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CEO narcissism and corporate ESG performance

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Abstract

Purpose – Based on the psychological traits of executives, this study investigates the impact and mechanism of Chief Executive Officer (CEO) narcissism on corporate Environmental, Social and Governance (ESG) performance.

Design/methodology/approach – Based on the upper echelons theory, we measure the degree of CEO narcissism by the size of their handwritten signatures and empirically examine whether and how CEO narcissism affects corporate ESG performance.

Findings – Using the data of Chinese A-share listed companies during 2009–2022 as the research sample, this paper finds that CEO narcissism is significantly negatively correlated with corporate ESG performance. Further, the mechanism test indicates that CEO narcissism reduces firms' ESG performance mainly through three paths: lowering internal control quality, lowering information transparency and exacerbating financing constraints. The heterogeneity test finds that the negative effect of CEO narcissism on firms' ESG performance is more significant in firms with shorter CEO tenure, lower institutional ownership, firms in non-heavy pollution industries and lower media attention. In addition, the economic consequence test finds that the negative effect of CEO narcissism on ESG performance ultimately leads to a decrease in corporate performance.

Originality/value – We adopt a CEO narcissism perspective to innovatively deconstruct the micro-level driving mechanisms behind corporate ESG performance in the Chinese context. It provides a theoretical basis for firms to improve their governance structures to constrain the adverse behaviors of narcissistic CEOs, while empowering regulatory authorities to identify the underlying psychological causes behind differences in corporate ESG performance. This has strategic value for promoting substantive ESG investments by firms.

Keywords CEO narcissism, ESG performance, Internal control quality, Information transparency, Financing constraints

Paper type Research article

1. Introduction

Over the long term, China has experienced sustained and rapid economic growth; however, its resource-dependent development model can no longer meet the demands of high-quality development. Against this backdrop, Environmental, Social and Governance (ESG)—serving as a strategic framework that integrates environmental, social and governance dimensions—has emerged not only as an inevitable choice for firms to align with the country's economic transformation but also as a key pathway to building long-term sustainable competitive advantage. Unlike the "top-bottom" mandatory regulatory model prevalent in Western countries, China's ESG institutional development has yet to establish a unified and compulsory standard. Instead, it features a distinctive "policy-guided" and "bottom-top" approach, favoring voluntary and incentive-based principles. Rather than enforcing compliance, the system relies primarily on soft market regulation to exert external pressure, compelling firms to proactively

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undertake ESG-oriented strategic transformation. As a result, ESG performance among Chinese firms is highly contingent on internal discretion and voluntary responsiveness (Fairfax, 2022). Nevertheless, data from 2023 reveal that less than 40% (33.93%) of A-share listed firms issued standalone ESG reports, only 8.8% received an A-level or higher ESG rating, and nearly 30% were rated at the lowest CCC level. These figures underscore the considerable variation in ESG performance among Chinese firms and highlight the challenges posed by insufficient initiative and proactivity in ESG implementation.

Upper echelons theory offers a novel perspective for uncovering the intrinsic drivers behind corporate ESG performance. This theory posits that strategic decision-making within firms is significantly shaped by the Chief Executive Officer's (CEO's) cognitive base, values and experiential background (Hambrick & Mason, 1984). In the context of China's unique institutional environment—where ESG performance is predominantly determined by voluntary adoption rather than mandatory regulation—the personal characteristics of the CEO become a pivotal factor in influencing the extent of corporate ESG engagement. Existing research from the perspective of CEO attributes has identified several influential factors, such as gender (Zhang *et al.*, 2023), tenure (Huang *et al.*, 2011) and short-termist behavior (Liu & Zhang, 2023). However, these studies have largely focused on observable and objective external traits. In contrast, psychological research indicates that CEOs' internal psychological traits can more profoundly shape their cognitive patterns, risk preferences and value judgments, thereby exerting a fundamental influence on strategic decisions (Chatterjee & Pollock, 2017). Therefore, under China's predominantly voluntary ESG framework, understanding CEOs' deep-seated psychological characteristics is essential for uncovering the internal mechanisms underlying corporate ESG performance.

In recent years, CEO narcissism has garnered increasing attention as a psychological trait within the academic community. Narcissistic CEOs are typically characterized by excessively optimistic self-perceptions (Morf & Rhodewalt, 2001), a strong inclination toward risk-taking (Chatterjee & Hambrick, 2007), and an intense desire for attention and admiration (Buss & Chiodo, 1991). Existing evidence suggests that narcissistic CEOs can significantly influence corporate social responsibility (CSR). For example, Petrenko *et al.* (2016) found that narcissistic CEOs are more inclined to engage in philanthropic activities to attract public attention. Similarly, Al-Shammari *et al.* (2019) revealed that externally oriented CSR initiatives are more effective in capturing public attention, thereby fulfilling narcissistic CEOs' desire for recognition. However, such studies have largely focused on how narcissistic CEOs use individual CSR actions to satisfy their attention-seeking motives. Within the broader ESG framework, the environmental, social and governance dimensions are all potentially shaped by the narcissistic tendencies of senior executives. This raises a critical question: will narcissistic CEOs continue to promote ESG development primarily out of their motivation for attention-seeking? Or will their behavior change due to the potential imbalance and conflicts among the multidimensional goals of ESG? These questions warrant further in-depth investigation.

Accordingly, this paper, grounded in the Chinese context, aims to explore the dual—both positive and negative—effects of CEO narcissism on corporate ESG performance. On the positive side, driven by a strong desire for attention and the need to demonstrate leadership (Lin *et al.*, 2021), narcissistic CEOs tend to transform ESG strategies into tools for self-promotion, thereby enhancing ESG performance. Furthermore, their pursuit of superior firm performance may provide a material foundation for the implementation of ESG initiatives (Aktas *et al.*, 2016). On the negative side, narcissistic CEOs often cause resource misallocations and managerial conflicts among different ESG dimensions, which can undermine overall ESG performance. The mechanisms are as follows: First, the autocratic behavior of narcissistic CEOs tends to intensify managerial conflict and weaken cross-departmental coordination (Johnson *et al.*, 2013), thereby reducing internal control quality. A decline in internal control quality directly results in ineffective constraints on the CEO's self-serving behaviors, leading to resource allocations that favor greenwashing and short-termism,

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crowding out substantive ESG investments. Second, narcissistic CEOs' overly optimistic expectations regarding future corporate earnings (Rijsenbilt & Commandeur, 2013) may lead to earnings management and information manipulation, thereby reducing the firm's information transparency. Increased information asymmetry raises the cost and difficulty of external supervision, resulting in a lack of external pressure and motivation for the firm to improve its ESG performance. Finally, their strong risk appetite makes narcissistic CEOs more inclined toward debt financing (Zhang *et al*., 2023), which increases financing constraints and forces firms to allocate limited resources toward alleviating immediate financial pressures rather than supporting long-term, uncertain-return ESG projects. In summary, while narcissistic CEOs' desire for attention may act as a driving force in promoting corporate ESG strategies, their cognitive biases and managerial characteristics can also become significant constraints. Therefore, it is of great significance to explore the specific mechanisms through which CEO narcissism influences corporate ESG performance.

Against this backdrop, this paper empirically examines the impact of CEO narcissism on corporate ESG performance using a sample of Chinese A-share listed firms on the Shanghai and Shenzhen Stock Exchanges from 2009 to 2022. The findings reveal that higher levels of CEO narcissism are associated with poorer ESG performance, and this result remains robust across a series of robustness checks. Further mechanism analyses show that: First, CEO narcissism deteriorates ESG performance by weakening internal control quality, which leads to ineffective constraints on self-serving behaviors by narcissistic CEOs. Second, narcissistic CEOs reduce information transparency, thereby increasing the cost and difficulty of external supervision, which in turn hampers ESG performance. Third, narcissistic CEOs intensify financing constraints, making it difficult for firms to allocate resources to long-term, uncertain-return ESG projects, ultimately undermining ESG performance. Moreover, heterogeneity analyses reveal boundary conditions under which the impact of CEO narcissism on ESG performance varies significantly. Specifically, narcissistic CEOs with shorter tenures, driven by performance pressure, are more likely to prioritize short-term financial results over ESG, worsening ESG outcomes. Firms with a higher proportion of institutional ownership tend to have stronger governance and monitoring mechanisms, which can mitigate the negative effects of CEO narcissism on ESG performance. The relatively low environmental pressure faced by firms in non-heavy polluting industries is not conducive to narcissistic CEOs' development of environmental awareness, thus CEO narcissism inhibits corporate ESG performance more significantly. Additionally, firms with lower media attention have a more significant negative impact of CEO narcissism on their ESG performance due to less external supervision. Finally, the economic consequence analysis indicates that the negative impact of CEO narcissism on ESG performance ultimately leads to a decline in firm value.

The main contributions of this paper are as follows:

(1) This paper deepens the micro-level cognitive framework for understanding the drivers of corporate ESG performance in the Chinese context and expands the application boundaries of upper echelons theory. It moves beyond prior ESG research that mainly focused on observable CEO characteristics such as gender and tenure. Instead, this paper introduces CEO narcissism as a core explanatory variable, which represents a deep psychological trait and systematically examines its complex influence on the ESG performance of Chinese firms. In the unique context of China's ESG system, which emphasizes "policy guidance" and voluntary participation rather than mandatory compliance, this paper reveals how CEOs' intrinsic psychological traits transcend external objective attributes to become the key micro-level drivers determining differences in corporate ESG strategy investment and performance. This enriches and deepens the theoretical explanatory power of upper echelons theory in ESG research and the Chinese context, providing a new perspective for understanding the "black box" of corporate ESG decision-making.

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(2) This paper explores the complexity of narcissistic CEO behavior under the conflicting multidimensional goals of ESG and extends the research focus on CEO narcissism from corporate social responsibility (CSR) to the broader ESG framework. Existing studies on narcissistic CEOs have largely concentrated on their influence on CSR-related behaviors, particularly in areas such as charitable donations and public welfare initiatives, highlighting their motivation to seek public attention and enhance personal reputation. However, ESG encompasses not only social responsibility but also environmental and corporate governance dimensions, among which resource competition and strategic trade-offs are often present. As a result, the behavioral motivations of CEOs become more intricate. This paper seeks to move beyond the narrow focus on CSR and systematically investigates how narcissistic CEOs navigate behavioral choices within a more complex, multi-objective and constraint-rich ESG framework. By doing so, it reveals the potential distortions in their behavior across the broader ESG dimensions and provides a new theoretical lens for understanding the impact of psychological traits on firms' multidimensional strategic decision-making.

(3) This paper offers important policy implications and managerial insights for ESG practices and corporate governance improvement. Under China's voluntary ESG regime characterized by policy guidance rather than mandatory enforcement, corporate ESG performance largely depends on the initiative of their senior executives. Through an empirical analysis of narcissistic traits among senior executives, this paper demonstrates the driving role of executive psychological characteristics in ESG strategic choices. It provides micro-level psychological evidence that helps regulators understand the underlying reasons behind the differentiated ESG performance among Chinese firms. Moreover, the findings offer practical guidance for firms seeking to improve their governance mechanisms to constrain the potential negative behaviors of narcissistic senior executives and to more effectively channel resources toward substantive ESG advancement.

The remainder of this paper is organized as follows: Section 2 reviews the relevant literature; Section 3 develops the research hypotheses; Section 4 describes the research design; Section 5 presents and discusses the empirical results; Section 6 conducts further analysis; and Section 7 concludes the paper.

2. Literature review

2.1 Economic consequences of CEO narcissism

Narcissistic personality is an important field in psychology and sociology. With the rise of behavioral economics, especially after Chatterjee and Hambrick achieved the quantification of CEO narcissistic tendencies, more and more scholars have included it in the field of economics research. Narcissism, as a psychological trait, manifests itself as an individual's overestimation or optimism of his or her own ability and knowledge, as well as a strong willingness to attract the attention of others and a desire for power. The potential impact of CEO narcissism on corporate decision-making and resource allocation has attracted increasing academic attention. Existing studies have examined the impact of CEO narcissism on corporate behavior from the following perspectives.

In terms of investment decisions, Ham *et al.* (2018) found that narcissistic CEOs will display themselves and win attention through investment behavior, and they will overestimate the returns that investment brings to the firm while underestimating the risks of the investment project, and thus are more inclined to overinvest. In terms of financing decisions, Hackbarth (2008) found that narcissistic CEOs have a strong belief in their own abilities; the optimistic and confident mentality will magnify the tax benefits of debt financing, while underestimating the risk of bankruptcy and the cost of financial crises that are elevated by high debt ratios, which in turn encourages narcissistic CEOs to choose debt financing. In terms of innovation

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decisions, Kashmiri *et al.* (2017) found that narcissistic CEOs are more confident in their own abilities and will underestimate the risks in the innovation process. At the same time, since launching a new product will help the CEO to gain the attention of the audience, they will be more motivated to launch a new product, and the firm's output of new products will be higher.

In terms of firm performance and value, Chatterjee & Hambrick (2007) found that narcissistic CEOs preferred high-risk actions, such as aggressive expansion and extensive development of new products, which led to significant fluctuations in performance. Olsen *et al.* (2014) found that out of a need for self-improvement and outside attention, narcissistic CEOs use actual operational management activities in an effort to improve earnings per share and stock prices that are highly scrutinized by stakeholders and the media public. However, studies on the impact of CEO narcissism on firm performance have not reached consistent conclusions. Ham *et al.* (2018) found that narcissistic CEOs ignore the feedback and ideas of other team members in order to dominate the decision-making process. This leads to sub-optimal decision-making outcomes, which, in turn, can have a negative impact on firm performance.

In terms of CSR fulfillment, Petrenko *et al.* (2016) found that corporate involvement in social welfare and charitable activities attracts the attention of the community and occupies a moral high ground in society for CEOs, which satisfies their sense of superiority and vanity. Therefore, narcissistic CEOs are motivated to fulfill their social responsibilities. Furthermore, Al-Shammari *et al.* (2019) found that since externally oriented social responsibility attracts more public attention compared to internally oriented, it can better satisfy narcissistic CEOs' needs to gain praise and dominate decision-making. Therefore, the higher the level of CEO narcissism, the more actively they will engage in externally oriented social responsibility activities.

In terms of unethical behavior, Rijsenbilt & Commandeur (2013) found that narcissistic CEOs are more optimistic about future financial performance and will engage in challenging and bold behavior to maintain their positive image; thus, narcissistic CEOs have a greater propensity to commit fraud. Olsen & Stekelberg (2016) found that narcissistic CEOs' sense of superiority makes them believe that they are above the law and are more inclined to overstep rule constraints. Therefore, faced with taxes that divert economic resources, narcissistic CEOs adopt aggressive tax avoidance strategies. In addition, CEO narcissism is significantly associated with manipulating financial information. Marquez-Illescas *et al.* (2019) found that more narcissistic CEOs tend to reinforce their positive self-image by making earnings announcements with a more positive tone. Capalbo *et al.* (2018) found that narcissistic CEOs have a higher desire for power and money, and tend to manipulate accounting information to maximize their personal interests.

A review of the relevant literature on CEO narcissism indicates that this personality trait influences a CEO's cognitive capacity and value orientation, and manifests across various aspects of strategic decision-making and corporate management. Regarding the economic consequences of CEO narcissism, existing studies primarily focus on internal organizational outcomes, particularly the impact on strategic decisions and firm performance. Some research also explores the association between CEO narcissism and unethical behaviors such as tax avoidance and financial manipulation. It is worth noting that while prior studies have examined the effect of CEO narcissism on corporate social responsibility (CSR), their core emphasis lies in explaining how narcissistic CEOs engage in CSR activities to satisfy their vanity and gain public attention. This narrow focus diverges from the holistic and sustainability-oriented goals advocated by the ESG framework. Within the broader ESG context, all three dimensions—environmental, social and governance—are potentially shaped by CEO narcissism. Moreover, the conflicts between these dimensions may lead narcissistic CEOs to exhibit decision-making behaviors that go beyond mere attention-seeking, reflecting deeper aspects of their personality. However, current research remains limited in exploring how CEO narcissism influences corporate ESG performance in a comprehensive manner.

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2.2 The influencing factors of corporate ESG performance

The literature on the factors influencing corporate ESG performance mainly explores three aspects: external environmental factors, internal corporate factors and executive characteristics.

In terms of the external environment, policies and regulations, industry characteristics and the level of economic development can all affect ESG performance. He *et al.* (2023a) found that environmental protection tax provides for the levy of taxes on firms emitting taxable pollutants, while offering tax exemptions to firms with low pollution emissions. Under the dual pressures of tax costs and tax exemption incentives, heavily polluting firms will actively engage in green transformation, thereby enhancing their ESG performance. Industry characteristics play an important role in the process of promoting ESG practices. Leong & Yang (2020) find that the more competitive the industry in which a firm is located, the more motivated the firm is to actively fulfill its social responsibility in order to improve its competitive advantage to cope with the competition. The economic environment in which the firm is located also has an important impact on ESG performance. Cai *et al.* (2016) concluded that ESG performance mainly satisfies the upper-level needs, such as a safe and comfortable working environment, employees' continuing education needs and avoiding the use of child labor, and that the basic conditions in economically underdeveloped regions are difficult to satisfy the practice of ESG concepts. Therefore, the higher the economic development level of the region where the company is located, the better its ESG performance.

From the perspective of an internal firm, corporate ESG performance can be affected by factors such as ownership characteristics, firm size, digital transformation and the operation of the board of directors. Crifo *et al.* (2015) found that compared to non-SOEs, SOEs' own objectives include helping the government to improve the ecological environment and maintain social stability. At the same time, SOEs also have sufficient material, financial and human resources, so they have both the incentive and ability to improve their ESG performance. Drempetic *et al.* (2020) find that larger firms have more resources, and at the same time, have a larger stakeholder group and are subject to wider public scrutiny, so larger firms have better ESG performance. The ESG performance of firms is also affected by the digital transformation of firms. Lu *et al.* (2024) find that digital transformation improves resource allocation efficiency and information integration, which can more effectively carry out green technology innovation, improve customer perception and enhance supply chain resilience and flexibility, thus improving environmental and social performance, and ultimately contributing to the improvement of corporate ESG performance. In addition, the operation of the board of directors also affects corporate ESG fulfillment. Zubeltzu-Jaka *et al.* (2020) found that larger and more independent boards of directors have better access to social resources, are more able to be stakeholder-oriented and have better corporate ESG performance.

From the perspective of executive characteristics, corporate ESG performance can be affected by factors such as gender and short-sightedness. Zhang *et al.* (2023) found that compared with male executives, female executives are more risk averse, have a greater sense of responsibility for environmental issues and pay more attention to the firm's contribution to society as well as the quality of the work environment and psychological needs of employees, so that female CEOs are more inclined to make strategic decisions to improve ESG performance. Liu & Zhang (2023) found that short-sighted management focuses more on short-term performance and may neglect long-term sustainability goals that require investment and do not show immediate results, thus hindering corporate ESG practices.

After reviewing the relevant research on corporate ESG performance, it was found that the literature on the factors influencing corporate ESG performance can be divided into three aspects: external environment, corporate level and executive characteristics. Among them, the impact of executive characteristics on corporate ESG performance has mainly been studied from the perspectives of gender, tenure and short-termism, with few studies focusing on the influence of executive psychological traits on corporate ESG performance. Therefore, to

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address the shortcomings of existing research, we take the CEO's psychological traits as the entry point to explore the relationship between CEO narcissism and corporate ESG performance, as well as its underlying mechanisms. This research not only deepens our understanding of the organizational consequences of CEO narcissism and enriches the literature on the economic consequences of CEO narcissism but also expands the study of factors influencing corporate ESG performance, with the aim of promoting the optimization of corporate ESG performance and advancing sustainable corporate development.

3. Theoretical analysis and research hypothesis

The influence of CEO narcissism on corporate ESG performance is complex and dual-faceted. Drawing on a competing mechanism framework, we examine both the potential positive drivers and negative consequences of CEO narcissism for ESG outcomes. On the one hand, narcissistic CEOs may enhance ESG performance by seeking public attention, reinforcing their leadership authority and striving for superior firm performance. On the other hand, such traits may also impair ESG outcomes by weakening internal control quality, reducing information transparency and exacerbating financial constraints.

3.1 CEO narcissism enhances corporate ESG performance

On the one hand, CEO narcissism may enhance a firm's ESG performance. Driven by a strong desire for attention and a need to demonstrate leadership, narcissistic CEOs tend to leverage ESG strategies as a means of self-promotion, thereby contributing to improvements in ESG performance. In addition, their pursuit of superior firm performance provides a solid material foundation to support ESG performance.

First, the attention-seeking motivation of narcissistic CEOs compels them to actively use ESG strategies as a means to enhance their personal influence. These CEOs place great emphasis on external evaluations and the maintenance of a positive self-image, and they tend to engage in activities that can boost their public visibility and reputation (Petrenko *et al.*, 2016; Al-Shammari *et al.*, 2019). Against the backdrop of growing societal concern for corporate sustainability, ESG strategies have emerged as an important channel for firms to signal responsibility and visionary leadership. Narcissistic CEOs often exploit ESG initiatives as tools for self-promotion, aiming to attract media attention and public praise through high-profile environmental commitments, social welfare programs and corporate governance reforms, thereby reinforcing their image as responsible business leaders (Krüger, 2015). Such behavior not only satisfies their psychological need for recognition and admiration (Lin *et al.*, 2021) but also contributes to improvements in the firm's ESG performance.

Second, the desire for control and leadership among narcissistic CEOs drives them to actively utilize ESG strategies to reinforce their internal authority within the organization. The formulation and implementation of ESG strategies typically require cross-level and cross-functional coordination, imposing higher demands on a CEO's leadership capabilities. Given their strong dominance and need for control (Ruiz *et al.*, 2001), narcissistic CEOs often regard ESG strategies as key platforms to showcase their leadership prowess. By promoting green innovation, emphasizing employee welfare and establishing specialized ESG committees, they not only cultivate an image of "transformational leadership" but also exert influence over organizational structure and corporate culture, thereby consolidating their central position within the firm (Lin *et al.*, 2016). Such behavior, though driven by personal motives, plays an important role in advancing the firm's ESG strategy implementation.

Third, narcissistic CEOs often achieve better firm performance, which in turn provides the material foundation for supporting ESG strategies. Such CEOs are typically more strongly motivated to pursue superior performance outcomes (Aktas *et al.*, 2016). Moreover, they tend to possess a more optimistic and confident outlook regarding their own problem-solving capabilities (Aktas *et al.*, 2016), enabling them to proactively confront risks and challenges

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faced by the firm (Kashmiri *et al.*, 2017), thereby further enhancing firm performance (Olsen *et al.*, 2014). Improved financial performance is critical for advancing ESG strategies. On the one hand, strong performance not only ensures the firm's operational stability but also generates financial surpluses that can help cover the costs associated with fulfilling ESG responsibilities and provide the necessary resources for ESG initiatives (Gaol & Harjanto, 2019). On the other hand, firms with excellent financial outcomes tend to attract greater external attention and are subject to stronger regulatory and public scrutiny regarding ESG disclosures, which in turn compels them to proactively improve their ESG performance (Ali *et al.*, 2017).

3.2 CEO narcissism reduces corporate ESG performance

On the other hand, the narcissistic traits of CEOs may also undermine a firm's ESG performance. Narcissistic CEOs' obsession with control, overly optimistic expectations of future returns and preference for high-risk decisions often lead to resource imbalances and managerial conflicts across different ESG dimensions. These dynamics may prompt narcissistic CEOs to adopt governance strategies that reflect their personality traits—such as weakening internal control quality, reducing information transparency and intensifying financial constraints—which can ultimately have a detrimental impact on the firm's overall ESG performance.

First, CEO narcissism can lead to the failure of internal controls within the firm, making it difficult to effectively constrain self-serving behaviors, thereby resulting in poorer ESG performance. To begin with, narcissistic CEOs tend to be autocratic and dismissive of advice from other experienced board members (Zhu & Chen, 2015), which undermines the effectiveness of corporate oversight mechanisms and weakens internal controls. Additionally, narcissistic CEOs often exhibit arrogance and exploitative behavior, attributing others' achievements to themselves (Paulhus, 1998), which may lead to strained superior-subordinate relationships and managerial conflict (Johnson *et al.*, 2013), impeding internal communication and further weakening the functioning of internal controls. The direct consequence of internal control failure is the inability to curb the CEO's self-interested behaviors, which can result in opportunistic and short-sighted resource allocation. Specifically, on one hand, narcissistic CEOs may perceive that a minimal investment can generate public recognition of the firm's environmental efforts, thereby enhancing their own reputation—thus giving rise to opportunistic motives for greenwashing. On the other hand, narcissistic CEOs, driven by self-interest, may neglect the long-term benefits associated with ESG, preferring short-term, quick-return actions to boost personal performance-based incentives and status. Such short-term profit-seeking behaviors crowd out substantive investment in ESG, ultimately impairing the firm's ESG performance. Furthermore, the managerial conflicts caused by the narcissistic CEO's autocratic and arrogant leadership style can result in a lack of cross-departmental support, making it difficult to advance ESG strategies effectively.

Second, the narcissistic tendencies of CEOs can lead to reduced corporate information transparency, thereby increasing the cost and difficulty of external monitoring and ultimately lowering a firm's ESG performance. Narcissistic CEOs often hold overly optimistic expectations regarding future returns (Rijsenbilt & Commandeur, 2013), but their aggressive strategic decisions tend to cause significant volatility in firm performance (Ham *et al.*, 2018). When actual accounting earnings fall short of expectations, narcissistic CEOs are more likely to engage in earnings management, thus diminishing information transparency. Moreover, due to their self-centered nature and pursuit of personal gains, narcissistic CEOs are prone to adverse selection and moral hazard. They are more likely to manipulate disclosure narratives by releasing earnings announcements with an overly positive tone to enhance their public image (Marquez-Illescas *et al.*, 2019) and even to manipulate accounting metrics to exaggerate firm performance (Amernic & Craig, 2010; Capalbo *et al.*, 2018), which further reduces information transparency. This information asymmetry raises the cost and difficulty of

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external supervision. In the ESG domain, stakeholders rely heavily on comprehensive, timely and accurate disclosures to evaluate a firm's real ESG performance. If disclosures are insufficient, external stakeholders cannot effectively assess the firm's ESG efforts, leading to a lack of external pressure and incentives for the firm to improve its ESG performance. Additionally, information asymmetry can erode investor trust (Cormier *et al.*, 2011), weakening the firm's investment appeal and market competitiveness. This, in turn, hinders the firm's ability to secure funding necessary for implementing ESG strategies, further obstructing improvements in ESG outcomes.

Third, narcissistic CEOs tend to favor debt financing, which can result in more severe financial constraints and consequently lower ESG performance. On the one hand, narcissistic CEOs are typically more risk-seeking and optimistic, which amplifies their expectations of the tax benefits associated with debt financing while underestimating the potential costs of financial distress. Their confidence in their own capabilities also leads them to believe they can repay debt on time, making them more inclined toward debt as a financing strategy (Zhang *et al.*, 2023). However, this strategy increases the firm's leverage, thereby raising financing costs and risks, and exacerbating financial constraints. On the other hand, in pursuit of attention and recognition, narcissistic CEOs often engage in disclosure manipulation (Marquez-Illescas *et al.*, 2019) and earnings management (Capalbo *et al.*, 2018), which intensifies information asymmetry between the firm and external stakeholders. In response, stakeholders may demand higher risk premiums to protect their own interests and hedge against default risk, further increasing the firm's financing costs. Implementing ESG strategies typically requires substantial investment and associated projects—such as environmental protection, green innovation and social responsibility initiatives—are often long-term in nature with uncertain returns. Under tight financial conditions, firms are more likely to allocate limited resources to alleviate immediate financial pressures rather than support these long-term ESG initiatives (Zhang, 2023), ultimately resulting in weaker ESG performance.

Based on the above analysis, we propose the following competing hypotheses:

H1a. Ceteris paribus, CEO narcissism enhances corporate ESG performance.

H1b. Ceteris paribus, CEO narcissism reduces corporate ESG performance.

4. Research design

4.1 Sample selection and data sources

We selected Chinese A-share listed firms from 2009 to 2022 as the research samples. CEO signature materials were obtained from prospectuses and offering circulars downloaded from the official websites of Shanghai and Shenzhen Stock Exchanges, and the signature data were processed using Matlab programming. The corporate ESG performance data are adopted from the rating results provided by the CSI ESG evaluation system, which is sourced from the Wind database. The internal control quality data were obtained from the Dibo internal control and risk management database. Other data are from the CSMAR and CNRDS databases. In order to reduce the adverse effects of abnormal data and improve the validity of parameter estimation, we processed the sample as follows: (1) we excluded ST and *ST type firms; (2) considering the unique regulatory requirements for ESG assessment and disclosure in the financial industry and the significant differences in its business model compared to other industries, we excluded firms in the financial industry; and (3) we excluded samples of firms with missing data on key variables and control variables. On this basis, in order to avoid the impact of extreme values on the estimation results, we winsorize all continuous variables by 1%. Finally, we obtain 10,987 firm-annual data observations.

4.2 Variable design

4.2.1 Explanatory variable: CEO narcissism (CEO_nar). Based on existing research, there are mainly two methods for measuring narcissism: one is by directly measuring the level of

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narcissism using the Narcissistic Personality Inventory (NPI) scale; the other is by indirectly measuring narcissism through personal information such as photographs, compensation, or the size of signatures. In the field of organizational management, scholars often measure narcissism indirectly. Although measuring CEO narcissism with the NPI scale is more accurate, it is difficult to obtain the narcissism data of all CEOs through letters or on-site questionnaires. When the research purpose is clear, CEOs are likely to fill in the questionnaire based on the public's expected image rather than their true intentions, leading to issues with data validity.

In existing studies, Ham *et al.* (2017) and Ham *et al.* (2018) used signature size to measure the level of narcissism. To ensure reliability and validity, they first conducted an experiment to test the relationship between narcissism and signature size, asking participants to complete the NPI-16 narcissism personality scale. To avoid the influence of excessive confidence, they removed the items most closely related to overconfidence from the scale. The experimental results showed a significant positive correlation between the level of narcissism and signature size, with robust results. To further ensure reliability and validity, they analyzed the correlation between CEO signature size and CEO narcissism ratings, showing that the higher the CEO's level of narcissism, the larger the signature.

In this paper, we draw on Ham *et al.* (2017) to use CEO signature size as a proxy variable for CEO narcissism. First, the signature images in the prospectuses and offering circulars published on the official website of the Shanghai and Shenzhen Stock Exchanges are collected manually, and the image containing only the CEO's signature is manually intercepted in the image where the signature is located. The coordinates of the four vertices of the smallest rectangle occupied by the CEO's handwritten signature in the company's prospectus are localized using Matlab programming, and the program generates the number of pixels within the rectangle occupied by the signature, which is then used to determine the size of the signature. Second, considering that the pixel differences of the images may have an impact on the results, we normalize all the signature data, in other words, multiplying the ratio of the actual pixels of the signature to the number of pixels of the image where the signature is located by the average number of pixels of all the signature images. Finally, in order to eliminate the effect of the number of Chinese characters contained in the name on the size of the signature, the normalized signature size value is divided by the number of Chinese characters in the name for normalization, and the final logarithm is taken to obtain the narcissistic proxy variable *CEO_nar*: ln{[(pixels of CEO's signature/pixels of the image where the signature is located * average pixels of all images)/number of names}. The larger this variable is, the more narcissistic the CEO is. We provide a signature list and corresponding narcissism scores in appendix.

4.2.2 Explained variable: corporate ESG performance (ESG). We draw on Lin *et al.* (2021) to select the CSI ESG rating data to measure corporate ESG performance, which is based on a more mature international rating system and combines China's developmental realities and market characteristics to formulate a rating indicator system with Chinese characteristics that comprehensively measures the comprehensive performance of firms in the three areas of environment, society and corporate governance. CSI ESG indicators are adjusted using a combination of quarterly periodic evaluation and dynamic tracking, which is more timely and can be traced back to the first quarter of 2009 at the earliest, thus avoiding the situation of a small amount of overall data. The CSI ESG rating data rates all listed firms into 9 grades (grades AAA, AA, A, BBB, BB, B, CCC, CC and C) based on their ESG performance. In this paper, the ratings at the end of each year are assigned a value of 1–9 in descending order to form the variable *ESG* to measure the corporate ESG performance, and the larger the value of the variable is, the better the ESG performance of the company is.

4.2.3 Control variables. Based on the findings of the literature review section above, corporate ESG performance is affected by the company's operating conditions, internal governance and macroeconomics. We select the following control variables, including firm size (*Size*), firm age (*FirmAge*), return on assets (*ROA*), debt-to-asset ratio (*Lev*), proportion of

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independent directors (*Indep*), proportion of largest shareholders' shareholding (*TOP1*), the number of directors (*Board*), the degree of equity checks and balances (*Balance2*), the proportion of institutional investors' shareholding (*INST*), the nature of ownership (*SOE*) and the per capita GDP (*gdp*), and the definitions of the specific variables are referenced in Table 1.

4.3 Model construction

We designed the following regression model to empirically test the effect of CEO narcissism on corporate ESG performance:

$$ESG_{i,t} = \beta_0 + \beta_1 * CEO_nar_{i,t} + \sum \gamma_j * Controls_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \quad (1)$$

where $ESG_{i,t}$ denotes the ESG performance of firm i. $CEO_nar_{i,t}$ denotes the degree of CEO narcissism of firm i. $\sum Control_{i,t}$ denotes a set of control variables. The $\sum Year$ and $\sum Ind$ denote yearly and industry dummy variables, respectively. $\varepsilon_{i,t}$ represents the random disturbance term, and β_0 then represents the intercept term. We focus on the coefficient of β1. If the regression coefficient of β1 is negative, it indicates that CEO narcissism reduces corporate ESG performance. If the regression coefficient of β1 is positive, it indicates that CEO narcissism promotes corporate ESG performance.

Table 1. Variable definitions and data sources

Variable	Definition	Data source
Dependent variables		
ESG	Corporate ESG performance. It is obtained by assigning values 9–1 in sequence based on the CSI rating AAA-C	WIND
Independent variables		
CEO_nar	CEO narcissism, calculated based on ln{(pixels of CEO's signature/pixels of the image where the signature is located * average pixels of all images)/number of names}	Prospectuses
Control variables		
Size	Firm size, equal to the natural logarithm of the firm's total assets at the end of the period	CSMAR
FirmAge	Company age, natural logarithm of the number of years the company has been in existence	CSMAR
ROA	Return on total assets, which is equal to the ratio of a company's net profit to its average total assets	CSMAR
Lev	Debt-to-asset ratio, which is equal to the ratio of total liabilities to total assets of the company at the end of the period	CSMAR
Indep	Proportion of independent directors, which is equal to the ratio of independent directors to the total number of directors	CSMAR
TOP1	Shareholding concentration, equal to the proportion of shares held by the largest shareholder at the end of the year	CSMAR
Board	Number of directors, equal to the natural logarithm of the total number of directors of the company	CSMAR
Balance2	Shareholding checks and balances, equal to the sum of the shareholdings of the second through fifth largest shareholders divided by the shareholding of the largest shareholder	CSMAR
INST	Institutional investor shareholding ratio, equal to the ratio of the number of shares held by institutional investors to the total number of shares	CSMAR
SOE	Nature of property rights, taking 1 when the firm is a state-owned firm and 0 otherwise	CSMAR
Gdp	GDP per capita, equal to the natural logarithm of GDP per capita in the province where the firm is located	CSMAR

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5. Empirical test results and analysis

5.1 Descriptive statistics

Table 2 reports the descriptive statistics of the variables. The mean value of corporate ESG performance (*ESG*) is 4.35, and the median is 4, indicating that overall the ESG performance of the sample firms is average, the maximum value is 6, the minimum value is 2 and the standard deviation is 0.907, which indicates that there is a large difference in ESG performance between different firms within the sample. The minimum value of CEO narcissism (*CEO_nar*) is 6.153, the maximum value is 10.628 and the mean is 9.004 with a standard deviation of 0.842, which shows that there is a large difference in the degree of CEO narcissism between different firms.

For the control variables, the mean and median of *Size*, *FirmAge*, *ROA*, *Lev*, *Board* and *TOP1* are similar, with a large difference between the maximum and the minimum, which suggests that most of the firms' financial situations are basically stable at the average level, but there is a large difference among individual firms. The mean value of the proportion of independent directors (*Indep*) is 0.377, the median is 0.364, the minimum value is 0.333 and the maximum value is 0.571, which indicates that the proportion of independent directors of most firms can be more than one-third, and there is little difference among the sample firms. The mean value of the degree of equity checks and balances (*Balance2*) is 0.843, the median is 0.674, the minimum value is 0.041, and the maximum value is 2.990, which shows that the degree of equity checks and balances of most firms is not high, and there is a large gap. The minimum value of institutional investor shareholding (*INST*) is 0.000, the maximum value is 0.885, the median is 0.286 and the mean is 0.324, which indicates that there is a large gap in institutional investor shareholding in different firms, but in general the institutional investor shareholding ratio in the sample is low. The mean value of the nature of ownership (*SOE*) is 0.193, indicating that the proportion of state-owned firms in the sample is 19.3%. The minimum value of GDP per capita (*gdp*) is 9.564, the maximum value is 11.828 and the mean value is 10.814, indicating that there is a gap in GDP per capita in the provinces where the firms are located.

5.2 Benchmark regression analysis

Table 3 reports the benchmark regression results of CEO narcissism on corporate ESG performance. Column (1) presents the regression results controlling only for industry and year

Table 2. Summary statistics

Variable	N	Mean	SD	Min	Median	Max
ESG	10,987	4.350	0.907	2.000	4.000	6.000
CEO_nar	10,987	9.004	0.842	6.153	9.132	10.628
Size	10,987	22.004	1.338	19.990	21.702	26.245
FirmAge	10,987	2.749	0.409	1.386	2.833	3.497
ROA	10,987	0.053	0.046	−0.126	0.051	0.194
Lev	10,987	0.370	0.204	0.039	0.351	0.845
Indep	10,987	0.377	0.053	0.333	0.364	0.571
TOP1	10,987	0.358	0.150	0.091	0.341	0.764
Board	10,987	2.107	0.190	1.609	2.197	2.639
Balance2	10,987	0.843	0.644	0.041	0.674	2.990
INST	10,987	0.324	0.252	0.000	0.286	0.885
SOE	10,987	0.193	0.395	0.000	0.000	1.000
Gdp	10,987	10.814	0.477	9.564	10.889	11.828

Note(s): Table 2 presents the results of the descriptive statistics for the final sample, which consists of 10,987 firm-year data samples over the period 2009–2022. Please refer to Table 1 for definitions of all variables

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Table 3. Benchmark regression results: CEO narcissism and corporate ESG performance

	(1) *ESG*	(2) *ESG*
CEO_nar	*−0.058***	*−0.048***
	(−5.77)	*(−2.92)*
Size		0.121***
		(7.49)
FirmAge		0.050
		(1.35)
ROA		3.033***
		(10.47)
Lev		−0.481***
		(−5.10)
Indep		2.058***
		(7.09)
TOP1		0.463***
		(3.35)
Board		0.261***
		(2.99)
Balance2		0.108***
		(3.48)
INST		−0.240***
		(−4.12)
SOE		0.122***
		(2.63)
Gdp		0.066*
		(1.88)
_cons	4.887***	−0.259
	(44.78)	(−0.45)
Ind FE	Yes	Yes
Year FE	Yes	Yes
Cluster by Firm	Yes	Yes
Observations	10,987	10,987
Adj. R^2	0.06	0.12

Note(s): Table 3 reports the effect of CEO narcissism on corporate ESG performance. *CEO_nar* denotes the level of CEO narcissism. *ESG* denotes the firm's ESG performance. Other variables are defined in Table 1. All regressions are firm-level clustered robust standard errors. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively

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fixed effects, without the inclusion of control variables. Column (2) reports the results after including a set of control variables alongside industry and year fixed effects. The results show that, regardless of whether control variables are included, the coefficient of the explanatory variable CEO narcissism (*CEO_nar*) is significantly negatively associated with ESG performance (*ESG*) at the 1% significance level. This finding indicates that a higher degree of CEO narcissism leads to lower ESG performance, thereby supporting Hypothesis H1b. This result is consistent with the theoretical analysis and hypothesis discussed earlier in the paper—namely, narcissistic CEOs' obsession with control, over-optimism about future returns, and preference for high-risk strategies tend to result in resource imbalances and managerial conflicts across ESG dimensions. Consequently, such CEOs are more likely to adopt governance behaviors reflective of their narcissistic traits, such as weakening internal control quality, reducing information transparency and intensifying financing constraints, which ultimately exert a negative impact on overall ESG performance.

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5.3 Robustness tests

5.3.1 Propensity score matching method and placebo test. The benchmark regression confirms that narcissistic CEOs significantly reduce corporate ESG performance, but this finding may be the result of firms with lower ESG performance employing narcissistic CEOs to run their firms. To mitigate the possible impact of sample selectivity bias on the regression results, we used propensity score matching to re-test the findings. The impact of narcissistic CEOs on corporate ESG performance is revealed by comparing the difference in the impact of whether the CEOs hired by the firms are narcissistic or not. First, the samples were divided into two groups, and the rectangular areas occupied by the signatures were sorted in descending order, with the top 33% (relatively large signatures) identified as narcissistic as the experimental group, and the bottom 33% (relatively small signatures) identified as non-narcissistic as the control group. Second, the two groups of samples are matched on a 1:1 non-returned nearest-neighbor basis according to firm size, firm age, return on total assets, debt-to-asset ratio, proportion of independent directors, equity concentration, number of directors, equity checks and balances, institutional investors' shareholding ratio and GDP per capita. The results of the regression of the matched samples are shown in Column (1) of Table 4, where the coefficient of the explanatory variable *CEO_nar* is significantly negative at the 5% level. Thus, the conclusion still holds after controlling for the sample selection bias problem.

In order to test whether the effect of explanatory variables on the explained variables is influenced by the random factors, we used a placebo test for robustness testing. Referring to Cornaggia & Li (2019), we extract all the values of the *CEO_nar* variable from all firm-year observations in the sample, randomly assign these values to each firm-year observation one by one, and finally re-regress the model (1). If the placebo effect is present, then the treated *CEO_nar* should remain negatively correlated with corporate ESG performance due to the influence of unobserved random factors. The regression results, as shown in column (2) of Table 4, show that the coefficient of the explanatory variable *CEO_nar* is insignificant, which is significantly different from the results of the basic regression. This suggests that the placebo effect does not exist, again validating the robustness of the findings.

5.3.2 Replacement of variable measurements. In order to test whether the way the explanatory and explained variables are measured affects the basic regression results, we

Table 4. Robustness testing – PSM and placebo test

	Propensity score matching (PSM) (1) *ESG*	Placebo test (2) *ESG*
CEO_nar	*−0.038***	*−0.001*
	(−2.14)	*(−0.15)*
Controls	Yes	Yes
Ind FE	Yes	Yes
Year FE	Yes	Yes
Cluster by Firm	Yes	Yes
Observations	3,921	10,987
Adj. R^2	0.11	0.12

Note(s): Column (1) of Table 4 reports the regression results after matching on the 1:1 nearest neighbor matching principle. Column (2) reports the results of the placebo test. Specifically, the regression analysis is performed after randomly assigning CEO narcissism levels. Also, we repeat the above randomization process 500 times, where the coefficient of CEO narcissism (*CEO_nar*) is significantly negative at the 5% level 16 times and at the 1% level 7 times, ruling out the presence of a placebo effect. Other variables are defined in Table 1. All regressions are firm-level clustered robust standard errors. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively

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construct new explanatory and explained variables. As shown in Table 5, column (1) is the regression result after the constructed new explanatory variable *CEO_nar2*, specifically, drawing on the research method of Ham *et al.* (2017), the number of pixels within the rectangle occupied by the signature is generated and standardized according to the number of Chinese characters in the signature. The number of pixels per Chinese character is used to measure the size of the signature. Finally, the number of pixels per Chinese character is taken as the natural logarithm, which in turn yields a proxy measure of CEO narcissism, *CEO_nar2*: ln(number of signature pixels/number of names). The results show that the coefficient of CEO narcissism (*CEO_nar2*) is significantly negative at the 5% level, indicating that the results of the basic regression remain robust.

Columns (2), (3) and (4) are the regression results of the sub-dimension test by dividing the ESG rating of Huazheng into E rating, S rating and G rating. Assign values to the E, s and G levels of the firm from low to high. Among them, Column (2) is the regression result of the E rating. Column (3) is the regression result of the S rating. Column (4) is the regression result of the G rating. The results show that the regression results of the three sub-dimensions are still significant, and the results of the benchmark regression remain robust.

Columns (5), (6) and (7) are the regression results of changing the ESG measurement method of the explained variable. Among them, column (5) considers the quarterly disclosure of CSI ESG. It is the regression result of assigning firms' ESG ratings at the end of each quarter in descending order and then taking the mean to obtain the variable *ESG1* to measure corporate ESG performance. Column (6) is the regression result of using the percentile composite score

Table 5. Robustness testing – changing variable measures

	Replacement of explanatory variables	Replacement of explained variables					
	(1) *ESG*	(2) *E*	(3) *S*	(4) *G*	(5) *ESG1*	(6) *ESG2*	(7) *ESG3*
CEO_nar		*−0.055***	*−0.048****	*−0.073****	*−0.050****	*−0.265****	*−0.536***
		(−2.47)	*(−2.93)*	*(−4.40)*	*(−2.95)*	*(−3.27)*	*(−2.28)*
CEO_nar2	*−0.028***						
	(−2.28)						
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster by Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,987	10,987	10,987	10,987	10,812	10,987	8,485
Adj. R^2	0.12	0.07	0.15	0.28	0.14	0.13	0.35

Note(s): Column (1) of Table 5 reports the results of replacing the explanatory variables with *CEO_nar2* as a proxy measure of CEO narcissism: ln(signature pixels/number of names). Column (2), (3) and (4) are the regression results of the sub dimension test by dividing the ESG rating of Huazheng into E rating, S rating and G rating. According to the firm's E performance, S performance and G performance, all listed firms are rated as 9 grades according to three dimensions (AAA, AA, A, BBB, BB, B, CCC, CC and C in order from high to low) according to Huazheng's ESG rating data. In this paper, the rating at the end of each year is assigned as 1–9 in order from low to high. Columns (5), (6) and (7) report the results of replacing the explained variables. In particular, Column (5) takes the mean of firms' ESG ratings at the end of each quarter after assigning values 1–9 in descending order to obtain the variable *ESG1* to measure corporate ESG performance. Column (6) measures corporate ESG performance using the percentile score *ESG2* from CSI ESG. Column (7) uses the sustainability composite index *ESG3* published by Hexun.com to measure corporate ESG performance. Other variables are defined in Table 1. All regressions are firm-level clustered robust standard errors. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively

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of CSI ESG, *ESG2*, to measure corporate ESG performance. Column (7) shows the regression results of measuring corporate ESG performance using *ESG3*, a composite index published by Hexun.com that assesses firms' sustainability in terms of environmental, social and corporate governance. We find that the baseline regression results remain robust.

5.3.3 Adjustment of the study sample. In order to test the sensitivity of the regression sample, we adjusted the research sample, as shown in Table 6. The CEO signature material in this paper is from the IPO prospectuses and offering prospectuses, taking into account that the size of the signature may be affected by the length of time, the statute of limitations of the signature is limited to 5 years for the regression, and the results are shown in column (1). It can be seen that the coefficient of the explanatory variable CEO narcissism *CEO_nar* is significantly negative at the 5% level, which again validates the conclusion.

In addition, the Environmental Protection Tax Law was officially implemented in 2018. It has been concluded that this policy, by increasing tax costs and providing tax-free incentives, would promote firms' green transformation and thus enhance their ESG performance (He *et al.*, 2023b). Therefore, in order to exclude the possible interference caused by this policy, we exclude the sample after 2018 and re-regress it again. The test results are shown in Column (2) of Table 6, from which it can be seen that the coefficient of the explanatory variable CEO narcissism *CEO_nar* is significantly negative at the 1% level. We find that the baseline regression results remain robust.

5.3.4 Exogenous shocks of CEO turnover events. To further address potential endogeneity concerns, we constructed a quasi-natural experiment using CEO turnover events as exogenous shocks and employed a multi-period difference-in-differences (DID) model. First, we identify the year in which each listed company experienced a CEO change and calculate the change in

Table 6. Robustness testing – adjusting the study sample and considering CEO turnover events

	Consideration of a 5-year statute of limitations for signatures	Delete samples for 2018 and beyond	DID (CEO turnover)	
	(1)	(2)	(3)	(4)
	ESG	*ESG*	*ESG*	*ESG*
CEO_nar	*−0.035***	*−0.052****		
	(−2.04)	*(−2.68)*		
CEO_change_high			*−0.186**	
			(1.70)	
CEO_change_low				*0.164**
				(1.93)
Controls	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster by Firm	Yes	Yes	Yes	Yes
Observations	6,177	6,109	10,987	10,987
Adj. R^2	0.13	0.14	0.19	0.45

Note(s): Columns (1), (2) report the results of adjusting the study sample. Among them, Column (1) presents the results of the regression after limiting the signature timeliness to five years. Column (2) reports the regression results with the deletion of the 2018 and later year samples. Columns (3) and (4) report the results of considering CEO turnover events. Column (3) reports the DID regression results of the increase in narcissism among successors in CEO resignation events. Column (4) reports the DID regression results of the decrease in narcissism among successors in CEO resignation events. Other variables are defined in Table 1. All regressions are firm-level clustered robust standard errors. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively

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the *CEO_nar* score in the year of the transition compared to that of the predecessor. Based on the direction of change in *CEO_nar*, CEO turnover events are classified into two treatment groups: (1) a "Significant Increase in CEO Narcissism" group (*CEO_change_high*), and (2) a "Significant Decrease in CEO Narcissism" group (*CEO_change_low*). For the CEO_change_high group, if the *CEO_nar* score increases after the CEO change, the treatment indicator is coded as 1 for the year of the change and all subsequent years, and 0 otherwise. Similarly, for the CEO_change_low group, if the *CEO_nar* score decreases following the CEO transition, the treatment indicator is coded as 1 for the year of the change and all subsequent years, and 0 otherwise.

Column (3) of Table 6 presents the DID regression results for CEO turnover events where the successor exhibits a higher level of narcissism than the predecessor. The results show that when the new CEO is more narcissistic, ESG performance declines significantly. Column (4) of Table 6 reports the DID results for turnover events where the successor's level of narcissism is lower than that of the predecessor, indicating a significant improvement in ESG performance. Therefore, even after accounting for the exogenous shock of CEO turnover, the core findings of this study remain robust.

5.3.5 Controlling overconfidence. It is worth noting that narcissism and overconfidence are distinct concepts. Overconfidence primarily reflects a belief characteristic of the manager, which is more influenced by the manager's judgment of the internal and external environment of the company. In contrast, narcissism is not constrained by external environments; it emphasizes a more inherent, deeply rooted personality trait of the manager. However, since both CEO narcissism and overconfidence share the characteristic of exhibiting an optimistic bias regarding future events, it is necessary to control for CEO overconfidence. We select the following four methods to measure CEO overconfidence for robustness checks.

First, following the methods of Hayward & Hambrick (1997), Huang *et al.* (2011), we use the relative proportion of CEO compensation (*Ocf1*), which is the CEO's compensation divided by the total compensation of all executives, to measure CEO overconfidence.

Second, based on the methods of Schrand & Zechman (2012) and Ahmed & Duellman (2013), the overconfidence of CEOs is measured by the regression results of investment decisions (*Ocf2*). Specifically, the residuals are calculated from model (2), and the median residual is subtracted. If the result is greater than 0, it indicates overconfidence, with a value of 1 assigned; otherwise, the value is 0, indicating non-overconfidence. The dependent variable in the model is the total asset growth rate, and the independent variable is the operating income growth rate.

$$y_{i,t} = \beta_0 + \beta_1 * salesgrowth_{i,t} + \varepsilon_{i,t} \quad (2)$$

Third, psychological research shows that overconfidence behavior in individuals is influenced by personal characteristics such as age, work experience, educational background and professional skills (Heath & Tversky, 1991; Fraser & Greene, 2006). Therefore, we use the CEO's personal characteristics to measure their overconfidence. Specifically, first, psychological studies suggest that although both men and women may exhibit overconfidence tendencies, men tend to be more aggressive and exhibit higher levels of overconfidence. Thus, if the CEO is male, the value is 1; if female, the value is 0. Second, older managers are generally more cautious. Compared to younger managers, older ones usually have more experience and a more stable mindset. Therefore, if the CEO's age is below the sample mean, the value is 1; otherwise, it is 0. Third, research in psychology and behavioral finance indicates that the level of education is positively correlated with overconfidence. Hence, if the CEO holds at least a bachelor's degree, the value is 1; otherwise, it is 0. Fourth, if a manager holds both the CEO and chairman positions within the company, their self-perception of capability is significantly enhanced, leading them to overestimate their own abilities and increase their level of overconfidence when making decisions. Therefore, if the CEO is also the chairman, the value is 1; otherwise, it is 0. Finally, the arithmetic mean of the

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four personal characteristic scores is used as a composite score to measure the CEO's level of overconfidence (*Ocf3*). A higher composite score indicates a higher degree of overconfidence in the CEO.

Malmendier & Tate (2005) measured CEO overconfidence based on CEOs' option exercise behavior, using three independent proxy variables: Holder67, Longholder and Net Buyer. If a CEO holds options with at least a 67% premium on two or more occasions during the fifth year of the sample period, the CEO is considered overconfident and the Holder67 indicator is set to 1. If the CEO holds options until the final year of the sample period, the Longholder indicator is set to 1. If the CEO is a net buyer of company stock in the majority of the five years preceding the sample period, the Net Buyer indicator is set to 1. However, in the context of China, the stock option incentive system for executives is not yet fully developed, and relatively few listed firms implement equity incentive plans. As a result, it is difficult to measure CEO overconfidence using option exercise behavior. Instead, the indicator of CEO stock purchases is more suitable for the Chinese setting and aligns closely with the Net Buyer proposed by Malmendier & Tate (2005). Based on the above considerations, we define CEO overconfidence (*Ocf4*) as follows: if, during the sample period, the company's stock return is lower than the market return, and the CEO increases or maintains his or her shareholding in the company, the CEO is considered overconfident and Ocf4 is assigned a value of 1; otherwise, it is assigned a value of 0.

The results in Table 7 show that after controlling for four types of CEO overconfidence, CEO narcissism still has a significant impact on corporate ESG performance and the benchmark regression results remain robust.

5.3.6 Other robustness tests. Considering that the effect of CEO narcissism on corporate ESG performance may be lagged, and in order to mitigate the endogeneity problem of reverse

Table 7. Robustness testing – controlling overconfidence

	(1) *ESG*	(2) *ESG*	(3) *ESG*	(4) *ESG*
CEO_nar	*−0.049**** *(−3.00)*	*−0.049**** *(−2.99)*	*−0.054**** *(−2.90)*	*−0.046*** *(−2.11)*
Ocf1	−0.429*** (−5.86)			
Ocf2		0.145*** (6.95)		
Ocf3			0.692 (0.99)	
Ocf4				0.070** (2.26)
Controls	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster by Firm	Yes	Yes	Yes	Yes
Observations	10,972	10,987	8,210	6,834
Adj. R^2	0.13	0.12	0.11	0.13

Note(s): Columns (1), (2), (3) and (4) of Table 7 report regression results controlling for CEO overconfidence. In particular, column (1) is the regression result of measuring CEO overconfidence using the relative proportion of CEO pay *Ocf1*, which is the CEO pay divided by the sum of all executives' pay. Column (2) is the regression result measuring overconfidence *Ocf2* based on executives' investment decisions. Column (3) is the regression result measuring overconfidence *Ocf3* based on CEO's personal characteristics. Column (4) is the regression result measuring overconfidence *Ocf4* based on the change of CEO holdings. Other variables are defined in Table 1. All regressions are firm-level clustered robust standard errors. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively

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causality to some extent, we re-run the regression with the explained variables one period ahead. The results, as shown in column (1) of Table 8, show that the coefficient of the explanatory variable CEO narcissism *CEO_nar* is significantly negative at the 5% level, which still does not change the main conclusion that CEO narcissism negatively affects corporate ESG performance.

To test whether the use of regression methods affects the conclusion, we also use different estimation methods for the regressions. Column (2) of Table 8 shows the regression results controlling for industry, year and industry-by-year fixed effects. The results remain robust. Column (3) reports the regression results with CEO individual fixed effects and year fixed effects. Column (4) reports the regression results with firm fixed effects and year fixed effects. The results indicate that the benchmark regression remains robust.

6. Further analysis

6.1 Mechanism test

To examine whether CEO narcissism influences corporate ESG performance through specific channels—namely, by weakening internal control quality, reducing information transparency and intensifying financing constraints—we follow the methodology of Di Giuli & Laux (2022) and Cheng *et al.* (2023) and construct the following two-stage regression models for empirical testing.

$$Med_{i,t} = \alpha_0 + \alpha_1 CEO_nar_{i,t} + \sum \gamma_j Controls_{i,t} + \sum Year + \sum Ind + \delta_{i,t} \quad (3)$$

$$ESG_{i,t} = \delta_0 + \delta_1 pred_Med_{i,t} + \sum \gamma_j Controls_{i,t} + \sum Year + \sum Ind + \epsilon_{i,t} \quad (4)$$

Table 8. Other robustness tests

	Explained variable one period ahead (1) *ESG4*	Controlling for industry multiplier year fixed effects (2) *ESG*	Controlling for CEO individual fixed effects (3) *ESG*	Controlling for firm fixed effects (4) *ESG*
CEO_nar	*−0.049***	*−0.043****	*−0.222***	*−0.136***
	(−2.27)	*(−2.62)*	*(−2.19)*	*(−2.25)*
Controls	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	No	No
Year FE	Yes	Yes	Yes	Yes
Year*Ind FE	No	Yes	No	No
CEO FE	No	No	Yes	No
Firm FE	No	No	No	Yes
Cluster by Firm	Yes	Yes	Yes	Yes
Observations	7,447	10,987	10,987	10,987
Adj. R^2	0.14	0.12	0.44	0.44

Note(s): Column (1) reports the regression results for the explained variables one period ahead. Column (2) presents regression results controlling for year, industry and year multiplied by industry fixed effects. Column (3) reports the regression results controlling for CEO individual and year fixed effects. Column (4) reports regression results controlling for firm and year fixed effects. Other variables are defined in Table 1. All regressions are firm-level clustered robust standard errors. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively

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where $ESG_{i,t}$ denotes the ESG performance of firm i. $CEO_nar_{i,t}$ denotes the degree of CEO narcissism of firm i. $Med_{i,t}$ denotes the mechanism variable of firm i. $Pred_Med_{i,t}$ is the predictive mechanism variable of model (3). $\sum Control_{i,t}$ denotes a set of control variables. The $\sum Year$ and $\sum Ind$ denote yearly and industry dummy variables, respectively.

6.1.1 Internal control quality. CEO narcissism can significantly undermine the effectiveness of internal corporate controls. First, narcissistic CEOs tend to act in an authoritarian manner and often disregard the advice of other experienced board members (Zhu & Chen, 2015), thereby weakening the board's oversight and checks on CEO behavior and reducing the effectiveness of internal controls. Second, narcissistic CEOs are typically characterized by arrogance and a tendency to exploit others, often taking credit for others' achievements (Paulhus, 1998). This can lead to disharmony in superior-subordinate relationships and increased managerial conflict (Johnson *et al.*, 2013), which in turn hampers internal communication within the firm. The breakdown in communication channels makes it difficult for the internal control system to receive necessary feedback and early warnings, further undermining its operational effectiveness.

A direct consequence of internal control failure is the lack of effective constraints on the self-serving behavior of narcissistic CEOs. Such behavior often leads to opportunistic and short-sighted resource allocation within the firm, ultimately having a detrimental impact on ESG performance. Specifically, on one hand, narcissistic CEOs may be motivated to engage in opportunistic "greenwashing"—undertaking low-cost actions that create a perception of environmental responsibility in the eyes of the public, primarily to enhance their personal reputation. On the other hand, driven by self-interest, they tend to overlook the long-term benefits associated with ESG practices, instead favoring quick-profit strategies that boost short-term performance metrics and increase their personal rewards and perceived power. Ultimately, these short-term profit-driven actions crowd out substantive investment in ESG initiatives, thereby impairing the firm's overall ESG performance. In addition, the managerial conflicts caused by the CEO's autocratic and arrogant leadership style may hinder cross-departmental collaboration, making it difficult to implement and sustain effective ESG strategies.

Therefore, CEO narcissism may reduce internal control quality, thereby negatively affecting a firm's ESG performance.

To empirically test this argument, we adopt two measures of internal control quality. First, following the approach of Wang *et al.* (2018), we use the Dibo Internal Control Index divided by 100 to construct the variable *Icq1*, where a higher value indicates stronger internal control quality. Second, to ensure the robustness of our results, we also use the Dibo Internal Control Rating and assign values from 1 to 8 in descending order to construct *Icq2*. A higher value of *Icq2* reflects higher internal control quality.

Table 9 presents the results. In the first stage, we examine the impact of CEO narcissism on internal control quality. Columns (1) and (3) show that the coefficient of CEO narcissism (*CEO_nar*) is significantly negative, confirming that a higher level of CEO narcissism leads to a decline in the quality of internal controls. In the second stage, the predicted values of internal control quality from the first stage are used as explanatory variables for corporate ESG performance. Columns (2) and (4) indicate that the coefficients of the predicted internal control quality indicators (*pred_Icq1* and *pred_Icq2*) are significantly positive, suggesting that a deterioration in internal control quality further reduces a firm's ESG performance. These findings support our hypothesis that CEO narcissism undermines internal control quality, thereby negatively affecting corporate ESG performance.

6.1.2 Information transparency. CEO narcissism can significantly reduce corporate information transparency. First, narcissistic CEOs tend to hold overly optimistic expectations about the firm's future profitability (Rijsenbilt & Commandeur, 2013), but their aggressive strategic decisions often result in large performance fluctuations (Ham *et al.*, 2018). When actual accounting earnings fall short of these inflated expectations, narcissistic CEOs are more

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Table 9. Mechanism test – internal control quality

	(1) *Icq1*	(2) *ESG*	(3) *Icq2*	(4) *ESG*
CEO_nar	*−0.022**		*−0.028**	
	(−1.73)		*(−1.87)*	
pred_Icq1		*1.991***		
		(2.16)		
pred_Icq2				*1.534***
				(2.16)
Controls	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster by Firm	Yes	Yes	Yes	Yes
Observations	8,354	8,354	8,354	8,354
Adj. R^2	0.25	0.14	0.30	0.14

Note(s): Table 9 reports whether the effect of CEO narcissism on corporate ESG performance is realized through the pathway of lower internal control quality. *pred_Icq1* and *pred_Icq2* denote the predicted values of internal control quality in the first stage, respectively. Other variables are defined in Table 1. All regressions are firm-level clustered robust standard errors. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively

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likely to engage in earnings management. Second, narcissistic CEOs, who are self-centered and prioritize maximizing their personal gains, exhibit stronger tendencies toward adverse selection and moral hazard. They are more inclined to manipulate disclosure narratives, such as issuing overly optimistic earnings announcements to enhance their personal image (Marquez-Illescas *et al.*, 2019), or even manipulating accounting figures to exaggerate firm performance (Amernic & Craig, 2010; Capalbo *et al.*, 2018), which ultimately diminishes the transparency of corporate information.

A decline in information transparency increases the cost and difficulty of external oversight, thereby undermining a firm's ESG performance. In the ESG domain, effective monitoring and evaluation by external stakeholders—such as investors, rating agencies and regulators—depend on adequate, timely and accurate information disclosure. Insufficient disclosure hampers stakeholders' ability to accurately assess a firm's true ESG performance, thereby weakening the external pressure and incentives for firms to improve in this area. As a result, firms become less motivated and proactive in fulfilling their ESG responsibilities. Moreover, such information asymmetry reduces investor trust (Cormier *et al.*, 2011), which in turn undermines the firm's investment appeal and market competitiveness. This makes it more difficult for the firm to secure the financial resources necessary for implementing ESG strategies, further hindering improvements in ESG performance.

Therefore, CEO narcissism may reduce information transparency, thereby negatively affecting a firm's ESG performance.

To empirically test this argument, we adopt two proxies to measure corporate information transparency. First, following the method proposed by Hutton *et al.* (2009), we use the absolute value of the sum of discretionary accruals over the past three years as a proxy (*Opaque1*). A higher value of this variable indicates lower information transparency. Second, to ensure the robustness of our results, we adopt an alternative measure based on the information disclosure ratings assigned by the Shanghai and Shenzhen Stock Exchanges, as suggested by Ho *et al.* (2022). This measure (*Opaque2*) captures the overall quality of firms' information disclosure practices, with higher values indicating higher levels of information transparency.

Table 10 presents the results. In the first stage, we examine the effect of CEO narcissism on corporate information transparency. In the second stage, the predicted values of information

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Table 10. Mechanism test – information transparency

	(1) *Opaque1*	(2) *ESG*	(3) *Opaque2*	(4) *ESG*
CEO_nar	*0.004**		*−0.040****	
	(1.82)		*(−4.01)*	
pred_Opaque1		*−8.700**		
		(−1.74)		
pred_Opaque2				*1.191****
				(2.92)
Controls	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster by Firm	Yes	Yes	Yes	Yes
Observations	7,679	7,679	10,987	10,987
Adj. R^2	0.32	0.14	0.08	0.12

Note(s): Table 10 reports whether the effect of CEO narcissism on corporate ESG performance is realized through the path of reduced information transparency. *pred_Opaque1* and *pred_Opaque2* denote the predicted values of information transparency in the first stage, respectively. In particular, the larger the value of variable *pred_Opaque1*, the lower the information transparency of the firm. The larger the value of variable *pred_Opaque2*, the higher the corporate information transparency. Other variables are defined in Table 1. All regressions are firm-level clustered robust standard errors. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively

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transparency from the first stage are used as explanatory variables for corporate ESG performance. Column (1) shows that the coefficient of CEO narcissism (*CEO_nar*) is significantly positive, confirming that a higher level of CEO narcissism leads to greater earnings management and thus lower information transparency. Column (2) indicates that an increase in earnings management (*pred_Opaque1*) results in a decline in ESG performance, suggesting that lower information transparency is associated with poorer ESG performance. Column (3) shows that the coefficient of CEO narcissism is significantly negative, indicating that higher CEO narcissism is associated with lower information disclosure ratings. Column (4) further demonstrates that lower information disclosure ratings (*pred_Opaque2*) are associated with worse ESG performance. These findings support our proposed mechanism: CEO narcissism reduces information transparency, which in turn negatively affects a firm's ESG performance.

6.1.3 Financing constraints. A narcissistic CEO's higher risk-taking tendency can significantly increase the firm's financing constraints. On the one hand, narcissistic CEOs often exhibit stronger risk appetite and excessive optimism. They tend to overestimate the tax shield benefits of debt financing while underestimating the potential costs of financial distress. Their overconfidence in their own capabilities further strengthens their belief in the firm's ability to repay debt, making them more inclined to adopt debt-heavy financing strategies (Zhang *et al.*, 2023). Such strategies increase the firm's leverage, thereby raising its financing costs and overall risk exposure. On the other hand, in order to satisfy their desire for attention and recognition, narcissistic CEOs are more likely to manipulate disclosure language (Marquez-Illescas *et al.*, 2019) or engage in earnings management (Capalbo *et al.*, 2018), which exacerbates the information asymmetry between the firm and external stakeholders. To mitigate their own risk, external stakeholders demand higher risk premiums, further aggravating the firm's financing difficulties and costs.

The intensification of financing constraints has a significant negative impact on a firm's ESG performance. Implementing ESG strategies often requires large-scale and sustained capital investment, particularly in areas such as environmental protection, green technology

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innovation and the fulfillment of social responsibilities. These projects are typically characterized by long investment cycles and high uncertainty in future returns. When a firm faces severe financing difficulties, management is more likely to prioritize short-term financial needs in resource allocation to ensure business continuity and operational stability (Zhang, 2023). Under such circumstances, ESG-related projects—due to their long-term nature and uncertain payoffs—are often subject to budget cuts or even resource diversion. This reallocation of resources ultimately leads to insufficient substantive investment in ESG initiatives, thereby weakening the firm's overall ESG performance.

Therefore, CEO narcissism may exacerbate financing constraints, thereby negatively affecting a firm's ESG performance.

To empirically test this argument, we employ two indicators to measure the degree of financing constraints. First, following the approach of Kaplan & Zingales (1997), we construct the KZ index, where a higher value indicates more severe financing constraints. Second, to ensure the robustness of our results, we also adopt the FC index proposed by Hadlock & Pierce (2010), with higher values likewise indicating greater levels of financing constraints.

Table 11 reports the results. In the first stage, we examine the effect of CEO narcissism on corporate financing constraints. Columns (1) and (3) show that the coefficient of CEO narcissism (*CEO_nar*) is significantly positive, indicating that a higher level of CEO narcissism intensifies a firm's financing constraints. In the second stage, the predicted financing constraint indicators from the first stage are used as explanatory variables for ESG performance. Columns (2) and (4) reveal that the coefficients of financing constraints (*pred_KZ* and *pred_FC*) are significantly negative, suggesting that greater financing constraints further reduce the firm's ESG performance. These results support our hypothesis that CEO narcissism increases financing constraints, which in turn negatively affects corporate ESG performance.

6.2 Heterogeneity test

6.2.1 CEO tenure. Experienced executives are able to realize the long-term impact of ESG performance on their firms, while some executives with short tenure and little experience tend

Table 11. Mechanism test – financing constraints

	(1) *KZ*	(2) *ESG*	(3) *FC*	(4) *ESG*
CEO_nar	*0.077***		*0.008***	
	(3.19)		*(3.33)*	
pred_KZ		*−0.614***		
		(−2.88)		
pred_FC				*−6.229***
				(−2.92)
Controls	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster by Firm	Yes	Yes	Yes	Yes
Observations	10,862	10,862	10,987	10,987
Adj. R^2	0.60	0.12	0.69	0.12

Note(s): Table 11 reports whether the effect of CEO narcissism on corporate ESG performance is through the path of exacerbating financing constraints. *pred_KZ* and *pred_FC* denote the predicted values of financing constraints in the first stage, respectively. Other variables are defined in Table 1. All regressions are firm-level clustered robust standard errors. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively

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to focus their resources on improving performance and reduce their investment in R&D in order to maximize their compensation and better career development opportunities due to the pressure to perform (Ali & Zhang, 2015). Therefore, we expect that the shorter the CEO tenure, the more likely narcissistic CEOs are to engage in opportunistic behaviors, and the negative effect of CEO narcissism on corporate ESG performance is more significant.

To test this idea, we construct the dummy variable *Tenure* bounded by the median of CEO tenure in the same industry and year, which takes the value of 1 if the CEO tenure is higher than the median and 0 otherwise, and performs a group test. Panel A of Table 12 reports the results

Table 12. Heterogeneity test

Panel A: The impact of CEO tenure and institutional investors' shareholding ratio

	ESG		*ESG*	
	(1)	(2)	(3)	(4)
	Tenure = 1	Tenure = 0	Inst = 1	Inst = 0
CEO_nar	*−0.019*	*−0.059***	*−0.032*	*−0.059***
	(−0.52)	*(−3.79)*	*(−1.46)*	*(−2.92)*
Controls	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster by Firm	Yes	Yes	Yes	Yes
Observations	4,584	6,402	5,417	5,570
Adj. R^2	0.12	0.13	0.14	0.12
p-value for difference in coefficients between groups	0.000***		0.002***	

Panel B: Impact of industry attributes and media attention

	ESG		*ESG*	
	(1)	(2)	(3)	(4)
	Pollute = 1	Pollute = 0	Media = 1	Media = 0
CEO_nar	*−0.013*	*−0.059***	*−0.030*	*−0.068***
	(−0.38)	*(−3.20)*	*(−1.37)*	*(−3.38)*
Controls	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster by Firm	Yes	Yes	Yes	Yes
Observations	2,343	8,644	5,359	5,546
Adj. R^2	0.10	0.13	0.11	0.14
p-value for difference in coefficients between groups	0.000***		0.000***	

Note(s): Table 12 reports whether the effect of CEO narcissism on corporate ESG performance varies by CEO tenure, the firm's institutional investor shareholding ratio, the industry attribute and the level of media attention. *Tenure* is constructed using the median of CEO tenure in the same industry and year as the boundary, and takes the value of 1 if the CEO tenure is higher than that median and 0 otherwise. *Inst* is constructed by taking the median of institutional investor shareholding ratio in the same industry and year as the boundary. If the ratio is higher than that median, *Inst* takes the value of 1, otherwise it takes the value of 0. *Pollute* is constructed as whether the firm is in a heavy polluting industry or not. If the firm is in a heavy polluting industry, *Pollute* takes the value of 1, otherwise it takes the value of 0. *Media* is constructed as the Media is constructed by taking the median of media attention in the same industry and year as the boundary. If the media attention is higher than this median, *Media* takes the value of 1, otherwise it takes the value of 0. We also use Bootstrap method to self-sample 1,000 times to conduct the test for difference in coefficients between groups, which shows that the empirical *P*-values are all significant at the level of 1%. Other variables are defined in Table 1. All regressions are firm-level clustered robust standard errors. *, ** and *** indicate significant at the 10%, 5% and 1% levels, respectively

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of this grouping regression test. Column (1) shows that the coefficient of CEO narcissism (*CEO_nar*) is insignificant in the subsample with longer CEO tenure. Whereas, column (2) shows that the coefficient of CEO narcissism (*CEO_nar*) is significantly negative at the 1% statistical level in the subsample with shorter CEO tenure. Further, we also utilize bootstrap method for self-sampling 1,000 times to test the difference in coefficients between groups, which shows that the empirical *p*-value is 0.000, which is significant at the 1% level, indicating that the difference between the two groups is significant. The above results are consistent with our expectation that the shorter the CEO tenure, the stronger the inhibitory effect of CEO narcissism on corporate ESG performance.

6.2.2 Institutional investor shareholding ratio. Institutional investors have the advantages of talent, capital and professionalism, better information interpretation ability and more rational investment (Tang *et al.*, 2024). They can exert governance effects through public or non-public means such as voting rights, shareholder behavior and selection of board members. Moreover, institutional investors bear the responsibility of making profits and reducing losses for individual investors, and the fiduciary responsibility and investment interests together drive institutional investors to actively participate in corporate governance, which constrains management's behavior of pursuing their own interest maximization (Lewellen & Lewellen, 2022). Therefore, the lower the shareholding ratio of institutional investors, the more difficult it is to restrain narcissistic CEOs from violating ethical and short-sighted behaviors, and the negative impact of CEO narcissism on corporate ESG performance is more significant.

In order to test this idea, we construct the dummy variable *Inst* with the median of the firm's institutional investor shareholding ratio in the same industry and year as the boundary, which takes the value of 1 if the ratio is higher than the median and 0 otherwise, and perform a group test. Panel A of Table 12 reports the results of this grouping regression test. Column (3) shows that the coefficient of CEO narcissism (*CEO_nar*) is insignificant in the subsample of firms with higher institutional investor ownership. Column (4) shows that the coefficient of CEO narcissism (*CEO_nar*) is significantly negative at the 1% statistical level in the subsample of firms with lower institutional investor shareholding. Further, we also utilize the bootstrap method for self-sampling 1,000 times to test the difference in coefficients between groups, which shows an empirical *p*-value of 0.002, which is significant at the 1% level, indicating that the difference between the two groups is significant. The above results are consistent with our expectations.

6.2.3 Industry attributes. The industrial activities of firms are an important factor in causing environmental pollution. Compared with industries that have lower environmental impact, heavy polluting industries such as chemicals or energy face greater regulatory pressures from the government, the media and other relevant stakeholders. This pressure can force firms to improve their ESG performance (Cho & Patten, 2007). At the same time, heavy polluting firms will face corresponding environmental regulations. With the introduction of the Environmental Protection Tax Law, heavy polluting firms will enhance their ESG performance by reinforcing their green concepts, taking the initiative to combat pollution and assuming social responsibility (He *et al.*, 2023a, b). Therefore, the relatively low environmental pressure faced by firms in non-heavy polluting industries is not conducive to narcissistic CEOs' development of environmental awareness and attention to stakeholders' needs; thus, CEO narcissism inhibits corporate ESG performance more significantly.

The Ministry of Environmental Protection issued the < Listed Firms in Environmental Verification Industry Classification and Management Directory> in 2008, which clearly specifies the heavy polluting industries. In order to verify this viewpoint, we refer to this directory and construct the dummy variable *Pollute* with the industry attribute of the firm. If the industry in which the firm is located is a heavy polluting industry, *Pollute* takes the value of 1, otherwise it is 0, and it performs a group test. Panel B of Table 12 reports the results of this group regression test. Column (1) shows that the coefficient of CEO narcissism (*CEO_nar*) is insignificant in the subsample where the firm is in a heavy polluting industry. Column (2)

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shows that the coefficient of CEO narcissism (*CEO_nar*) is significantly negative at the 1% level in the subsample of firms' industries that are non-heavy polluting industries. Further, we also utilize the bootstrap method for self-sampling 1,000 times to test the difference in coefficients between groups, which shows that the empirical *p*-value is 0.000, which is significant at the 1% level, indicating that the difference between the two groups is significant. The above results are consistent with our expectations.

6.2.4 Media attention. As a regulator in society, the media can utilize their professional strengths and expertise to disclose important information about a company in a clearer and easier-to-read manner to all relevant parties without charge in order to reduce information asymmetry and protect the rights and interests of all relevant parties (Dyck *et al.*, 2008). In addition, media reports have the function of monitoring corporate governance; not only can they have a certain impact on the company's stock price, but their negative reports can also trigger general concern in the society, forming an invisible constraint on reputation-conscious managers, which is conducive to management's attention to environmental and social issues (He *et al.*, 2024). Therefore, firms that receive less media attention have more difficulty in restraining the unethical behavior of narcissistic CEOs, and thus the negative effect of CEO narcissism on corporate ESG performance is more significant.

In order to verify this view, and following He *et al.* (2024), we measure media attention as the natural log of 1 plus the total number of newspaper and online news reports about the firm. The larger the value of this variable, the higher the media attention. At the same time, we construct a dummy variable, *Media*, which takes the median of media attention in the same industry and year as the boundary. If the media attention received by the firm is higher than the median, then *Media* takes the value of 1, otherwise it is 0, and conducts a group test. Panel B of Table 12 reports the results of this grouping regression test. Column (3) shows that the coefficient of CEO narcissism (*CEO_nar*) is insignificant in the subsample of firms receiving high media attention. Column (4) shows that the coefficient of CEO narcissism (*CEO_nar*) is significantly negative at the 1% level in the subsample of firms with low media attention. Further, we also utilize the bootstrap method for self-sampling 1,000 times to test the difference in coefficients between groups, which shows that the empirical *p*-value is 0.000, which is significant at the 1% level, indicating that the difference between the two groups is significant. The above results are consistent with our expectations.

6.3 Analysis of economic consequences

The previous study shows that CEO narcissism will reduce the corporate ESG performance, and in the context of the current economic and social development concept advocating firms to strengthen ESG performance, the reduction of ESG performance will inevitably give rise to corresponding economic consequences. The fulfillment of ESG responsibilities may bring new opportunities for value growth. The fulfillment of environmental responsibility can promote firms to accelerate green and low-carbon transformation, comprehensively improve the efficiency of energy and resource utilization and clean production, and implement the "dual-carbon" goal. The fulfillment of social responsibility integrates the goals of stakeholders, forms a good ecosystem of mutual benefit and win–win situations, and promotes the realization of common wealth. The fulfillment of governance responsibility can realize the reshaping of governance value through optimizing corporate governance, improving equity incentives and strengthening the disclosure of information, thereby driving the enhancement of the overall corporate value. Narcissistic CEOs tend to show self-perception bias and short-sighted behavior, and are more sensitive to the short-term gains that can be brought by decision-making while underestimating the market risk, which brings adverse consequences for the firm and reduces the value of the firm. Therefore, we argue that CEO narcissism reduces a firm's ESG performance, which further leads to a reduction in firm value.

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To test this idea, this part constructs the following econometric model for examination:

$$Value = \varphi_0 + \varphi_1 CEO_nar + \varphi_2 ESG_r + \varphi_3 CEO_nar * ESG_r + \varphi_4 Controls + \Sigma Year + \Sigma Ind + \omega \quad (5)$$

The explained variable in model (5) is firm value. For ease of understanding, we generate a new variable by multiplying the variable *ESG by* −1. At this point, the larger the value of the variable *ESG_r*, the worse the firm's ESG performance is. We focus on the coefficient of the cross-multiplier term (*CEO_nar*×*ESG_r*), φ_3. If the coefficient of this term is significantly negative, it indicates that CEO narcissism reduces corporate ESG performance, decreasing firm value.

We use five ways to measure firm value. First, the firm's return on assets, *ROA*, is used to measure firm value, where the firm's return on assets is equal to the ratio of the firm's net profit after tax to the average balance of total assets. Second, using a firm's *ROE* to measure firm value, a firm's ROE is equal to the ratio of a firm's net profit after tax to its average net assets. Third, the firm's growth rate of operating income is used to measure the value of the firm, which is equal to the growth rate of revenue at the end of the period compared to the previous period. Fourth, the firm's net profit margin, *NPM*, is used to measure the firm's value, and the firm's net profit margin is equal to the ratio of the firm's net profit after tax to its sales revenue in the previous period. Fifth, using the economic value added as a percentage of total assets, *EVAH*, to measure firm value.

Table 13 shows the effect of CEO narcissism reducing corporate ESG performance on firm value. It can be seen that the coefficient of the cross-multiplier term between CEO narcissism (*CEO_nar*) and corporate ESG performance (*ESG_r*) is negative and significant at the 1% level, which indicates that the decline in corporate ESG performance due to CEO narcissism reduces firm value. Therefore, it is necessary to mitigate the negative impact of self-interested

Table 13. CEO narcissism, corporate ESG performance and corporate value

	(1) ROA	(2) ROE	(3) Growth	(4) NPM	(5) EVAH
CEO_nar	−0.0007	−0.0006	−0.0531**	−0.0016	−0.0007
	(−1.00)	(−0.38)	(−2.29)	(−0.81)	(−0.81)
ESG_r	−0.0067***	−0.0116***	0.1304***	−0.0131***	−0.0077***
	(−10.30)	(−8.46)	(2.85)	(−8.30)	(−10.48)
*CEO_nar*ESG_r*	*−0.0025****	*−0.0059****	*−0.0142****	*−0.0049****	*−0.0027****
	(−3.65)	*(−3.79)*	*(−2.82)*	*(−2.82)*	*(−3.47)*
controls	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster by Firm	Yes	Yes	Yes	Yes	Yes
Observations	10,987	8,920	8,918	10,986	10,986
Adj. R^2	0.24	0.09	0.07	0.27	0.17

Note(s): Table 13 reports a test of the economic consequences that follow the effect of CEO narcissism on corporate ESG performance. *ROA* equals the firm's after-tax net income divided by the average balance of total assets. *ROE* equals the firm's after-tax net income divided by the average net assets. *Growth* equals the growth rate of end-of-period operating revenues compared to the previous period. *NPM* equals the ratio of the firm's last-period after-tax net income to its sales revenues. *EVAH* is equal to EVA as a percentage of total assets. Other variables are defined in Table 1. All regressions are firm-level clustered robust standard errors. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively

Source(s): Authors' own work

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behavior and short-sighted performance of narcissistic CEOs on corporate ESG performance to ensure the overall value of the firm.

7. Research conclusions

China's ESG development exhibits a distinct pattern of "policy-driven" and "bottom-top" characteristics, where corporate ESG performance largely depends on voluntary choices rather than mandatory regulations. Within this institutional context, CEO personality traits have become a critical micro-level determinant in ESG strategy implementation. Drawing upon the upper echelons theory, this paper innovatively investigates the complex influence of CEO narcissism—a deep-seated psychological trait—on corporate ESG performance from a psychological perspective.

Using a dataset of Chinese A-share listed firms from 2009 to 2022, we empirically examine the relationship between CEO narcissism and ESG performance. The main findings are as follows: CEO narcissism significantly impairs corporate ESG performance, and this negative effect is partially driven by three underlying mechanisms—deterioration in internal control quality, reduced information transparency and intensified financing constraints. Furthermore, heterogeneity analysis reveals that the negative relationship between CEO narcissism and ESG performance is more pronounced in firms with shorter CEO tenure, lower institutional ownership, non-heavily polluting industries and lower media attention. Finally, economic consequence analysis suggests that the detrimental effect of CEO narcissism on ESG performance ultimately leads to a decline in firm value.

The findings of this paper have several practical implications. First, by introducing CEO narcissism as a core psychological trait, this study systematically analyzes its complex influence on corporate ESG performance in the unique Chinese context of policy-led and voluntary ESG engagement. It reveals how intrinsic psychological characteristics can transcend external attributes and become key micro-level drivers of strategic ESG variation across firms. This provides a new lens for understanding the "black box" of corporate ESG decision-making. Second, the study uncovers the resource trade-offs and strategic dilemmas embedded in multidimensional ESG goals, highlighting the behavioral complexity of narcissistic CEOs. It enriches the literature by moving beyond a narrow focus on CSR to encompass the full ESG framework, thereby deepening our understanding of how psychological traits affect strategic choices under multidimensional constraints. Finally, this paper offers micro-level empirical evidence for Chinese regulators to better understand the psychological roots of ESG performance heterogeneity. It also provides policy and managerial implications for listed firms to optimize governance mechanisms and guide resources toward substantive ESG improvements.

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Appendix

To enhance reader comprehension of the CEO narcissism measure, we present the CEO signature sizes of some listed firms (see Table 14). The first column lists the company code, the second column shows the CEO's name (fictionalized without changing the number of characters), and the third column displays the CEO's signature size.

CEO_nar = ln{(pixels of CEO's signature/pixels of the image where the signature is located * average pixels of all images)/number of names}

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Table A1. CEO signature size list

stkcd	CEO	CEO_nar
16	刘星明	10.2903
39	麦德盛	11.2559
50	成伟	8.2509
401	李泽	10.0166
402	盛杰涛	9.6614
498	林浩然	9.2026
507	冯鹏	9.8507
528	曾瑞鹏	8.5482
537	孙乐阳	10.0249
568	林志	9.7276
582	闻宇翔	9.1838
589	何志远	9.6207
591	张哲铭	9.6549
625	王嘉	8.6556
628	贺天华	9.4927
656	杨睿晨	8.7556
688	应承熙	8.9644
709	许博	10.2315
723	姚俊熙	8.6584
725	刘建华	9.2582
736	徐荣凯	9.5210
789	李嘉鸿	9.1385
797	郑宏达	9.6890
875	牛宇辰	12.0140
877	肖庆东	9.1621
878	田智伟	9.8150
906	张泽明	8.6534
966	袁邓白	9.5267
967	马参	9.9303

Source(s): Authors' own work

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