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Demographic and Psychological CEO Traits as Strategic Levers of CSR

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Abstract

This study investigates the determinants of Corporate Social Responsibility (CSR) performance, focusing on how the background and psychological traits of Chief Executive Officers (CEOs) influence a firm's commitment to CSR. Using data from companies listed on the STOXX Europe 600 index between 2017 and 2023, the analysis explores the impact of six CEO attributes: educational background, gender, age, tenure, narcissism, and overconfidence on CSR outcomes through the Feasible Generalized Least Squares (FGLS) method. The results reveal a positive association between CSR performance and several CEO characteristics, including higher education, advanced age, longer tenure, narcissism, and overconfidence. Robustness checks confirm that these effects remain consistent across different CSR dimensions such as resource efficiency, community engagement, and human rights. The findings offer practical insights for corporate boards, suggesting that CEO profiles can serve as strategic levers to enhance CSR performance. By integrating both demographic and psychological CEO traits, this study advances the upper echelons theory and provides a comprehensive perspective linking leadership profiles to the multidimensional nature of CSR.

Keywords: Socio-demographic Traits, Psychological Traits, Corporate Social Responsibility, Multidimensional CSR.

Introduction

Within the contemporary business landscape, defined by complex environmental, social, and economic challenges, Corporate Social Responsibility (CSR) is widely recognized as a cornerstone of sustainable development. The corporate sector holds a pivotal position in this paradigm, tasked with integrating sustainability and ethics into their strategic models. Such integration, increasingly mandated by institutional regulations and societal norms, is critically dependent on the decisions and directional guidance provided by top management (Chwiłkowska-Kubala et al., 2023; Rahman et al., 2024; Chulkova and Kim, 2025).

In the corporate structure, CEOs hold a definitive role in steering CSR strategy, acting as the central force in its design and execution. This leadership is vital for establishing the corporate lens through which sustainability challenges are viewed and managed (Waldman et al., 2006). Therefore, variations in CSR strategy can be significantly explained by the individual traits of the CEO, encompassing both socio-demographic and psychological dimensions (Chatterjee and Hambrick, 2007; Huang, 2013; Amor-Esteban et al., 2019; Birindelli et al., 2019; Bhaskar et al., 2023; Erdiaw-Kwasie et al., 2023).

The body of research on Corporate Social Responsibility has traditionally prioritized organizational factors, such as internal culture and sector-specific regulations, over the examination of individual leader attributes. This gap is significant, as leaders are far from passive agents; their strategic outlook is fundamentally molded by their idiosyncratic values,

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backgrounds, and psychological profiles (Aibar-Guzmán and Frías-Aceituno, 2021; Lewis et al., 2014; Petrenko et al., 2016; Garrido-Ruso et al., 2023).

The central inquiry of this paper is the extent to which a CEO's individual characteristics influence a firm's CSR engagement. Its principal objective is to contribute new understanding of the personal factors that drive corporate sustainability commitment. The investigation is twofold: it first assesses socio-demographic attributes (gender, education level, tenure, and age) that condition a leader's attitudes toward societal and environmental responsibilities (Manner, 2010; Velte, 2019). It then explores relevant psychological traits, such as narcissism and overconfidence, which are pivotal in strategic decision-making processes related to sustainability (Petrenko et al., 2016; Al-Shammari et al., 2019; Phan and Ha, 2024; Shahzadi et al., 2024).

The heterogeneity of stakeholder groups and their respective demands necessitates that corporations implement a diversified portfolio of CSR initiatives. This multiplicity validates a methodological approach that dissects CSR into its discrete subcategories for deeper analysis. Drawing on the frameworks of Choi et al. (2023) and Chen et al. (2023), we examine domains such as human rights, community engagement, and emission reduction. This focused perspective is critical for elucidating the strategic inclinations of CEOs toward each specific CSR dimension (McCarthy et al., 2017; Bouzguenda and Jarboui, 2024).

The primary contribution of this research lies in its integrated investigation of how CEO traits encompassing both background and psychological factors shape corporate social responsibility holistically and in its constituent parts. By demonstrating the robustness of these effects across distinct CSR domains, the study extends current scholarly understanding. These findings have tangible implications for governance, providing a evidence-based framework for selecting leaders capable of driving meaningful societal impact through enhanced CSR commitment.

The findings affirm the CEO's critical position as an architect of responsible governance, illustrating how their personal traits permeate strategic CSR decisions and thereby enrich our comprehension of the individual-level factors shaping a company's social impact.

The subsequent sections of this paper are arranged in the following sequence. Section 2 offers a theoretical foundation through a review of relevant literature on CEO characteristics and CSR. The research design, encompassing sample selection and analytical methods, is described in Section 3. Section 4 then introduces the formal research models, leading into Section 5, which details the empirical results and their interpretation. Finally, Section 6 concludes with a summary of the principal findings and their implications, and Section 7 identifies the study's limitations and suggests directions for further inquiry.

2. Literature Review

Upper Echelons Theory (UET) provides a framework for linking the attributes of senior leaders to organizational strategies. It contends that strategic decisions are not made in a vacuum but are the product of a leader's subjective interpretation of situations, an interpretation heavily influenced by their individual background and personality (Hambrick and Mason, 1984; Wang et al., 2015). It follows, therefore, that the specific strategic path a company takes can be partly predicted by examining its leader's demographic characteristics (e.g., age, education, tenure) and psychological profile (e.g., levels of narcissism and overconfidence) (Bamber et al., 2010; Liao et al., 2019).

The formulation and disclosure of Corporate Social Responsibility strategies are fundamentally directed by the CEO (Aguinis and Glavas, 2012; García-Sánchez and Martínez-Ferrero, 2019). This critical role means that the leader's subjective perception of CSR importance, which is itself shaped by their socio-demographic and psychological profile, directly impacts outcomes (Cordeiro and Sarkis, 2008; Aibar-Guzmán and Frías-Aceituno, 2021). It follows that executive-level decisions on CSR can be traced to individual attributes, such as education, gender, tenure, and behavioral traits like narcissism and overconfidence (Villalba-Ríos et al., 2022).

The extant literature on CEO attributes exhibits a significant limitation: a dichotomous treatment that investigates socio-demographic and psychological traits separately, failing to account for their concerted effects (Hewa Heenipellage et al., 2022). This study directly addresses this shortcoming by proposing an integrated model that jointly assesses the influence of both types of factors on CSR implementation. The objective of this holistic analysis is to construct a composite leadership profile optimized for enhancing sustainability performance and maximizing dedication to CSR objectives (Lewis et al., 2014; Liao et al., 2019; García-Sánchez et al., 2020; Aibar-Guzmán and Frías-Aceituno, 2021; Bertrand et al., 2021; Hewa Heenipellage et al., 2022; Rahman et al., 2024).

2.1. CEOs'Socio-Demographic Factors and Their Impact on CSR

Grounded in Upper Echelons Theory (Hambrick and Mason, 1984), which posits that a CEO's personal values are a key determinant of corporate strategy, a substantial body of research has examined CEO characteristics as drivers of Corporate Social Responsibility. Empirical studies have consistently validated this premise, providing robust evidence of a CEO's significant impact on a firm's socially responsible initiatives (García-Sánchez, Aibar-Guzmán, et al., 2020; Aibar-Guzmán and Frías-Aceituno, 2021; Wernicke et al., 2022; Schwoy et al., 2023).

2.1.1. CEO Education Level

Within the spectrum of CEO socio-demographic traits, education stands out for its profound effect on CSR strategic orientation (Huang, 2013; Borghesi et al., 2014; Lewis et al., 2014; Davis et al., 2018). The educational process is theorized to refine an individual's ethics and foster a more receptive mindset, thereby enhancing their sensitivity to stakeholder and environmental demands (Hambrick and Mason, 1984). This is evidenced by the tendency of highly educated leaders to be more proactive in addressing sustainability and ensuring transparency in their social and environmental disclosures (Malik et al., 2020; Garrido-Ruso et al., 2023).

The correlation between advanced education and increased CSR engagement is well-documented, with scholars noting that heightened sensitivity to such issues often accompanies higher learning (Schaper, 2002; Gadenne et al., 2009). The inherent intellectual demands of CSR including its reliance on R&D and innovation are more effectively met by leaders with enhanced cognitive capacities, often gained through exposure to new technologies. This is consistent with the foundational principle that educated CEOs, endowed with extensive knowledge and well-developed values, are superior strategic actors, particularly in complex domains like corporate

responsibility (Hambrick and Mason, 1984; Herrmann and Datta, 2002; Huang, 2013; Velte, 2019; Hewa Heenipellage et al., 2022; Wang et al., 2024).

H1: CEO education level is positively associated with superior corporate social responsibility performance.

2.1.2. CEO Gender

A growing body of evidence indicates that the gender of a Chief Executive Officer plays a critical role in shaping CSR initiatives. Female leaders are commonly perceived as exhibiting stronger ethical standards and a greater sense of responsibility, attributes linked to their propensity for empathy and risk aversion (Bear et al., 2010). Such traits are instrumental in weaving social and environmental considerations into the fabric of corporate strategy, thereby fostering the implementation of more sustainable practices. Empirical evidence suggests that companies led by female CEOs consistently demonstrate stronger CSR performance and a closer alignment with the Sustainable Development Goals (SDGs) (Furlotti et al., 2019; Wernicke et al., 2022; Choi et al., 2023; Liang et al., 2024). This can be attributed to a greater prioritization of sustainability and corporate citizenship among women leaders (Chu et al., 2022). Their approach is underpinned by distinct psychological and leadership qualities including enhanced skills in conflict resolution, adaptability, and motivation which not only drive sustainability agendas but also foster a more positive work environment. This, in turn, reduces employee stress and turnover, thereby strengthening overall organizational health and effectiveness.

H2: CEO gender (female) is positively associated with superior corporate social responsibility.

2.1.3. CEO Tenure

The length of a CEO's tenure is a significant determinant in strategic decision-making, especially concerning Corporate Social Responsibility. Through the lens of human capital theory, extended tenures allow CEOs to accumulate invaluable firm-specific knowledge, which is instrumental for the effective execution of CSR strategies. This accumulated expertise strengthens the positive correlation observed between tenure and CSR engagement (Manner, 2010; Al-Duais et al., 2021; Yin et al., 2024). Furthermore, a prolonged association with the company often cultivates a deeper personal identification with the firm, motivating CEOs to intertwine their own legacy with the organization's social performance and thus bolstering their dedication to CSR (Garrido-Ruso and Aibar-Guzmán, 2022).

Divergent theoretical viewpoints, however, offer a more nuanced picture. According to the career concerns and career horizon hypotheses, newly appointed CEOs are driven to rapidly establish their competence, which can incentivize investments in prominent, high-visibility projects like CSR to signal their leadership quality (Chen et al., 2019; Khan et al., 2021). In contrast, the fixed paradigm hypothesis argues that lengthy tenures can result in cognitive rigidities, making long-serving CEOs less adaptable to evolving stakeholder expectations and potentially leading to a decline in CSR initiatives (McClelland et al., 2012; Oh et al., 2018).

A review of the empirical literature reveals inconsistent findings on the impact of CEO tenure. Support for a positive association exists (Huang, 2013; Wei et al., 2018); however, this is counterbalanced by research pointing to a negative or non-existent relationship (Chen et al., 2019; Chen et al., 2021; Khan et al., 2021).

H3: Early CEO tenure is positively associated with superior corporate social responsibility.

2.1.4. CEO Age

A CEO's age is a pivotal factor in shaping a firm's corporate social responsibility, with its impact varying significantly across a leader's career stage. Driven by the need to establish their reputation and prove their strategic vision, younger CEOs typically exhibit a greater propensity for risk, often channeling this into CSR investments as a vehicle for long-term value creation (Kish-Gephart et al., 2019). Their inherent cognitive flexibility and adaptability, as noted in foundational management literature (Hambrick et al., 1984; Elsaid and Ursel, 2012), position them to respond more proactively to dynamic societal and environmental demands. This forward-looking orientation means that younger leaders are more predisposed to embed sustainability principles into their core strategy, which in turn elevates the company's overall CSR outcomes (Fabrizi et al., 2014; Saridakis et al., 2020).

The approach of older CEOs differs markedly; their extensive experience often informs a more guarded outlook, making them less inclined to pursue untested CSR programs. A tendency to favor stable, low-risk strategies over innovative ones may ultimately curb the company's CSR achievements. Therefore, the leader's age fundamentally shapes the organization's potential to elevate its social and environmental contributions.

H4: Younger CEO age is positively associated with enhanced corporate social responsibility.

2.2. CEOs' Psychological Factors and Their Impact on CSR

In the realm of CSR, the psychological traits of narcissism and overconfidence are notably influential. Although generally perceived as negative, they can paradoxically drive stronger CSR engagement when harnessed effectively and aligned with the company's strategic direction.

2.2.1. CEO Narcissism

Narcissism, a psychological trait marked by an inflated self-view, a constant need for admiration, and a drive for external validation, holds substantial sway over corporate CSR strategies. Multiple studies confirm the significant influence of this trait on such initiatives (Byun and Al-Shammari, 2021; Chatterjee and Pollock, 2017; Zhang and Wang, 2017; Shan et al., 2023).

The psychological drivers of narcissism particularly the chronic need for admiration motivate CEOs to engage more extensively with Corporate Social Responsibility. CSR activities offer a visible channel for these individuals to cultivate a distinctive identity and burnish their personal image (Chi et al., 2019; Shan et al., 2023). Possessing high self-esteem and a persistent drive for external validation, they strategically employ CSR to capture media interest, accrue recognition from various stakeholders, and elevate their standing in the socio-economic landscape.

A consistent, positive relationship exists between CEO narcissism and CSR initiatives, driven by

the leader's motivation to use such projects for personal image-building and recognition (Petrenko et al., 2016; Al-Shammari et al., 2019; Kim et al., 2018; Tang et al., 2018). This is because CSR offers a direct avenue to fulfill their psychological needs, allowing them to improve the company's public image and mitigate criticism, which in turn generates the admiration and praise they seek (Bodolica & Spraggon, 2011; Chatterjee & Hambrick, 2007; Al-Shammari et al., 2019; Tang et al., 2018).

Based on these arguments, we propose the following hypothesis:
H5: CEO narcissism is positively associated with corporate social responsibility engagement.

2.2.2. CEO Overconfidence

While overconfidence is known to significantly shape strategic corporate decisions, its influence is complex. This cognitive bias, which can impair rational judgment, has been linked to unethical conduct such as fraud and accounting manipulation, posing substantial risks to organizations (Hambrick, 1997; Ben-David, 2007; Malmendier and Tate, 2008; Rijsenbilt and Commandeur, 2013; Wang, 2023). Paradoxically, however, overconfidence may also be a driving force behind a company's engagement in Corporate Social Responsibility (Bhaskar et al., 2023), potentially as overconfident CEOs believe they can successfully manage stakeholder expectations and enhance the firm's reputation through such initiatives.

As a dominant cognitive bias, overconfidence exerts a significant influence that extends beyond financial decisions to shape a firm's approach to Corporate Social Responsibility (Duttie and Shichijo, 2015). Despite established evidence that CSR enhances reputation, employee productivity, and firm value (Campbell and Helleloid, 2016; Chang, 2015; Puchakayala et al., 2023), overconfident CEOs may paradoxically deprioritize such initiatives, viewing them as peripheral to core performance objectives. This perception stands in direct contrast to a substantial body of research confirming a positive relationship between CSR engagement and financial outcomes (Frooman, 1997; Erdiaw-Kwasie et al., 2023).

The influence of CEO overconfidence on CSR is complex. Research by Jo and Harjoto (2012) highlights its role in promoting CSR engagement through its effect on strategic decision-making. Conversely, this trait can also result in limited CSR involvement when leaders judge such activities to be peripheral to their perceived abilities or performance goals (Phan and Ha, 2024; Shahzadi et al., 2024).

Based on these observations, we propose the following hypothesis:
H6: CEO overconfidence is positively associated with corporate social responsibility engagement.

3. Methodology

3.1. Sampling and Data Collection

This study employs a seven-year panel (2017-2023) of companies drawn from the STOXX Europe 600 index. The selection of this benchmark ensures a representative sample of the

European market, with its cross-sector diversity safeguarding the findings from being biased by the characteristics of any specific industry.

The sample construction involved two key filtering criteria. First, financial sector companies were omitted because of their idiosyncratic accounting practices and regulatory environments, which are not directly comparable to other industries. Second, firms with missing or insufficient data were excluded to preserve the dataset's completeness and the robustness of the subsequent statistical analysis.

The final sample includes 2,429 firm-year observations from 347 companies. Financial data came from DataStream, and CSR data were obtained from Thomson Reuters Asset4. CEO details were manually compiled from annual reports. The data were processed and analyzed using STATA 13.

3.2. Measurement of Dependent Variables

To evaluate Corporate Social Responsibility, we employ the overall ESG score, a well-established measure in prior research (Marquis et al., 2011; Wang et al., 2018). This metric, obtained from the Thomson Reuters ASSET4 database, is presented on a percentage scale from 0 to 100. It is constructed from multiple weighted indicators, and consistent with other studies, a higher score denotes more advanced CSR performance (Ahn, 2020; Bhaskar et al., 2023; Yin et al., 2024; Wang et al., 2024).

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This study employs a multidimensional framework, analyzing corporate responsibility through both a global ESG score and six distinct components: product responsibility, community involvement, human rights, employee relations, resource use, and emissions reduction. This approach enables a granular analysis of how CEO traits influence specific sustainability domains (Choi et al., 2023; Bouzguenda and Jarboui, 2024). Furthermore, these dimensions serve as the basis for robustness checks, thereby validating the consistency of the empirical results across different facets of CSR.

3.3. Measurement of Independent Variables

- CEO Education Level (CEO Level): This is a dichotomous variable coded as 1 if the CEO holds an MBA (Master of Business Administration), and 0 otherwise (Aier et al., 2005; Kouaib and Jarboui, 2016).
- CEO Gender (CEO Gender): A binary variable where 1 represents a male CEO, and 0 represents a female CEO (Manner, 2010; Marquis and Lee, 2013).
- CEO Tenure (CEO Tenure): Measured by counting the number of years since the CEO's appointment, i.e., the number of years the CEO has held the position (Chen et al., 2019; Ahn et al., 2020).

- CEO Age (CEO Age): The natural logarithm of the CEO's age is used as a measure of this variable, following the methodology of Fabrizi et al. (2014); Muttakin et al. (2018); Belot and Serve (2018).
- CEO Narcissism (CEO Narci): CEO narcissism is measured using a four-point index developed by Chatterjee and Hambrick (2007), which includes:
 - (1) The prominence of the CEO's image in the company's annual report.
 - (2) The frequency of the CEO's name mentioned in corporate press releases.
 - (3) The CEO's monetary remuneration.
 - (4) The CEO's non-monetary remuneration.These factors reflect various dimensions of a narcissistic personality. A single narcissism index is obtained by computing the mean of these four indicators, as per Chatterjee and Hambrick (2007) and Oesterle et al. (2016).
- CEO Overconfidence (CEO Over): Overconfidence is assessed using a score based on five dimensions, as outlined by Schrand and Zechman (2012):
 - (1) Industry-adjusted investment excess.
 - (2) The net amount of acquisitions made by the company within the industry.
 - (3) The company's industry-adjusted debt-to-equity ratio.
 - (4) Risky debt.
 - (5) Dividend yield.After calculating the five dimensions, the overconfidence score is determined «CEO Over» is a dummy variable coded as 1 if at least three out of the five dimensions suggest that the CEO is overconfident, and 0 otherwise (Schrand and Zechman, 2012; Kouaib and Jarboui, 2016).

3.4. Measurement of Control Variables

- Firm Size (Size): This variable is measured as the natural logarithm of the book value of total assets at the beginning of the year. We expect a positive relationship between firm size and CSR (McWilliams and Siegel, 2001).
- Firm Profitability (ROA): Firm profitability is calculated as profit before extraordinary items, divided by the book value of total assets at the beginning of the year. We anticipate a positive relationship between firm profitability and CSR (Waddock and Graves, 1997; Tang et al., 2015).
- Leverage (Debt): Leverage is a key factor influencing CSR engagement, as highlighted by several studies (Jiao, 2010; Giroud and Mueller, 2017). It is calculated based on the total debt relative to the book value of total assets at the beginning of the year. We expect a negative relationship between leverage and CSR (Waddock and Graves, 1997; Jiao, 2010).
- Firm Age (AGE): The number of years of existence of the company since its creation.
- CSR Committee (CSRcom): This is a dummy variable that takes the value of 1 if the firm has a CSR committee on the board, and 0 otherwise (García-Sánchez et al., 2022; Garrido-Ruso et al., 2023).

Dependent variables	Measurements	Authors
ESG	The ESG score is an aggregate score based on much information.	<i>Marquis et al. (2011)</i>
Product Responsibility Score	The product responsibility score reflects a company's capacity to produce high quality products and services, incorporating the customer's health and safety, integrity, and data privacy	Choi et al. (2023); Chen et al. (2023); Bouzguenda and Jarboui (2024)
Community Score	It measures the company's commitment to being a good citizen, protecting public health and respecting business ethics	Choi et al. (2023); Chen et al. (2023); Bouzguenda and Jarboui (2024)
Human Rights score	It is a score measuring a company's effectiveness in respecting the conventions of fundamental human rights	Choi et al. (2023); Chen et al. (2023); Bouzguenda and Jarboui (2024)
Employee score	The employee score measures a company's effectiveness towards job satisfaction, and healthy and safe workplace, maintaining diverse and equal opportunities for its workforce	Choi et al. (2023); Chen et al. (2023); Bouzguenda and Jarboui (2024)
Resource use score	Resource Use Score reflects a company's performance and capacity to reduce the use of materials, energy or water, and to find more eco-efficient solutions by improving supply chain management.	Choi et al. (2023); Chen et al. (2023); Bouzguenda and Jarboui (2024)
Emissions reduction score	Emissions Score measures a company's commitment to and effectiveness in reducing environmental emission in the production and operational processes.	Choi et al. (2023); Chen et al. (2023); Bouzguenda and Jarboui (2024)
Independent variables	Measurements	Authors
CEO Level	It is a dichotomous variable that equals 1 if the CEO has an MBA, and 0 otherwise.	Hewa Heenipellage et al. (2022).
CEO Gender	It is a dichotomous variable that equals 1 when the CEO is male, and 0 otherwise.	García-Sánchez et al. (2022).
CEO Tenure	It is the number of years the CEO has held his/her position.	Garrido-Ruso et al.(2023)
CEO Age	It is the log of the CEO age.	Saridakis et al., 2020
CEO OVER	The indicator variable is coded 1 if at least three out of five components of the score indicate that the firm is more likely to have overconfident CEOs, and 0 otherwise:	kouaib and Jarboui (2016).

	<ul style="list-style-type: none"> ▪ XSINVEST_INDADJ is greater than 0, ▪ ACQUIRE_INDADJ is greater than 0, ▪ DERATIO_INDADJ is greater than 0, ▪ RISKYDT is equal to 1, and ▪ DIVYLD is equal to 1. 	
CEO NARCI	<p>The narcissism variable is the weighted average equal to four dimensions:</p> <ul style="list-style-type: none"> ▪ The importance of the size of the CEO photography in the annual report of the company. ▪ The importance of mentioning the name of the CEO in the press releases of the companies. ▪ The importance of the CEO monetary remuneration. ▪ The importance of the CEO's non-monetary remuneration. 	Lin et al. (2022).
Control variables	Measurements	Authors
Size	It is the firm size as measured by the natural logarithm of total assets.	Lin et al. (2022)
ROA	It is the company performance as measured by the ratio of operating income to total assets.	Tang et al. (2015)
Debt	The debt ratio is equal to total debt/total assets.	Giroud and Mueller (2017)
Age	The number of years of existence of the company since its creation	Garrido-Ruso et al. (2023)
CSR com	It denotes a dummy variable that takes the value of 1 if the firm has a CSR committee on the board, and 0 otherwise.	García-Sánchez et al., (2022).

Table 1 : Measurement of Variables**4. Research models**

Econometrically, we estimate regression models to validate our already-formulated hypotheses.

Model 1 :

$$\text{CSRit} = \beta_0 + \beta_1(\text{CEO Level}) + \beta_2(\text{CEO Gender}) + \beta_3(\text{CEO Tenure}) + \beta_4(\text{CEO Age}) + \beta_5(\text{SIZE}) + \beta_6(\text{ROA}) + \beta_7(\text{Debt}) + \beta_8(\text{CSRcom}) + \epsilon_{it}$$

Model 2:

$$\text{CSRit} = \beta_0 + \beta_1(\text{CEO Narc}) + \beta_2(\text{COE Over}) + \beta_3(\text{Size}) + \beta_4(\text{ROA}) + \beta_5(\text{Debt}) + \beta_6(\text{CSRcom}) + \epsilon_{it}$$

Model 3

$$\text{CSRit} = \beta_0 + \beta_1(\text{CEO Level}) + \beta_2(\text{COE Gender}) + \beta_3(\text{CEO Tenure}) + \beta_4(\text{CEO Age}) + \beta_5(\text{CEO Narci}) + \beta_6(\text{CEO Over}) + \beta_7(\text{Size}) + \beta_8(\text{ROA}) + \beta_9(\text{Debt}) + \beta_{10}(\text{CSRcom}) + \epsilon_{it}$$

With: The dependent variable represents the ESG: it denotes the ESG score;

The independent variables are as follows:

CEO Level: it is the level of education of the CEO;

CEO Gender: it is a dichotomous variable indicating 1 when the CEO is male, and 0 otherwise;

CEO Tenure: it is the number of years the CEO has held the position;

CEO Age: it is the age of the CEO;

CEO Over: it designates the CEO confidence level;

CEO Narci: it stands for the narcissism degree;

The control variables are as follows:

SIZE: it refers to the firm size;

ROA: it denotes the firm performance;

DEBT: it stands for the debt ratio;

AGE: The number of years of existence of the company since its creation.

CSRcom: it is a dummy variable that assumes the value of 1 if there is a CSR commission on the board, and 0 otherwise.

5. The Empirical Results and Discussion

5.1. Results of Univariate Analysis

5.1.1. Descriptive Statistics

Table 2 provides the descriptive statistics for the model's variables, detailing both numerical measures and the relative frequencies of dichotomous variables. Concerning the dependent variable, Panel A indicates a mean ESG score of 78.11. This result points to a notably high level of ESG performance within the sample, underscoring a significant corporate focus on sustainable and ethical operations.

Panel B outlines the profile of the sampled CEOs, revealing a leadership demographic with an average age of 65 and an average tenure of 8.17 years. The cohort is predominantly male (93%), and a significant majority (81%) hold an MBA, indicating a high prevalence of advanced business education. Notably, the analysis of psychological traits shows a mean narcissism score of 0.88, aligning with findings that narcissism is common among leaders of major firms (Kim et al., 2018). Furthermore, the results indicate that 76.9% of CEOs in the sample demonstrate a high

level of overconfidence.

Panel A: Descriptive statistics for Dependent variables		
	Mean	Standard deviation
CSR	78,11	19.24
Panel B: Descriptive statistics for independent and control variables		
Continuous variables	Mean	Standard deviation
CEO Tenure	8,17	25,76
CEO Age	65,31	27,00
Size	9,3	0,88
ROA	8,87	2,08
Debt	19,31	4,22
CEO Narci	0,88	2,65
Dichotomous variables	Frequencies	Percentage
CEO Level	1967,5	81%
CEO Gender	2258,97	93%
CEO Over	1867,9	76,9%
CSRcom	1068,76	44%

Table 2: Descriptive statistics

5.1.2. Correlation Analysis

The results presented in Table 3, which include the correlation matrix and Variance Inflation Factor (VIF) scores, **evince** no issues with multicollinearity. All correlation coefficients are below the 0.8 threshold (Brooks, 2008), and the VIF values are substantially lower than 10.

	CEO Level	CEO Gender	CEO Tenure	CEO Age	CEO Narci	CEO Over	Size	ROA	Debt	CSR com	VIF
CEO Level	1,0000										0,664
CEO Gender	0,0011 (0,09)	1,0000									0,688
CEO Tenure	0,0247 (0,0701)	0,0577 (0,0136)	1,0000								0,690
CEO Age	-0,2270 (0,0223)	0,1022 (0,0001)	0,0819 (0,0004)	1,0000							0,713
CEO Narci	0,0138 (0,0005)	- 0,0420 (0,072)	0,0260 (0,2652)	0,0750 (0,0002)	1,0000						0,749

		3)									
CEO Over	-0,0875 (0,0002)	- 0,0420 (0,0723)	0,0445 (0,0568)	0,3089 (0,0000)	0,2382 (0,0005)	1,0000					0,843
Size	0,1722 (0,0000)	- 0,0095 (0,6855)	- 0,0641 (0,0060)	0,1320 (0,0000)	0,4013 (0,0000)	0,2550 (0,0000)	1,0000				0,853
ROA	0,0410 (0,0444)	- 0,0691 (0,0031)	- 0,0104 (0,6566)	0,2021 (0,0000)	0,0728 (0,0018)	0,3090 (0,0000)	0,3408 (0,0000)	1,0000			0,965
Debt	-0,0046 (0,1705)	0,0433 (0,0338)	0,2772 (0,0000)	0,2695 (0,0000)	0,1484 (0,0000)	0,3512 (0,0000)	0,3311 (0,0000)	0,3442 (0,0000)	1,0000		0,988
CSR com	0,8863 (0,0029)	0,0473 (0,0204)	0,2556 (0,0000)	0,2563 (0,0000)	0,1421 (0,0000)	0,3659 (0,0000)	0,3519 (0,0000)	0,4230 (0,0000)	0,3366 (0,0000)	1,0000	0,995

Table 3: Spearman correlation matrix**5.2. Result of the Multivariate Analysis****5.2.1. Tests on Panel Data: Individual-Effects Tests / Hausman Test / Heteroscedasticity Test**

The results of the regression model confirm the appropriateness of panel data methodology. Diagnostic tests, specifically the Hausman test, produced statistically significant results ($p < 0.01$), consistently leading to the rejection of the random-effects model in favor of a fixed-effects specification (table 4). Furthermore, our diagnostics identified issues of serial autocorrelation and heteroscedasticity in the error structure. Given the presence of these violations to the classical linear regression assumptions, standard estimators like fixed-effects with robust standard errors and Ordinary Least Squares (OLS) were deemed inadequate. Consequently, the Feasible Generalized Least Squares (FGLS) method was employed to obtain efficient and reliable estimates.

Therefore, the Feasible Generalized Least Squares (FGLS) estimator was identified as the most suitable technique for model estimation. This method was selected for its proven efficacy in correcting for several common panel data complications, specifically serial correlation, heteroskedasticity, and cross-sectional dependence, thereby ensuring the robustness of our results.

Tests Models	Homogeneity test Fisher test	Specification test Hausman test	Heteroscedasticity Breush Pagan test
M1	1629,42 (0,0000)***	52,31 (0,0000)***	1463.43 (0,0000)***
M2	1434,51 (0,0000)***	15,89 (0,0121)***	4.53 (0,0334)**
M3	1648,33 (0,0000)***	46,86 (0,0000)***	1404.38 (0,0000)***

Table 4. The results of the individual-effects tests.

5.2.2. Overall estimation

A. The impact of the CEO Socio-Demographic characteristics on the CSR

The regression results elucidate the significant role of CEO socio-demographic traits in shaping CSR performance. A key finding is a statistically significant positive association between a CEO's education level and CSR engagement ($Z = 2.87$, p -value = 0.004). This provides strong support for Hypothesis H1, confirming that firms led by highly educated CEOs demonstrate a greater commitment to corporate social responsibility (Malik et al., 2020; Garrido-Ruso et al., 2023). This relationship suggests that advanced academic credentials, like an MBA, equip leaders with the strategic foresight needed to champion and integrate CSR into corporate strategy effectively (Huang, 2013; Velte, 2019; Hewa Heenipellage et al., 2022).

The analysis indicates a modest, marginally significant relationship between CEO gender and CSR performance, providing limited support for Hypothesis H2. This tentative association, significant only at the 10% level, aligns with theoretical expectations that female leaders often prioritize sustainability (Chu et al., 2022; García-Sánchez et al., 2022). However, the weak robustness of this result is likely influenced by the low representation of female CEOs in our sample, which constrains statistical power. Consequently, while a gender-based tendency may exist, the findings imply that gender alone is not a predominant driver of CSR engagement within the context of our sampled firms (Liang et al., 2024).

A strongly significant, positive effect of CEO tenure on CSR performance was observed ($Z = 5.58$, p -value = 0.000), providing definitive support for Hypothesis H3. This aligns with the established view that the early years of a CEO's tenure are a critical period for implementing long-term CSR strategies, driven by the incentive to generate enduring firm benefits and solidify their leadership record (Chen et al., 2019; Chen et al., 2021; Khan et al., 2021). The consistency of this finding with prior research (Bhaskar et al., 2023; Yin et al., 2024; Garrido-Ruso et al., 2023) underscores the reliability of tenure as a key predictor of CSR engagement.

Confirmation for Hypothesis H4 is established, as the results show a clear tendency for younger CEOs to adopt CSR strategies that improve social and environmental outcomes. This aligns with the established view that younger executives are more disposed to prioritize sustainability, often injecting a modern and innovative approach into corporate leadership, a pattern documented in previous studies (Petrenko et al., 2016; Malik et al., 2020).

This analysis confirms that CEO characteristics are pivotal in steering CSR strategy, thereby

validating the core premise of Upper Echelons Theory. The evidence positions education and tenure as the dominant factors, through which a CEO's strategic foresight is translated into sustained CSR engagement and the pursuit of long-term organizational goals.

B. The impact of CEO Psychological characteristics on CSR

Analysis of the psychological determinants in Model 2 reveals that CEO narcissism exerts a significant positive influence on CSR, providing support for H5 ($Z = 2.11$, $p\text{-value} = 0.035$). This finding aligns with the view that the pursuit of prestige and a burnished public image is a key motivator for narcissistic leaders, prompting them to adopt more visible and substantial CSR strategies (Tang et al., 2018; Al-Shammari et al., 2019; Lin et al., 2022; Shan et al., 2023).

A highly significant positive relationship is also observed between CEO overconfidence and CSR engagement ($Z = 7.00$, $p\text{-value} = 0.000$), confirming Hypothesis H6. This indicates that overly confident leaders are associated with stronger corporate social responsibility performance. This finding is consistent with prior research (Chang, 2015; Campbell & Helleloid, 2016; Puchakayala et al., 2023; Wang, 2023). The rationale is that overconfident CEOs possess an elevated belief in their capacity to manage complex challenges, motivating them to undertake bold, long-term CSR initiatives that significantly advance social and environmental goals.

C. The Combined Impact of CEO Socio-Demographic and Psychological Traits on CSR

Model 3 integrates both socio-demographic and psychological variables to provide a holistic analysis of their collective impact on CSR performance. The results demonstrate that a CEO's education, tenure, age, narcissism, and overconfidence are all significant, positive drivers of CSR. This finding underscores the notion that corporate social responsibility is not solely a function of a leader's professional expertise but is also profoundly shaped by their inherent personal attributes and background.

This comprehensive view corroborates the foundational principles of Upper Echelons Theory (Hambrick and Mason, 1984), affirming that the characteristics of top executives—through their values and cognitive frameworks—are decisive in shaping strategic organizational outcomes like CSR. Moreover, the results from Model 3 consolidate and reinforce the individual findings from Model 1 (socio-demographic) and Model 2 (psychological), confirming that the combined influence of these traits is consistent with their individual effects (table 5).

From a practical standpoint, these findings highlight the strategic importance of considering a CEO's complete profile—encompassing both their resume and their psychological makeup—during leadership selection and when formulating CSR strategies (Liao et al., 2019; García-Sánchez et al., 2020; Aibar-Guzmán and Frías-Aceituno, 2021; Hewa Heenipellage et al., 2022; Garrido-Ruso et al., 2023; Liang et al., 2024). Adopting such a nuanced approach to executive assessment can strengthen a company's commitment to sustainability and foster more resilient and relevant CSR practices, ultimately enhancing their ability to meet contemporary societal and environmental challenges (Rahman et al., 2024).

A systematic analysis of the control variables confirms their significant role in shaping CSR outcomes. Specifically, larger scale, higher profitability, increased financial leverage, and the institutionalization of a CSR committee are all associated with enhanced CSR performance. This collective evidence supports the conclusion that companies with ample resources, sound profitability, and structured oversight are more inclined to pursue and achieve advanced levels of corporate social responsibility (Wang et al., 2024).

The variables	Model 1		Model 2		Model 3	
	Z	p-value	Z	p-value	z	p-value
CEO Level	2,87	0,004***			2,97	0,003**
CEO Gender	1,83	0,068**			1,68	0,093**
CEO Tenure	5,58	0,000***			5,13	0,000**
CEO Age	11,32	0,000**			10,23	0,000**
CEO Narci			2,11	0,035**	2,47	0,014**
CEO Over			7,00	0,000***	4,79	0,000**
Control variables						
Size	7,46	0,004***	7,57	0,000***	6,97	0,000***
ROA	3,98	0,068**	4,08	0,000***	3,32	0,001***
Debt	14,47	0,000***	15,15	0,000***	13,11	0,000***
CSRcom	10,47	0,000***	10,53	0,000***	9,41	0,000***
R-square	0,9884		0,8787		0,9884	
Prob>F	0,000***		0,000***		0,000***	
Wald Chi2	1637,13		1435,74		1657,19	
Prob> chi2	0,000***		0,000***		0,000***	

Table 5. Regression results of model 1, 2 and 3

5.3. Robustness cheks

Corporate Social Responsibility is inherently multifaceted, spanning critical areas such as product responsibility, community engagement, human rights, employee management, resource use, and emission reduction (McCarthy et al., 2017; Chen et al., 2023; Bouzguenda and Jarboui, 2024). Despite this complexity, there remains a scarcity of research that concurrently investigates how CEOs' socio-demographic and psychological traits influence both the aggregate CSR score and its distinct sub-dimensions. Our study bridges this scholarly divide by undertaking an integrated examination of these relationships.

The analysis reveals distinct patterns in how CEO traits influence specific CSR dimensions. CEO education, tenure, age, narcissism, and overconfidence all demonstrate a positive aggregate effect on CSR engagement (Choi et al., 2023; Jarboui and Bouzouitina, 2025). A granular examination shows that education exerts its strongest influence on internal and structural dimensions like employee management, resource use, and human rights. In contrast, CEO age is more impactful on external-facing areas such as product responsibility and community engagement. The effect of gender is dimension-specific, showing a positive correlation with product responsibility and emission reduction. The psychological traits further illustrate this differential impact: narcissism exerts a broad influence across all dimensions, particularly human rights and product responsibility, while overconfidence is more narrowly channeled, primarily driving outcomes in

product responsibility and emission reduction through a propensity for strategic risk-taking (table 6).

The influence of organizational-level variables further substantiates these findings. Both firm size and financial performance (ROA) demonstrate a systematic, positive relationship with CSR engagement. The effect of financial leverage, while statistically significant, presents a more complex and divergent pattern across models. The strong explanatory power of the models, as evidenced by high R^2 values, coupled with the statistical significance confirmed by Wald χ^2 tests, underscores the overall validity and reliability of the results.

Collectively, these findings challenge a purely resource-based view of CSR by highlighting the determinative role of the individual at the helm. The study provides the nuanced insight that certain CEO "biases" can paradoxically function as catalysts, rather than impediments, to advancing a corporate responsibility agenda. Consequently, a comprehensive understanding of sustainable governance must integrate the psychological profile of leadership as a key explanatory factor.

The granular analysis across CSR subcategories yields significant scholarly and practical contributions. Primarily, it affirms that the positive association between CEO characteristics and CSR is not an artifact of aggregate measurement but is a stable phenomenon manifesting consistently across distinct sustainability domains, thereby enhancing the validity of the core findings. From an applied perspective, this underscores the strategic importance of incorporating leaders' socio-demographic and psychological profiles into corporate governance and succession planning. Understanding that specific traits influence specific CSR dimensions allows firms to move beyond a one-size-fits-all approach. Boards can now calibrate leadership development programs and executive incentives to deliberately cultivate strengths in targeted areas, such as environmental innovation or community relations, thereby optimizing both societal contribution and long-term corporate value.

In conclusion, this study establishes that a company's CSR trajectory is not solely dictated by financial logic or resource availability but is critically influenced by the personal profile of its CEO. It reveals a compelling paradox: psychological characteristics traditionally perceived as leadership flaws notably narcissism and overconfidence—can paradoxically enable and accelerate a firm's sustainability agenda. These findings position CEO personality not as a peripheral concern, but as an integral component in the architecture of effective and sustainable corporate governance.

Table 6. Robustness checks**6. Conclusion**

The variables	PRODUCT		COMMUNITY		HUMAN RIGHTS		RESSOURCE USE		EMPLOYEE		EMISSION REDUCTION	
	Z	p-value	Z	p-value	Z	p-value	Z	p-value	Z	p-value	Z	p-value
CEO Level	3,73	0,000***	14,71	0,000***	16,32	0,000***	19,63	0,000***	92,82	0,000***	2,61	0,009
CEO Gender	4,77	0,000***	0,98	0,037	1,23	0,217	0,24	0,812	1,92	0,055	7,20	0,007
CEO Tenure	-16,72	0,000***	1,30	0,109	0,38	0,005	0,51	0,611	9,001	0,93	1,10	0,02
CEO Age	27,63	0,000***	4,48	0,000***	-3,95	0,007***	4,02	0,000***	62,01	0,792	8,05	0,09
CEO Narc	3,37	0,001***	2,23	0,026	2,68	0,008	2,18	0,029	8,08	0,380	2,88	0,000
CEO Over	10,91	0,000***	0,90	0,067	1,98	0,059	-0,95	0,340	2,07	0,790	1,93	0,004
Control variables												
Size	17,51	0,000***	1,80	0,071	0,004***	0,431	2,60	0,009***	1,04	0,004***	1,55	0,054
ROA	7,06	0,000***	0,22	0,826	0,068**	0,005	0,11	0,099**	3,05	0,068**	4,55	0,006
Debt	33,38	0,000***	3,12	0,002***	0,000***	0,066	3,58	0,000***	1,19	0,000***	6,51	0,001
CSRcom	21,62	0,000***	0,89	0,074	0,000***	0,122	0,93	0,052	1,32	0,000***	2,65	0,000***
R-square	0,9885		0,6999		0,7997		0,8889		0,7879		0,8989	
Prob>F	0,000***		0,000***		0,000***		0,000***		0,000***		0,000***	
Wald Chi2	1837,13		1655,01		1277,33		1444,24		1543,47		1395,88	
Prob>chi2	0,000***		0,000***		0,000***		0,000***		0,000***		0,000***	

This research establishes that a CEO's personal and psychological profile is a significant driver of corporate social responsibility (CSR). Specifically, background characteristics such as education, tenure, and age, alongside psychological traits like narcissism and overconfidence, were found to be positively correlated with CSR performance. These results indicate that leaders' inherent qualities can effectively propel sustainability agendas. Consequently, the study underscores the critical role of executive leadership in cultivating robust corporate citizenship. The analysis of control variables further underscores how organizational structure and financial standing influence CSR strategy. The results indicate that superior CSR performance is consistently associated with larger firm size, stronger profitability (ROA), greater leverage, and the formal establishment of a CSR committee. This pattern suggests that organizations with more substantial resources, robust financial foundations, and dedicated governance mechanisms possess an enhanced ability to allocate capital towards long-term sustainable initiatives. A pivotal contribution of this research lies in its granular, multi-dimensional approach to CSR. By deconstructing the aggregate measure into six core components—product responsibility, community engagement, human rights, employee relations, resource use, and emission reduction—the analysis offers refined insights into how specific CEO attributes drive discrete sustainability outcomes (Bouzzuenda and Jarboui, 2024). This detailed perspective reveals a critical distinction: whereas certain traits like education uniformly strengthen all CSR domains, others, including gender and overconfidence, display a more targeted influence, predominantly shaping environmental and product-related initiatives.

This research elucidates the multifaceted relationship between CEO attributes, organizational context, and CSR performance. It validates the necessity of integrating both the socio-demographic and psychological dimensions of leadership into the strategic formulation of corporate social responsibility (Phan and Ha, 2024; Yin et al., 2024; Shahzadi et al., 2024). Theoretically, by employing a multidimensional framework, the study advances the CSR literature. It provides compelling evidence that the influence of CEO characteristics permeates not only the aggregate level of CSR commitment but also produces a differential impact across its specific sub-dimensions, thereby offering a more granular explanation of how leadership translates into sustainable practices.

The practical implication for firms is clear: CEO selection and development must evolve to integrate psychological and background assessments. By proactively aligning leadership profiles with specific CSR goals, companies can more effectively translate sustainability ambitions into tangible action, strengthening both their societal impact and competitive advantage.

This research yields significant implications for both theory and practice. Theoretically, it expands the discourse on CSR by constructing an integrated framework of CEO influences, demonstrating that a combination of demographic factors—education, tenure, age—and psychological dispositions—narcissism, overconfidence—can act as catalysts for corporate responsibility. The robustness checks across CSR sub-domains add further nuance, revealing that these leadership attributes do not exert a monolithic effect but often have a differential impact, disproportionately shaping particular areas like employee relations or environmental stewardship.

From a practical standpoint, the findings offer strategic guidance for governance bodies, regulators, and investors, emphasizing that a CEO's holistic profile is a critical determinant of sustainability outcomes. Organizations can leverage these insights to refine executive recruitment and succession planning, deliberately selecting for traits aligned with long-term ESG goals. Furthermore, the results indicate that tailored leadership development initiatives could be designed to foster the cognitive and behavioral patterns that underpin responsible governance, thereby more effectively synchronizing corporate strategy with societal and environmental imperatives.

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