	−0.186	0.614
Firm-level control variables						
Ln (Assets)	4843	7.959	1.609	6.796	7.797	8.999
Leverage	4782	0.222	0.161	0.103	0.209	0.315
Tangibility	4842	0.273	0.177	0.134	0.230	0.377
Sales/Assets	4843	1.184	0.686	0.739	1.021	1.441
CAPEX/Assets	4838	0.044	0.033	0.021	0.034	0.057
Market to Book	4213	1.640	0.724	1.125	1.431	1.937
FCF/Assets	4602	0.074	0.071	0.037	0.072	0.117
Cash/Assets	4843	0.112	0.112	0.028	0.073	0.158
Dividends/Assets	4837	0.013	0.0174	0	0.007	0.019
Ln (Analyst)	4903	2.134	0.770	1.609	2.197	2.708
Ln (Delta)	4165	5.512	1.499	4.617	5.557	6.449
Other firm-level variables						
Inv_Eff	4089	−0.107	0.157	−0.120	−0.068	−0.035
Inv_Eff Ind. Adj.	4089	0.183	0.732	0.101	0.370	0.542
Ln (Production per Employee)	4317	5.171	0.751	4.690	5.080	5.533
Ln (Revenue per Employee)	4703	5.611	0.681	5.196	5.552	5.956
High-Low Spread	4306	0.009	0.004	0.006	0.008	0.010
FSD Score	4963	0.026	0.008	0.021	0.026	0.031

This table presents the descriptive statistics. The establishment-level sample has 64,530 observations, while the firm-level sample has 4969 observations. Detailed descriptions of the variables are available in Appendix A1.

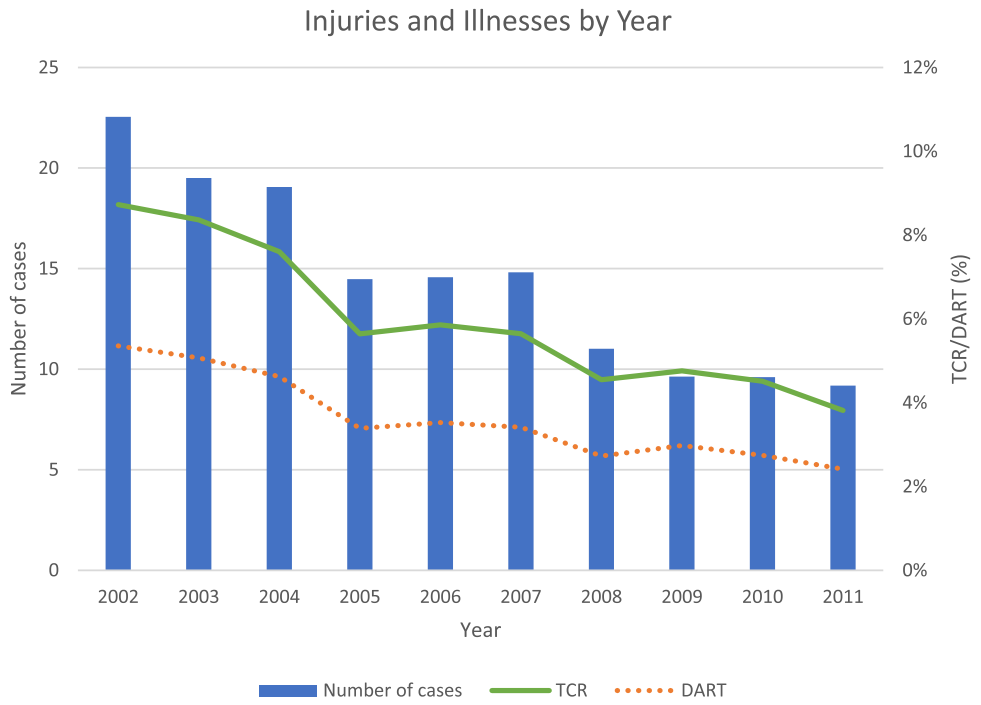

Fig. 1. Workplace injuries and illnesses by year. This figure presents workplace injuries and illnesses by year, during the period from 2002 to 2011. The blue bars represent the average number of reported cases by establishments, the Green solid line illustrates the mean TCR injury rates, while the Orange dotted line displays the mean DART injury rates.

approximately 5.74 % decrease in the injury rate.[14] Prior studies suggest that this effect is both economically and practically significant. To provide further context, Cohn and Wardlaw (2016) discover that a one standard-deviation decrease in leverage is associated with a similar magnitude of change in the injury rate, which is 5.6 % relative to the sample mean. Thus, our documented effect of general managerial skills

[14] This number is calculated as follows: 5.74 % = 0.443 / 7.713 (the sample average).

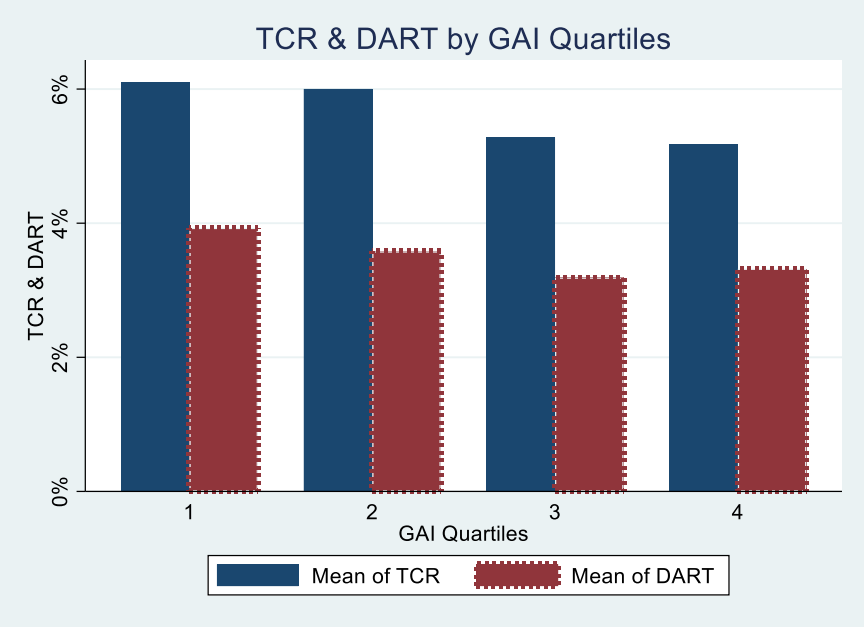

Fig. 2. *t*CR and DART injury rates across GAI-sorted *p*ortfolios.*t*his figure *p*resents *t*he average values of *t*CR and DART injury rates across general ability index (GAI) quartile *p*ortfolios. *t*he GAI quartiles are calculated annually *t*o account for *t*he *t*ime variations of *t*he GAI values. *t*he bar representing *t*CR is on *t*he left side of each quartile, while *t*he DART is on *t*he right. *t*he *t*able following *t*he figure displays *t*he mean values of injury rates for each GAI quartile. Column (5) examines *t*he difference between *t*he lowest and highest GAI quartile, and *t*he resulting *t*-statistics and *p*-values are reported in column (6).

on injury rates is at least equally important as the impact of firm-level attributes reported by Cohn and Wardlaw (2016).

4.3. CEO turnover tests

We acknowledge that our findings are potentially subject to endogeneity concerns, which arise when unobserved factors influence both the independent and dependent variables, potentially biasing the results. For instance, unobserved factors might lead firms to hire CEOs with greater general skills while simultaneously contributing to fewer injuries and illnesses. Alternatively, reverse causality could be at play: firms with safer workplaces may prefer to recruit generalist CEOs.

The cases of CEO turnover warrant thorough examination. While such events may not always be entirely exogenous, as some replacements may be driven by the need to acquire CEOs with broader managerial expertise, these events still offer an opportunity to partially mitigate endogeneity concerns. We examine changes in injury rates following CEO turnover and identify two types of turnovers: (1) non-generalist to generalist turnover and (2) generalist to non-generalist turnover. Furthermore, we utilize propensity score matching (PSM), a statistical method that pairs observations with similar characteristics (control and treatment groups) to ensure better comparability within the sample and to reduce selection bias. Specifically, the matching criteria require that the control observation must occur in the same year as the treatment observation. Then, the propensity score is calculated using a logit model, a type of regression suitable for binary outcomes, based on the following variables: Ln (Assets), *Leverage*, *Tangibility*, *CAPEX*, and the 2-digit SIC code. These control variables were selected because they are significant when regressing the General Ability Index (GAI) on the baseline controls, as reported in Appendix A3.[15] The matching caliper is set at 0.01, ensuring that only closely matched pairs (within a 1 % difference in propensity scores) are compared, consistent with prior research. This process results in 24 and 33 matched pairs, respectively.

We generate an explanatory variable, an interaction term of two dummy variables, to capture the effect of CEO turnovers on workplace safety. Specifically, the first dummy variable, *CEO turnover*, equals one in panel A if the turnover involves a transition from a non-generalist CEO to a generalist CEO, and zero otherwise. In Panel B, this variable equals one if the turnover involves a transition from a generalist to a non-generalist CEO, and zero otherwise. The second dummy variable, *Post*, is defined as the period during or within three years after the turnover occurs. Specifically, *Post* equals one for observations in years t to $t+3$ following the turnover and zero for observations in years t-3 to t-1 prior to the turnover. The interaction term of these two dummy variables captures the combined effect of CEO turnover and the post-turnover period on workplace safety. Specifically, this term reflects whether a CEO turnover (from non-generalist to generalist or vice versa) had an impact on injury rates in the three years following the turnover.

To further address potential endogeneity concerns, we examine the reasons for prior CEO departures. We utilize CEO dismissal reason data from Gentry et al. (2021). Some CEO departures are due to exogenous reasons such as retirement, illness, death, or new career opportunities, while others are related to job performance or regulatory violations. We conduct separate analyses on two samples: one includes the full sample of all CEO turnover types, and the other is restricted to exogenous turnovers unrelated to job performance or violations. By adding the analyses on exogenous turnovers due to CEOs' personal reasons, we mitigate concerns that CEO dismissals may be directly linked to

[15] The regression uses GAI General Ability Index as the dependent variable and includes all the baseline control variables as explanatory variables. The regression has industry and year fixed effects, and robust standard errors clustered at firm-year. There are four significant determinants of GAI, including firm size, leverage ratio, asset tangibility, and capital expenditure. These are significant at 1 % level, while the other variables are insignificant. Please refer to Appendix A3 for details.

Table 2
Generalist CEOs and workplace safety.

Panel A: Establishment-level analyses

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*TCR*	*TCR*	*TCR*	*TCR*	*TCR*	*TCR Ind. Adj.*
GAI Median Dummy	−0.678***	−0.981***				
	(0.116)	(0.061)				
General Ability Index			−0.263***	−0.497***		
			(0.031)	(0.036)		
GAI Industry Adjusted					−0.593***	−0.102***
					(0.031)	(0.005)
Controls:						
Ln (Assets)		0.164***		0.130***	0.149***	0.006
		(0.027)		(0.026)	(0.027)	(0.005)
Leverage		2.176***		1.926***	1.977***	0.336***
		(0.255)		(0.254)	(0.255)	(0.043)
Tangibility		2.076***		2.189***	2.173***	0.170***
		(0.289)		(0.289)	(0.290)	(0.046)
Sales/Assets		−0.234***		−0.311***	−0.328***	−0.046***
		(0.063)		(0.063)	(0.064)	(0.010)
CAPEX/Assets		−1.187		−1.341	−1.840	0.350
		(1.315)		(1.320)	(1.322)	(0.220)
Market to Book		0.649***		0.683***	0.662***	0.118***
		(0.070)		(0.070)	(0.071)	(0.012)
FCF/Assets		−3.038***		−2.979***	−2.666***	−0.665***
		(0.713)		(0.715)	(0.721)	(0.122)
Cash/Assets		6.298***		6.586***	6.797***	0.880***
		(0.467)		(0.470)	(0.473)	(0.082)
Dividends/Assets		−3.300		−3.698*	−1.420	0.179
		(2.052)		(2.052)	(2.062)	(0.359)
Ln (Analyst)		−0.442***		−0.458***	−0.444***	−0.070***
		(0.061)		(0.061)	(0.061)	(0.010)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	64,499	57,206	64,499	57,206	56,952	56,939
Adjusted R-squared	0.230	0.238	0.229	0.237	0.239	0.020

Panel B: Firm-level analyses

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*TCR*	*TCR*	*TCR*	*TCR*	*TCR*	*TCR Ind. Adj.*
GAI Median Dummy	−0.678***	−0.483***				
	(0.116)	(0.131)				
General Ability Index			−0.396***	−0.320***		
			(0.064)	(0.074)		
GAI Industry Adjusted					−0.294***	−0.066***
					(0.067)	(0.015)
Controls:						
Ln (Assets)		−0.085		−0.074	−0.066	−0.021
		(0.061)		(0.062)	(0.062)	(0.014)
Leverage		1.184**		1.204**	1.199**	0.261**
		(0.470)		(0.470)	(0.472)	(0.109)
Tangibility		0.448		0.414	0.424	−0.116
		(0.659)		(0.659)	(0.667)	(0.133)
Sales/Assets		1.012***		1.012***	1.017***	0.210***
		(0.135)		(0.134)	(0.136)	(0.029)
CAPEX/Assets		−3.288		−3.475	−3.219	−0.376
		(3.262)		(3.268)	(3.293)	(0.700)
Market to Book		−0.150		−0.162	−0.169	−0.046
		(0.129)		(0.129)	(0.130)	(0.029)
FCF/Assets		2.211*		2.211*	2.331*	0.572*
		(1.267)		(1.266)	(1.285)	(0.298)
Cash/Assets		−0.699		−0.657	−0.669	−0.420**
		(0.755)		(0.755)	(0.761)	(0.178)
Dividends/Assets		0.780		1.018	0.900	1.118
		(3.948)		(3.953)	(3.962)	(0.908)
Ln (Analyst)		−0.343***		−0.340***	−0.342***	−0.103***
		(0.124)		(0.124)	(0.125)	(0.029)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4964	3948	4964	3948	3892	3892
Adjusted R-squared	0.311	0.356	0.312	0.357	0.354	0.061

This table presents the regression results of TCR injury rates on generalist CEO measures. Panel A reports establishment-level results, while panel B reports firm-level analysis. The dependent variable is the TCR total case rates in Columns (1) to (5), and the industry-adjusted TCR in Column (6). The main explanatory variables of interest are the general ability index (GAI), GAI yearly median dummy, and industry-adjusted GAI. Industry fixed effects based on two-digit SIC and year-fixed effects are included. Robust standard errors clustered by establishment-year (Panel A) and firm-year (Panel B) are reported in parentheses. *, **, and *** indicate statistical significance at 10 %, 5 %, and 1 % levels. Detailed descriptions of the variables are available in Appendix A1.

workplace safety.

Table 3 presents the results. In both panels, Column (1) includes the full sample of all CEO turnover types. Column (2) restricts the sample to turnovers where the departing reasons are unrelated to job performance or violations. The regression model is consistent with the baseline specification, including the same control variables and fixed effects. The statistically significant results in Panel A suggest that workplace safety improves after a generalist replaces a non-generalist CEO. Based on the results reported in Column (1), on average, the TCR injury rate decreases by 1.082 units annually in the three years following the turnover. Conversely, in Panel B, the main explanatory variable has a significantly positive coefficient estimate in the full sample (Column 1). On average, the TCR injury rate increases by 0.85 units annually after a non-generalist replaces a generalist CEO. However, this coefficient becomes statistically insignificant when the sample is restricted to exogenous turnovers. One possible explanation is that the departing generalist CEO has established strong safety policies, leaving limited room for deterioration under the new leadership. Overall, although the turnover test cannot fully eliminate endogeneity concerns, the results support the conclusion that generalist CEOs contribute to reducing workplace injury rates.

Table 3
CEO turnover tests.

	Panel A: Non-generalist to generalist CEOs		Panel B: Generalist to non-generalist CEOs	
	(1) All turnovers	(2) Exogeneous turnovers	(1) All turnovers	(2) Exogeneous turnovers
VARIABLES	*TCR*	*TCR*	*TCR*	*TCR*
CEO Turnover × *Post*	−1.082**	−1.634***	0.850*	0.590
	(0.495)	(0.568)	(0.466)	(0.553)
Controls:				
Ln (Assets)	0.193	−0.694*	0.029	0.481
	(0.352)	(0.395)	(0.270)	(0.339)
Leverage	−2.861	−1.006	2.338	−0.315
	(2.180)	(2.623)	(1.980)	(2.119)
Tangibility	13.054***	6.647**	−6.921***	−3.982
	(3.207)	(3.133)	(2.603)	(3.043)
Sales/Assets	0.396	1.114	1.761***	2.194***
	(0.620)	(0.683)	(0.482)	(0.634)
CAPEX/Assets	−48.259***	−7.174	22.849	8.248
	(14.394)	(14.754)	(16.084)	(16.628)
Market to Book	1.320*	0.519	0.664	0.058
	(0.751)	(0.605)	(0.636)	(0.784)
FCF/Assets	−18.454**	−8.609	0.989	10.183
	(7.107)	(5.945)	(5.304)	(6.174)
Cash/Assets	6.119**	6.013**	−0.172	0.839
	(2.410)	(2.691)	(2.417)	(2.664)
Dividends/ Assets	13.323	60.260**	12.905	17.228
	(23.266)	(23.376)	(23.873)	(27.817)
Ln (Analyst)	0.025	0.455	−0.803*	−1.358**
	(0.547)	(0.628)	(0.479)	(0.546)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	229	164	318	263
Adjusted R-squared	0.467	0.489	0.412	0.451

This table presents the regression results of the CEO turnover tests incorporating propensity score matching at the firm level. Panel A examines turnovers from non-generalist to generalist CEOs, while Panel B focuses on turnovers from generalist to non-generalist CEOs. In both panels, Column (1) includes the full sample of all CEO turnover types. Column (2), however, restricts the sample to turnovers where the departing reasons are unrelated to job performance or regulatory violations, such as retirement, illness, death, or new career opportunities. The Post variable is a dummy variable that equals one if the observation is in the year on or within three years after which the turnover happens, and zero otherwise. The dependent variable is the TCR injury rate. Both panels include control variables used in the baseline regressions. Industry fixed effects based on two-digit SIC and year-fixed effects are included. Robust standard errors clustered by firm-year are reported in parenthesis. *, **, and *** indicate statistical significance at 10 %, 5 %, and 1 % levels. Descriptions of the variables are available in Appendix A1.

4.4. Entropy balancing tests

Entropy balancing is a method designed to address biases related to the functional form of relationships between variables. It achieves covariate balance by reweighting treatment and control observations, ensuring that firms with generalist CEOs and those with non-generalist CEOs are more comparable. This approach reduces the risk of bias arising from differences in firm characteristics and indirectly mitigates certain forms of endogeneity.

In this analysis, the treatment and control groups are distinguished by the generalist CEO median dummy variable. The prespecified balancing conditions include all control variables to ensure a fair comparison between the two groups. This is particularly important because firms with certain characteristics may prefer hiring generalist CEOs, while others may favor non-generalists, leading to systematic differences between the two groups. The entropy balancing technique adjusts the weights of observations, effectively equalizing the mean and standard deviation of the control variables. This ensures that the non-generalist group mirrors the firm characteristics of the generalist group. The balancing efficiency, reported in Appendix A3, demonstrates how well the matching process has equalized firm characteristics between the two groups, confirming that the groups are well-matched for comparison.

Table 4 presents the results of the entropy balancing tests. Consistent with the findings from our baseline regressions, both panels of Table 4 demonstrate that generalist CEOs are associated with lower injury rates at both the establishment and firm level.

4.5. Cross-sectional tests

The effect of generalist CEOs on workplace safety may vary across different contexts. As discussed in hypothesis Section 2.4, we propose two moderating variables that could influence the magnitude of this relationship: product market competition and firm financial constraints.[16]

Our subsamples are constructed based on the sample median of the moderating variables. We first rerun the baseline regressions for each subsample and then utilize seemingly unrelated regression (SUR) and Wald tests to compare the effects of generalist CEOs across the two subsamples. For moderating variables, we employ the widely-used product market fluidity measure as a proxy for product market competition (Hoberg et al., 2014) and the Kaplan and Zingales (KZ) index to capture financing constraints (Lamont et al., 2001). The product market fluidity measure, developed by Hoberg et al. (2014), is based on a company's product text descriptions and competitor actions. This measure's emphasis is on rival actions. If a firm's competitors begin to enter its existing product lines, it translates into tougher competition. Lamont *et al.*'s (2010) KZ index is a combination of five accounting ratios: cash flow to total capital, market to book ratio, debt to capital, dividends to capital, and cash to capital.[17] Firms with greater financing constraints are associated with higher KZ index values.

Table 5 presents the results of the cross-sectional tests. Panel A and B report the results for competition and financing constraints,

[16] McManus and Schaur (2016) and Cohn and Wardlaw (2016) document that market competition and financial constraints induces workplace injuries.

[17] The specifics of KZ index construction formula are available in Appendix A1: Variable definitions.

Table 4
Entropy balancing tests.

	Panel A: Establishment Level	**Panel B:** Firm Level
VARIABLES	*TCR*	*TCR*
GAI Median Dummy	−0.511***	−0.377***
	(0.078)	(0.134)
Controls:		
Ln (Assets)	−0.212***	−0.212***
	(0.040)	(0.065)
Leverage	1.057***	1.543***
	(0.344)	(0.495)
Tangibility	3.640***	0.548
	(0.434)	(0.711)
Sales/Assets	−0.600***	0.929***
	(0.083)	(0.137)
CAPEX/Assets	−3.787**	−3.875
	(1.704)	(3.533)
Market to Book	0.976***	−0.349**
	(0.099)	(0.139)
FCF/Assets	−7.258***	1.928
	(0.924)	(1.455)
Cash/Assets	6.830***	−0.054
	(0.615)	(0.891)
Dividends/Assets	−11.679***	2.028
	(2.812)	(4.226)
Ln (Analyst)	0.170	−0.124
	(0.113)	(0.143)
Industry Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	57,205	3948
R-squared	0.280	0.357

This table presents the regression results of the entropy balancing tests. Panel A reports the results for the establishment level, while Panel B reports the results for firm-level analyses. The treatment and control groups are distinguished by the GAI Median Dummy. The balancing variables are all the control variables. The dependent variable is the TCR injury rate. Both panels include control variables used in the baseline regressions. Industry fixed effects based on two-digit SIC and year-fixed effects are included. Robust standard errors clustered by establishment-year (Panel A) and firm-year (Panel B) are reported in parenthesis. *, **, and *** indicate statistical significance at 10 %, 5 %, and 1 % levels. Descriptions of the variables are available in Appendix A1. The matching efficiency is reported in Appendix A4.

Table 5
Cross-sectional tests.

Panel A: Market Competition		
	Product Market Fluidity	
	(1)	(2)
	Low Competition	High Competition
VARIABLES	*TCR*	*TCR*
General Ability Index	−0.183*	−0.507***
	(0.104)	(0.107)
Baseline Controls	Included	Included
Unit of Analysis	Firm Level	Firm Level
Industry Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	2048	1811
Adjusted R-squared	0.308	0.424
SUR & Wald Test for Differences in Coefficients:		
Chi-squared Statistics	4.89**	
p-value	0.027	
Panel B: Financing Constraint		
	KZ Index	
	(1)	(2)
	Low Financing Constraint	High Financing Constraint
VARIABLES	*TCR*	*TCR*
General Ability Index	−0.264**	−0.571***
	(0.106)	(0.114)
Baseline Controls	Included	Included
Unit of Analysis	Firm Level	Firm Level
Industry Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	1872	1723
Adjusted R-squared	0.373	0.363
SUR & Wald Test for Differences in Coefficients:		
Chi-squared Statistics	4.03**	
p-value	0.045	

This table presents the regression results of the cross-sectional tests. Panel A reports the results associated with the cross-sectional variable of market competition, proxied by the product market fluidity. Panel B analyses the cross-sectional impacts from the financing constraint, proxied by the KZ index. The regression models are the same as the baseline models, except that the sample is split into two halves based on the cross-sectional variable. The dependent variable is the TCR injury rate. The main explanatory variable of interest is the GAI general ability index. The bottom two rows in each panel report the results of the SUR & Wald tests for differences in the coefficients. Both panels include control variables used in the baseline regressions. Industry fixed effects based on two-digit SIC and year-fixed effects are included. Robust standard errors clustered by firm-year are reported in parenthesis. *, **, and *** indicate statistical significance at 10 %, 5 %, and 1 % levels. Detailed descriptions of the variables are available in Appendix A1.

respectively. The findings suggest that the impact of generalist CEOs on workplace safety is more pronounced under conditions of high competition. The coefficients on GAI increase from 0.183 to 0.507 in highly competitive markets. Additionally, when firms face greater financing constraints, the impact of generalist CEOs on workplace safety becomes more pronounced. The coefficients on GAI increase from 0.264 to 0.571 and are statistically significant at the 5 % level or higher.

4.6. Possible channels

In this section, we explore how and why these executives influence safety and discuss various potential mechanisms that facilitate these relationships. We propose three potential mechanisms, which include labor investment efficiency, employee workload, and information quality.

Regarding the first channel, we argue that CEOs with diverse career experiences possess a deeper understanding of the optimal level of labor investment. This insight enables them to mitigate workplace injuries and illnesses, which often stem from worker inexperience. This is particularly critical given that new employees are more prone to injuries due to their limited familiarity with safety risks and hazardous materials in the workplace, as documented by Bell and Grushecky (2006) and Leigh (1986). These studies highlight the importance of labor investment efficiency in enhancing workplace safety.

The second channel, employee workloads, receives support from both anecdotal and empirical evidence. A recent Deloitte survey identifies heavy workloads as the most frequently cited obstacle to workplace well-being (Fisher and Silverglate, 2022). Caskey and Ozel (2017) further demonstrate that increased employee workloads are associated with higher rates of work-related injuries and illnesses. Additionally, Che et al. (2017) provide empirical evidence showing that executives' management styles significantly influence how employee workloads are allocated. Building on these findings, we argue that executives with diverse career experiences are better equipped to understand and implement appropriate workload distributions. This proficiency helps prevent excessive workloads, which have been consistently linked to elevated rates of workplace injuries and illnesses.

The third channel, information quality, draws on two strands of literature. First, research on workplace misconduct by Hope et al. (2022) demonstrates that higher information quality is associated with significantly lower rates of workplace injuries. Second, the corporate management literature, particularly Hu and Liu (2015), suggests that CEOs with broader career experiences can reduce information asymmetry due to their extensive social networks. Building on these insights, we hypothesize that generalist CEOs enhance workplace safety by improving information quality, thereby equipping employees and managers with the necessary information to make informed decisions regarding workplace safety policies. To test these channels, we employ the following

regression equation and present the results in Table 6.

$$Channel\ Measures_{i,t} = \alpha_0 + \beta_1\ Generalist\ CEO\ Measures_{i,t} + \beta\ Control\ Variables_{i,t} + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon_{i,t} \quad (3)$$

The regression model incorporates all control variables from the baseline model, along with an additional control variable, Ln (Delta), which captures the sensitivity of the CEO's wealth to changes in the firm's stock price. This measure reflects the CEO's risk-taking incentives and is a critical determinant of managerial decision-making, as highlighted by Anantharaman and Lee (2014) and Boyallian and Ruiz-Verdu (2018).

The Panel A of Table 6 reports the results for the labor investment efficiency channel. To quantify labor investment efficiency, we adopt a well-established approach from the literature (e.g., Cao and Rees, 2020; Ee et al., 2022; Jung et al., 2014). we measure labor investment efficiency as the deviation of actual net hiring from expected net hiring, where expected net hiring is determined by factors such as sales growth, profitability, and leverage. This measure was originally developed by Jung et al. (2014), where a negative regression coefficient indicates higher efficiency. To facilitate interpretation, we invert their measure by multiplying it by negative one, so that a positive value now corresponds to better labor investment efficiency.

The results in Panel A indicate that generalist CEOs are associated with more efficient labor investments. For instance, based on the coefficient estimate in Column (1), a 0.012-unit improvement in efficiency translates to 11.21 % of the sample mean.[18] Furthermore, the establishment-level analysis corroborates these findings, confirming the robustness of the results.

Panel B of Table 6 reports the results of the employee workload tests. Following Caskey and Ozel (2017), we employ two measures of employee workload: production per employee and sales revenue per employee, where production is defined as the cost of goods sold minus the decrease in inventory. The results show that generalist CEOs are associated with lower employee workloads. Specifically, under the leadership of generalist CEOs, production per employee decreases by 6.15 %, and revenue per employee decreases by 4.7 %. These reductions in workload suggest that employees experience less physical stress, which in turn leads to fewer workplace injuries and illnesses.

To measure information quality, we employ two established metrics: the high-low spread developed by Corwin and Schultz (2012) and the financial statement divergence (FSD) score introduced by Amiram et al. (2015). The high-low spread, derived from daily high and low stock prices, is shown by Corwin and Schultz (2012) to effectively estimate the bid-ask spread and outperform several traditional measures. A higher bid-ask spread indicates greater information asymmetry (Greenstein and Sami, 1994). The FSD score, on the other hand, captures the quality of financial statements (Amiram et al., 2015) and serves as a proxy for the firm's overall information quality.

The results in Panel C of Table 6 indicate that generalist CEOs are associated with lower high-low spreads and lower financial statement divergence (FSD) scores. The coefficient estimates correspond to approximately 2.33 % and 3.79 % of the sample mean, respectively.[19] These findings suggest that generalist CEOs contribute to better information quality. Overall, the regression results demonstrate that generalist CEOs enhance workplace safety through three key mechanisms: more efficient labor investments, milder employee workloads, and improved information quality.

4.7. Economic consequence tests

This section includes two main analyses. First, we explore the impact of workplace safety on innovation, productivity, and firm value. Second,

Table 6
Channel mechanism tests.

	Panel A: Labor Investment Efficiency		Panel B: Employee Workloads	
	(1)	(2)	(1)	(2)
VARIABLES	*Inv_Eff*	*Inv_Eff Ind. Adj.*	Ln (Production per Employee)	Ln (Revenue per Employee)
GAI Median Dummy	0.012**	0.060**	−0.062***	−0.047**
	(0.006)	(0.028)	(0.023)	(0.021)
Controls:				
Ln (Assets)	−0.001	−0.002	0.152***	0.153***
	(0.002)	(0.012)	(0.011)	(0.010)
Leverage	−0.076***	−0.366***	−0.211***	−0.151**
	(0.025)	(0.111)	(0.082)	(0.072)
Tangibility	0.004	−0.061	0.368***	0.099
	(0.029)	(0.147)	(0.122)	(0.110)
Sales/Assets	0.027***	0.095***	0.455***	0.244***
	(0.005)	(0.024)	(0.027)	(0.025)
CAPEX/Assets	0.515***	2.834***	−3.451***	−2.001***
	(0.126)	(0.678)	(0.565)	(0.524)
Market to Book	−0.001	−0.005	−0.089***	−0.016
	(0.005)	(0.024)	(0.024)	(0.022)
FCF/Assets	0.167***	0.877***	−0.843***	0.108
	(0.051)	(0.269)	(0.247)	(0.238)
Cash/Assets	−0.049	−0.247	0.533***	1.008***
	(0.031)	(0.153)	(0.115)	(0.100)
Dividends/Assets	0.530***	2.207**	−2.441***	−1.188*
	(0.176)	(0.891)	(0.748)	(0.615)
Ln (Delta)	0.002	0.015	0.014	0.008
	(0.003)	(0.013)	(0.011)	(0.010)
Unit of Analysis	Firm Level	Firm Level	Firm Level	Firm Level
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	3014	3014	3200	3348
Adjusted R-squared	0.040	0.050	0.412	0.404

Panel C: Information Quality

	(1)	(2)
VARIABLES	*High-Low Spread*	*FSD Score*
GAI Median Dummy	−0.0002*	−0.001**
	(0.000)	(0.000)
Controls:		
Ln (Assets)	−0.001***	−0.001***
	(0.000)	(0.000)
Leverage	0.000	−0.003***
	(0.000)	(0.001)
Tangibility	0.003***	0.002*
	(0.001)	(0.001)
Sales/Assets	0.000***	0.001***
	(0.000)	(0.000)
CAPEX/Assets	−0.012***	−0.006
	(0.003)	(0.007)
Market to Book	0.000**	0.001**
	(0.000)	(0.000)
FCF/Assets	−0.011***	−0.004
	(0.001)	(0.003)
Cash/Assets	0.006***	0.006***
	(0.001)	(0.002)
Dividends/Assets	−0.028***	−0.004
	(0.003)	(0.009)
Ln (Delta)	−0.000***	−0.000
	(0.000)	(0.000)
Unit of Analysis	Firm Level	Firm Level
Industry Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	3109	3447
Adjusted R-squared	0.611	0.059

This table presents the regression results of the channel mechanism tests. Panel A presents the labor investment efficiency channel, measured by *Inv_Eff* and *Indus_Adj_Inv_Eff*. Panel B reports the employee workload channel, measured by Ln (Production per Employee) and Ln (Revenue per Employee). Panel C reports

[18] The sample mean of abnormal net hire is 0.107.

[19] The mean of the high-low spread is 0.0086, while the mean of the FSD score is 0.0264.

the channel of information quality, measured by the high-low spread and FSD financial statement divergence score. The main explanatory variable of interest is the GAI yearly median dummy. Industry fixed effects based on two-digit SIC and year-fixed effects are included. Robust standard errors clustered by firm-year are reported in parenthesis. *, **, and *** indicate statistical significance at 10 %, 5 %, and 1 % levels. Detailed descriptions of the variables are available in Appendix A1.

we investigate whether generalist CEOs mitigate the adverse effects associated with unsafe workplaces.

Workplace health-oriented leadership has been shown to enhance worker performance (Klebe, Felfe, & Klug, 2021). Improved employee treatment and satisfaction are linked to higher morale, increased productivity, and reduced turnover intentions (Harter et al., 2002). Furthermore, employee human capital plays a critical role in shaping a firm's innovation capabilities (Bornay-Barrachina, De la Rosa-Navarro, López-Cabrales, & Valle-Cabrera, 2012). Enhanced employee treatment fosters greater innovation outputs by promoting employee stability and operational efficiency (Chen et al., 2016; Pham et al., 2024).

Table 7 presents the results of these analyses. The main explanatory variable is the TCR injury rate in a given year ($t = 0$). All models include the same control variables and fixed effects as in the baseline models. Given that it often takes several years for efforts to translate into measurable innovation and productivity outcomes (Evanschitzky et al., 2012; Wang and Hagedoorn, 2014), we evaluate the corporate outcomes (i.e., innovation, productivity, and firm value) two and three years after the present year (i.e., $t + 2$ and $t + 3$) to account for potential delayed effects over time.[20]

Panel A presents the results examining the impact of workplace safety on corporate innovation. In line with the innovation literature, the dependent variable of interest is corporate innovation, measured by the number of patents granted in a firm-year (e.g., Custódio et al., 2019; Fang et al., 2014; Griliches, 1990; Seru, 2014). We obtain patent data from Kogan et al. (2017), who compile the complete history of patents filed by firms with the United States Patent and Trademark Office (USPTO).[21] The results in Column (1) indicate that higher levels of work-related injuries and illnesses are associated with reduced innovation success. Specifically, using the number of patents granted two years after the present year (i.e., $t + 2$) as an example, a one-unit increase in the TCR injury rate is associated with a 1.7 % decrease in the number of granted patents.

In Columns (2) and (3), we re-estimate the model from Column (1) for two subsamples: firms led by non-generalist CEOs (Column 2) and firms led by generalist CEOs (Column 3).[22] Consistent with prior analyses, we use Seemingly Unrelated Regression (SUR) and Wald tests to determine whether the coefficient estimates for the two subsamples are statistically different. The results from Columns (2) and (3) suggest that generalist CEOs mitigate the adverse effects of workplace injuries and illnesses on innovation outputs. Specifically, the coefficient on TCR becomes statistically insignificant for firms led by generalist CEOs. This indicates that generalist CEOs can contribute to firms' innovation by maintaining higher levels of employee well-being. The findings in Panel A provide additional insights, as Custódio et al. (2019) demonstrate that CEOs with general skills tend to foster innovation and are associated with a higher number of patents. Our results suggest that maintaining adequate employee treatment, particularly through improved workplace safety, represents another channel through which generalist CEOs

Table 7
Economic consequence tests.

Panel A: Innovation			
	(1) Overall Sample	(2) Subsample Non-generalist CEOs	(3) Subsample Generalist CEOs'
	Dependent Variable: Ln (Patents)$_{t+2}$		
TCR	−0.017***	−0.035***	0.004
	(0.004)	(0.008)	(0.010)
Controls & Fixed Effects	Included	Included	Included
Observations	5959	1902	1933
Adjusted R-squared	0.385	0.449	0.378
SUR & Wald Test for Differences in Coefficients (Column 2 & Column 3):			
Chi-squared Statistics		10.30***	
p-value		0.0013	
	Dependent Variable: Ln (Patents)$_{t+3}$		
TCR	−0.018***	−0.036***	0.003
	(0.004)	(0.008)	(0.010)
Controls & Fixed Effects	Included	Included	Included
Observations	5794	1902	1933
Adjusted R-squared	0.374	0.441	0.368
SUR & Wald Test for Differences in Coefficients (Column 2 & Column 3):			
Chi-squared Statistics		9.79***	
p-value		0.0018	
Panel B: Productivity			
	(1) Overall Sample	(2) Subsample Non-generalist CEOs	(3) Subsample Generalist CEOs'
	Dependent Variable: *Total Factor Productivity*$_{t+2}$		
TCR	−0.003***	−0.005**	−0.000
	(0.001)	(0.002)	(0.002)
Controls & Fixed Effects	Included	Included	Included
Observations	4560	1595	1658
Adjusted R-squared	0.434	0.417	0.469
SUR & Wald Test for Differences in Coefficients (Column 2 & Column 3):			
Chi-squared Statistics		3.55*	
p-value		0.0594	
	Dependent Variable: *Total Factor Productivity*$_{t+3}$		
TCR	−0.005***	−0.005**	0.001
	(0.001)	(0.002)	(0.002)
Controls & Fixed Effects	Included	Included	Included
Observations	4366	1550	1601
Adjusted R-squared	0.402	0.389	0.425
SUR & Wald Test for Differences in Coefficients (Column 2 & Column 3):			
Chi-squared Statistics		5.40**	
p-value		0.0201	
Panel C: Firm value			
	(1) Overall Sample	(2) Subsample Non-generalist CEOs	(3) Subsample Generalist CEOs'
	Dependent Variable: *Tobin's* Q_{t+2}		
TCR	−0.005***	−0.009***	−0.002
	(0.002)	(0.003)	(0.003)
Controls & Fixed Effects	Included	Included	Included
Observations	5126	1711	1640
Adjusted R-squared	0.562	0.581	0.657
SUR & Wald Test for Differences in Coefficients (Column 2 & Column 3):			
Chi-squared Statistics		3.60*	
p-value		0.0577	
	Dependent Variable: *Tobin's* Q_{t+3}		
TCR	−0.007***	−0.010***	0.001
	(0.002)	(0.003)	(0.004)
Controls & Fixed Effects	Included	Included	Included
Observations	4398	1530	1446
Adjusted R-squared	0.455	0.494	0.562
SUR & Wald Test for Differences in Coefficients (Column 2 & Column 3):			
Chi-squared Statistics		5.62**	
p-value		0.0178	

[20] In untabulated results (for brevity), we repeat our analyses for one year following the present year (i.e., $t + 1$) and find our results are qualitatively unchanged.

[21] In untabulated results (for brevity), we use number of citations as an alternative measure of innovation and find our results are robust.

[22] The samples for Columns (2) and (3) are based on the availability of general ability index (GAI) data.

This table presents the regression results of the economic consequence tests. Panels A, B, and C report the results for corporate innovation, productivity, and firm value, respectively. Column (1) reports the regressions on the overall sample. Columns (2) and (3) report the results for subsamples of firms led by non-generalist CEOs and generalist CEOs. SUR & Wald tests are used to test for coefficient differences between Columns (2) and (3). The main explanatory variable of interest is the TCR injury rate. All models include the baseline control variables. Industry fixed effects based on two-digit SIC and year-fixed effects are included in all the regressions. Robust standard errors clustered by firm-year are reported in parenthesis. *, **, and *** indicate statistical significance at 10 %, 5 %, and 1 % levels. Detailed descriptions of the variables are available in Appendix A1.

enhance innovation outputs.

Panel B of Table 7 presents the results of the firm productivity analyses. To measure productivity, we use the firm-level total factor productivity (TFP) measure derived from İmrohoroğlu and Tüzel (2014). Total factor productivity captures overall firm-level efficiency by incorporating both labor and capital inputs in the production process. Similar to Panel A, Column (1) reports the results for the impact of workplace safety on firm productivity, while Columns (2) and (3) re-estimate the model from Column (1) for two subsamples: firms led by non-generalist CEOs (Column 2) and firms led by generalist CEOs (Column 3). The results in Column (1) indicate that workplace injuries and illnesses negatively affect firm productivity. The economic magnitude is significant, with a one-unit increase in the TCR rate leading to a 0.005-unit decrease in the productivity measure three years after the present year (i.e., $t + 3$). This decrease corresponds to approximately 1.74 % of the sample mean.[23] When we examine the subsamples of firms led by non-generalist CEOs (Column 2) and generalist CEOs (Column 3), we consistently find that generalist CEOs mitigate the negative effects of injuries and illnesses on productivity over time.

Panel C of Table 7 presents the results of the firm value analyses. Firm value is proxied by Tobin's Q ratio, a widely used measure in economics and finance literature to capture firm value and growth opportunities (e.g., Custódio et al., 2013; Hu and Liu, 2015). Tobin's Q is defined as the ratio of a firm's market value to the replacement cost of its assets.[24] The results in column (1) align with Cohn and Wardlaw (2016), showing that work-related injuries and illnesses reduce firm value. These results are both statistically and economically significant. Specifically, a one-standard-deviation increase in the TCR rate in the present year ($t = 0$) is associated with a 0.024-unit decrease in firm value two years later (i.e., $t + 2$), equivalent to 1.48 % of the sample mean.[25] Additionally, the difference between the coefficients in Columns (2) and (3) is statistically significant, highlighting the role of generalist CEOs in mitigating the adverse effects of work-related injuries on firm value.

Overall, the findings in Table 7 indicate that workplace injuries and illnesses negatively impact firms' innovation output, productivity, and firm value. However, generalist CEOs play a significant role in mitigating these adverse consequences.

[23] This number is calculated as follows: 1.74 % = -0.005 / −0.288 (where −0.288 is sample mean of total factor productivity in year $t + 3$).

[24] Tobin's Q's calculation method is available in the Appendix A1: Variable definitions.

[25] This number is calculated as follows: 0.024 units = 4.812 (standard deviation of TCR) × 0.005 (coefficient estimate). 1.48 % = 0.024/ 1.620 (where 1.620 is sample mean of Tobin's Q in year $t + 2$).

4.8. Robustness tests

To ensure that our baseline findings are not sensitive to specific measures or model specifications, we conduct additional robustness tests.[26] The results are presented in Table 8. Panel A incorporates additional establishment-level controls. Following Haga et al. (2022) and Hope et al. (2022), these controls include the number of employees to reflect establishment size, hours per employee to capture workload, and dummy variables for employee strikes, facility shutdowns, seasonal business operations, and natural disasters. These controls account for establishment-specific factors that may influence workplace safety outcomes. The results in Panel A demonstrate that the baseline findings remain robust to the inclusion of these additional controls. Moreover, the coefficient estimates for the generalist measures in this panel are very similar to the baseline coefficients reported in Panel A of Table 2.

The Panel B of Table 8 reports the results with additional control variables regarding CEO characteristics. There are five additional controls: CEO's age, tenure, compensation, gender, and duality. These control variables are consistent with the previous research by Wu et al. (2023) and Haga et al. (2022). Age, tenure, and gender may influence CEOs' skills and preferences toward workplace safety. We also control for CEO compensation, as generalist CEOs are often associated with premium pay (Custódio et al., 2013). By including compensation as a control, we can more accurately isolate the effect of CEOs' general skills on workplace safety. Additionally, we incorporate a duality dummy variable, as CEOs holding chairman positions possess structural power that can significantly influence safety outcomes (Haga et al., 2022).

In Columns (1) through (5) of Panel B in Table 8, we sequentially introduce one additional CEO control variable in each column. Column (6) includes all five CEO control variables simultaneously. Across all columns, generalist CEOs are consistently associated with improved workplace safety. Examining the coefficients of the added control variables reveals that, in Column (3), CEO compensation is positively associated with higher workplace safety levels. However, it is important to note that the relationship between compensation and safety is not purely linear or straightforward. For instance, excessively high equity incentives tied to short-term performance metrics might incentivize CEOs to prioritize profits over safety, potentially undermining workplace safety (Chircop et al., 2025). Although the coefficients for the other four CEO characteristics (age, tenure, gender, and duality) are statistically insignificant in this model, their potential relationship with workplace safety warrants careful consideration and further in-depth analysis. For example, future research could explore whether these characteristics interact with other firm-level factors to influence safety outcomes. Overall, the baseline results remain robust to the inclusion of these CEO characteristics as control variables, reinforcing the finding that generalist CEOs are associated with better workplace safety.

To ensure the robustness of our baseline findings, we incorporate additional governance and corporate culture control variables and present the results in Panel C of Table 8. Corporate governance is arguably a crucial factor that influences management behavior and firm policies (Bertrand and Mullainathan, 2003). While the baseline regressions in Table 2 include the analyst coverage variable Ln (Analyst), which captures certain governance aspects, this test further examines the robustness of our results using alternative corporate governance measures. Specifically, we include four widely used governance variables: board independence, board size, institutional share ownership ratio, and the takeover index. First, board independence, measured as the percentage of independent directors on the board, enhances

[26] Baseline tests are performed using ordinary least squares regressions. We follow Caskey and Ozel (2017) and utilize the Poisson model and negative binomial model. These alternative models generate significant results at both establishment and firm levels, ensuring the robustness of the relation between CEOs' general skills and workplace safety levels.

Table 8
Robustness tests.

Panel A: Establishment-level analyses with added establishment-level controls

	(1)	(2)	(3)
VARIABLES	*TCR*	*TCR*	*TCR*
GAI Median Dummy	−0.866***		
	(0.060)		
General Ability Index		−0.454***	
		(0.035)	
GAI Industry Adjusted			−0.535***
			(0.031)
Additional Establishment Controls	Yes	Yes	Yes
Baseline Controls	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	57,206	57,206	56,952
Adjusted R-squared	0.259	0.259	0.260

Panel B: Firm-level analyses with additional CEO controls

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*TCR*	*TCR*	*TCR*	*TCR*	*TCR*	*TCR*
GAI Median Dummy	−0.466***	−0.437***	−0.518***	−0.318**	−0.486***	−0.402**
	(0.134)	(0.139)	(0.152)	(0.133)	(0.134)	(0.171)
Ln (CEO Age)	−0.040					0.003
	(0.566)					(0.713)
Ln (CEO Tenure)		−0.003				−0.076
		(0.076)				(0.098)
Ln (CEO Comp.)			−0.432***			−0.213*
			(0.137)			(0.117)
CEO Gender				0.475		0.594
				(0.459)		(0.512)
CEO Duality					0.062	0.128
					(0.134)	(0.169)
Baseline Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3831	3487	2469	3622	3935	2017
Adjusted R-squared	0.355	0.358	0.347	0.360	0.354	0.354

Panel C: Firm-level analyses with additional corporate governance and culture controls

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*TCR*	*TCR*	*TCR*	*TCR*	*TCR*	*TCR*
GAI Median Dummy	−0.465***	−0.533***	−0.525***	−0.390***	−0.499***	−0.303*
	(0.149)	(0.147)	(0.136)	(0.132)	(0.136)	(0.161)
Board Independence	−1.736***					−1.674**
	(0.638)					(0.716)
Board Size		−1.544***				−0.085
		(0.467)				(0.498)
IOR			0.274			−0.112
			(0.412)			(0.825)
Takeover Index				−0.511		0.708
				(0.647)		(0.557)
Corporate Culture					−0.001	0.009
					(0.042)	(0.049)
Baseline Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3153	3153	3545	3762	3402	2409
Adjusted R-squared	0.360	0.360	0.351	0.353	0.365	0.366

Panel D: Establishment-level analyses with alternative dependent variables

	(1)	(2)	(3)	(4)
VARIABLES	*DART*	*DART*	*Safety Index*	*Safety Index*
GAI Median Dummy	−0.665***		0.070***	
	(0.046)		(0.006)	
General Ability Index		−0.360***		0.013***
		(0.027)		(0.003)
Baseline Controls	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	57,207	57,207	51,273	51,273
Adjusted R-squared	0.253	0.253	0.293	0.291

This table presents the regression results of the robustness tests. Panel A reports establishment-level regression results with additional control variables. Panel B reports firm-level regression results with additional CEO characteristics controls. Panel C includes additional corporate governance and culture control variables. Panel D reports the establishment-level results using alternative dependent variables, which are DART and the Safety Index. The main explanatory variables of interest are GAI yearly median dummy and GAI general ability index. The coefficients on the baseline control variables are not reported for brevity. Industry fixed effects based on two-

digit SIC and year-fixed effects are included. Robust standard errors clustered by establishment-year or firm-year are reported in parenthesis in all four panels. *, **, and *** indicate statistical significance at 10 %, 5 %, and 1 % levels. Detailed descriptions of the variables are available in Appendix A1.

monitoring effectiveness (Pan et al., 2018). Second, board size is a key governance factor with implications for corporate performance (Cheng, 2008). Third, institutional shareholders play a vital monitoring role (Kempf et al., 2017) and significantly influence corporate social responsibility practices (Chen et al., 2020). Finally, the takeover index, developed by Cain, McKeon, and Solomon (2017), captures external governance pressures.

Additionally, firms with strong corporate cultures are more likely to exhibit higher levels of workplace safety (Haga et al., 2024). If such firms also exhibit a preference for hiring generalist CEOs, potential endogeneity concerns may arise. To mitigate this, we control for corporate culture using a textual analysis-based measure developed by Li et al. (2021) and employed by Haga et al. (2024). This measure, derived from the textual analysis of earnings conference call transcripts, captures cultural values such as integrity and respect. We include this corporate culture control variable in Column (5) of Panel C.

The results in Panel C indicate that the baseline findings remain robust after incorporating these additional governance and culture controls. Columns (1) and (2) suggest that board independence and board size are significantly associated with higher workplace safety levels, highlighting the board's critical role in maintaining safety. To our knowledge, the literature lacks a thorough examination of how boards influence safety, presenting a potential avenue for future research. Column (5) demonstrates that generalist CEOs are positively associated with higher workplace safety levels, even after controlling for corporate culture. Overall, these findings reinforce the robustness of our baseline results.

We employ an alternative workplace safety measure to test for robustness, and the results are reported in Panel D of Table 8. The regression model in this panel is consistent with the baseline model. The results reveal a consistent relationship between generalist CEOs and various workplace safety measures. Specifically, the DART (Days Away, Restricted, or Transferred) injury rate, which typically measures the rate of severe injuries and illnesses, shows a significant association with generalist CEOs. Column (1) of Panel D indicates that establishments led by generalist CEOs, on average, exhibit 0.665 lower DART rates compared to those led by non-generalists. This difference translates to 12.91 % of the sample mean, highlighting the substantive impact of generalist CEOs on workplace safety outcomes.

Following the approach of Bradley et al. (2022), the *Safety Index* in Panel D represents a qualitative measure of a firm's employee well-being, derived from ratings provided by the Kinder, Lydenberg, and Domini (KLD) database. The *Safety Index* is calculated as the difference between the KLD "Health and Safety Strength" indicator variable and the KLD "Health and Safety Concern" indicator variable. As a result, the index can take on three possible values: 1 (indicating positive recognition of employee health and safety), −1 (indicating concerns about health and safety), and 0 (indicating neutral ratings). This index serves as a proxy for workplace safety. While the original KLD ratings are at the firm level, we assign these firm-level values to individual establishments by identifying the establishments owned by specific firms. In summary, the establishment-level tests using alternative dependent variables yield results that are consistent with our baseline findings.

We also conduct first-difference tests to further validate the baseline findings. This approach examines changes in variables over time, rather than their levels at a single point in time, effectively removing firm-level variations and ensuring uncorrelated residuals (Pham, Merkoulova, and Veld, 2023). The results, presented in Appendix A5, are consistent with our baseline findings, reinforcing the robustness of our conclusions.

Additionally, we examine the effect of generalist CEOs on the standard deviation of establishments' TCR injury rates within a firm-year. The results, reported in Appendix A6, show significantly negative coefficients, suggesting that generalist CEOs achieve more consistent management of workplace safety across a firm's establishments.

4.9. Alternative sample tests

We conduct additional tests using an alternative sample. Specifically, we utilize corporate safety and healthcare-related offense data from Good Jobs First's Violation Tracker dataset.[27] This dataset provides comprehensive coverage of workplace violations and penalties for U.S. business establishments. Our alternative sample spans the period from 2000 to 2016, as the Violation Tracker data begins in 2000 and our CEO general ability index data ends in 2016. To construct the dependent variable, we aggregate the penalty amounts at the establishment level to create a firm-year measure. This measure is then scaled by the number of employees and transformed using the natural logarithm. Scaling by the number of employees is necessary, as firms with larger workforces may have a higher likelihood of safety and healthcare-related violations. This adjustment ensures that our analysis accounts for differences in firm size.

We report the results of the alternative sample tests in Table 9. The

Table 9
Alternative sample tests.

VARIABLES	(1) Ln (Penalty Amount/ Employees)	(2) Ln (Penalty Amount/ Employees)
GAI Median Dummy	−0.147**	
	(0.068)	
General Ability Index		−0.092**
		(0.039)
Ln (Assets)	−0.327***	−0.325***
	(0.038)	(0.039)
Leverage	−0.370	−0.374
	(0.246)	(0.247)
Tangibility	0.562**	0.560**
	(0.284)	(0.283)
Sales/Assets	−0.371***	−0.376***
	(0.066)	(0.066)
CAPEX/Assets	−3.046***	−3.129***
	(1.040)	(1.042)
Market to Book	0.045	0.045
	(0.063)	(0.063)
FCF/Assets	0.482	0.494
	(0.617)	(0.618)
Cash/Assets	3.110***	3.144***
	(0.613)	(0.614)
Dividends/Assets	−3.337	−3.189
	(2.350)	(2.352)
Ln (Analyst)	−0.164**	−0.169**
	(0.067)	(0.067)
Industry Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	3015	3015
Adjusted R-squared	0.370	0.370

This table presents the regression results of the alternative sample tests. We acquire the corporate safety and healthcare related violation data from Good Jobs First's Violation Tracker dataset. The dependent variable is the natural log of penalty amount scaled by the number of employees. Industry fixed effects based on two-digit SIC and year-fixed effects are included. Robust standard errors clustered by firm-year are reported in parenthesis. *, **, and *** indicate statistical significance at 10 %, 5 %, and 1 % levels. Detailed descriptions of the variables are available in Appendix A1.

[27] Violation Tracker is produced by the Corporate Research Project of Good Jobs First. The official webpage is https://violationtracker.goodjobsfirst.org/.

regression follows the baseline model specifications, and the results are statistically significant at the 5 % level, indicating that generalist CEOs are associated with fewer safety and healthcare-related penalties. In terms of economic magnitude, the coefficient in the first column suggests that generalist CEOs are linked to a 14.7 % reduction in violation penalty amounts per employee. Furthermore, the result in the second column shows that a one standard deviation increase in the CEO general ability index corresponds to an 8.45 % decrease in penalties.[28] These findings provide additional evidence that CEOs with general skills are more effective in safeguarding workers.

5. Discussion

Anecdotal evidence suggests that while executives recognize the importance of employee well-being and safety, they may not fully understand the needs of their workers or demonstrate genuine concern for their overall welfare. A recent survey conducted by Deloitte and Workplace Intelligence highlights this issue, revealing that a significant proportion of C-suite executives (i.e., 68 % of surveyed managers) admit to failing to implement adequate measures to protect employee health.[29] The survey identifies several key reasons for this shortfall, including executives feeling overwhelmed, lacking confidence, and facing insufficient funding. This anecdotal evidence underscores the importance of understanding how managerial attributes can influence workplace safety. In this context, our research, which demonstrates that CEOs with general skillsets and expertise are better equipped to safeguard employee well-being, provides a timely and actionable response to address workplace safety challenges.

Our findings have several implications for the existing literature. First, while prior research suggests that generalist CEOs, with their broader career options, tend to exhibit greater risk tolerance in corporate decision-making (Custódio et al., 2019), our study reveals a nuanced perspective: these CEOs also prioritize employee safety. This implies that their risk tolerance does not extend to workplace safety, likely due to an understanding of the financial and reputational costs tied to injuries and illnesses. In essence, generalist CEOs balance strategic risk-taking with a commitment to maintaining a safe work environment, demonstrating both ambition and responsibility in their leadership.

Second, our findings add insights into the intriguing discussion regarding whether generalist CEOs prioritize shareholder interests at the potential cost of other stakeholders. Custódio et al. (2013) highlight the premium compensation that generalist CEOs earn, while Xu et al. (2021) demonstrate that they tend to achieve greater success in mergers and acquisitions compared to specialists. These studies suggest that generalist CEOs are skilled at delivering outcomes aligned with shareholder priorities. However, our research reveals that this focus on shareholder value does not necessarily compromise employee safety. This may stem from shareholders' own vested interest in maintaining high safety standards. Gong et al. (2023) support this view, showing that firms with stronger shareholder litigation rights tend to have better safety records. This suggests that shareholders recognize the financial value of a safe workplace. Thus, it appears that the interests of shareholders and employees are not always in conflict and can align in ways that benefit both.

Third, our research highlights how general managerial skills foster firm innovation by positively influencing workplace safety and employee satisfaction. This aligns with Custódio et al. (2019), who demonstrate that generalist CEOs enhance corporate innovation, and Chen et al. (2016), who show that employee satisfaction drives innovation. Innovation outputs, such as patents and citations, contribute to a firm's intangible assets. Similarly, employee satisfaction, with its implications on firm value and stock returns, can also be viewed as an intangible asset (Edmans, 2011). Thus, our findings provide deeper insights into how CEOs with general managerial skills bolster a firm's intangible assets.

From other perspectives, our study has additional implications. First, from a corporate management perspective, our findings underscore the importance of considering a CEO's general skill sets when selecting leaders. Second, for stakeholders such as investors, our research provides evidence on the economic benefits of generalist CEOs in promoting workplace safety, which can contribute to more sustainable and productive firms. Finally, given the significance of our findings, future research could explore other top management attributes that help mitigate unhealthy working conditions, offering a promising avenue for further research.

We acknowledge some limitations in our study. First, the OSHA workplace injury and illness data rely on self-reporting by businesses, which may introduce bias. However, this concern is mitigated by the consistency of our results when using alternative data (Violation Tracker) that do not depend on self-reporting. Second, our dataset is limited to U.S. firms. While it provides comprehensive insights into workplace safety within the U.S., caution is warranted when generalizing these findings to other countries. Future research could expand the scope by incorporating data from different nations, enriching the exploration of our research question.

6. Conclusion

Our quantitative study empirically examines how CEOs' general managerial skills impact workplace safety. We find that firms led by generalist CEOs experience fewer workplace injuries, illnesses, and safety-related penalties. These CEOs enhance workplace safety through more efficient labor investments, balanced employee workloads, and improved firm information quality. The positive impact of generalist CEOs on safety is particularly pronounced in firms facing intense market competition or financial constraints. Furthermore, employee safety and health significantly influence company innovation, productivity, and firm value. Generalist CEOs play a critical role in mitigating value-destructive effects by prioritizing employee well-being. Our study highlights the practical implications for executive selection and leadership training, emphasizing that investing in generalist leadership skills is a strategic approach to enhancing organizational performance by fostering safer workplaces.

CRediT authorship contribution statement

Tony Xiaochi Zhang: Writing – review & editing, Writing – original draft, Software, Methodology, Investigation, Formal analysis, Data curation. **Alexander Molchanov**: Writing – review & editing, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Funding acquisition, Conceptualization. **Harvey Nguyen**: Writing – original draft, Validation, Supervision, Resources, Funding acquisition, Data curation, Conceptualization. **Mia Hang Pham**: Writing – review & editing, Writing – original draft, Supervision, Software, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

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[28] 8.45 % = Coefficient estimate of 0.092 × GAI's sample standard deviation of 0.919. The standard deviation of 0.919 in the alternative sample is different from the baseline sample figure of 0.892.

[29] More details about the survey can be found at https://www2.deloitte.com/insights/topics/leadership/employee-wellness-in-the-corporate-workplace.html (retrieved on March 27, 2023).

seminar participants at Massey University, and conference participants at New Zealand Finance Colloquium. This paper won one of the *Best Paper Award at the 2024 New Zealand Finance Colloquium. Corresponding author: A/Professor Harvey Nguyen, Massey Business School, Massey University, Auckland, New Zealand.*

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.jbef.2025.101056.

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