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Red, blue, and green? The association between CEOs' political ideologies and green new product introductions

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Abstract

Not all firms exhibit the same level of commitment to green new product introductions (GNPIs), yet our understanding of the factors underlying these disparities remains incomplete. Prior research has primarily focused on firm-level factors, paying little attention to individual-level antecedents of GNPIs. This imbalance in the GNPI literature contrasts with the broader innovation and general management literature, which displays an ever-growing interest in the "human side of innovation," acknowledging the relevance of Chief Executive Officers' (CEOs') political ideologies for organizational outcomes. Addressing this imbalance, our study examines the relationship between CEOs' political ideologies and their firms' GNPIs, along with the conditions that shape this influence. Grounded in social identity theory, our study first argues that the more liberal CEOs are, the more GNPIs their firms are likely to generate and that this association is amplified by CEO power. It then proposes that the more liberal CEOs are, the more likely they are to respond to adverse situations beyond their control (a Republican presidency or lower levels of consumer green sentiment) by initiating more GNPIs. It finally posits that the more liberal CEOs are, the fewer GNPIs they tend to initiate in response to adverse situations for which they are accountable (involvement in sustainability-related scandals). We integrate data from seven databases into a longitudinal dataset comprising 89 firms and 192 CEOs over the period 2010–2020 to test our theoretical framework empirically. Time-lagged panel regression analyses strongly support our theoretical arguments. Our findings contribute to the emergence of an individual-level, microfoundational perspective on sustainable innovations, our knowledge about the organizational implications and boundary

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conditions of CEOs' political ideologies, and the treatment of multiple identities within social identity theory, especially the relationship between political and occupational identities. The implications of our findings extend to business practitioners, offering valuable insights for CEOs, boards of directors, and investors.

KEYWORDS

CEO liberalism, green product innovation, political ideology

> "Sustainability is a political choice, not a technical one. It's not a question of whether we can be sustainable, but whether we choose to be."
> Gary Lawrence (former advisor to U. S. President Clinton's Administration Council on Sustainable Development)

1 | INTRODUCTION

In the new era of environmental sustainability, the development and launch of environmentally friendly products, often referred to as "green new product introductions" or GNPIs for short (Olsen et al., 2014; Xie et al., 2019), has become an integral component of a firm's innovation strategy (Palmié et al., 2024; Paparoidamis et al., 2019). GNPIs are a subset of green innovation. While green innovation is a broad concept spanning activities, processes, and outcomes aimed at reducing the negative environmental impact of commercial activity and contributing to environmental sustainability (Amore & Bennedsen, 2016; Schiederig et al., 2012), GNPIs represent the outcome of a firm's product-focused green innovation activities (Takalo et al., 2021). GNPIs can bring several valuable outcomes for firms, including improvements in brand attitude (Olsen et al., 2014), enhancement of firms' green images and reputation (Chen, 2008; Dangelico & Pujari, 2010), and the provision of sustainable competitive advantages (Albort-Morant et al., 2016). Contributing to firms' prosperity and society's sustainable development, GNPIs hold significant strategic importance for firms and their stakeholders alike (Juntunen et al., 2019; Katsikeas et al., 2016; Varadarajan, 2017).

Despite the growing acceptance of environmentally friendly products by industries and consumers, firms vary widely in the number of GNPIs they produce. The reasons for this variation are poorly understood (Berrone et al., 2013; Peters & Buijs, 2022). Extant research on the antecedents of firms' GNPIs is limited and predominantly focuses on the organizational level. It has examined factors such as firms' pollution abatement expenditures (Brunnermeier & Cohen, 2003), corporate objectives (Chang, 2011; Dangelico & Pujari, 2010), core competencies (Chen, 2008), and institutional pressures (Berrone et al., 2013). However, such organizational-level research sheds little light on the "human side of innovation management" (Weiss et al., 2022, p. 283). This is unfortunate because such research can improve our understanding of firms' variation in GNPIs. Innovation is fundamentally an individual-level endeavor, which has emerged as a key determinant of innovative outcomes at the firm level (Palmié et al., 2023; Weiss et al., 2022). Recently, the management literature as a whole developed an ever stronger interest in individual-level factors as antecedents of firm-level outcomes, creating a "microfoundations movement" (Felin et al., 2015, p. 575) that entered the innovation management domain (cf. Palmié et al., 2023 for a systematic review). Thus, understanding how individual-level factors influence firms' GNPI has become increasingly relevant.

Our study aims to take a first step in this direction by focusing on Chief Executive Officers (CEOs). Bearing

Practitioner points

- The board of directors should ensure a Chief Executive Officer's (CEO's) personal value aligns with organizational goals to avoid strategic conflict.
- Sustainability-focused firms are advised to strategically recruit leaders with strong environmental and social responsibility values for competitive advantage.
- Conservative CEOs are encouraged to take into account that sustainability initiatives can enhance financial performance, not just ethical imperatives.
- Investors should factor in CEOs' political ideologies when making investment decisions, leveraging this information to influence firms' strategic direction and ensure alignment with environmental priorities.

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the primary responsibility for their firms' strategic decisions, CEOs represent a natural focal point for exploring individual-level antecedents of organizational outcomes (Finkelstein et al., 2009; Hambrick & Mason, 1984). Indeed, the literature that elucidates the influence of CEO characteristics and cognition on firm behaviors, strategies, and performance indicators is vast (cf. Finkelstein et al., 2009; Hambrick, 2007). This research has recently shown a growing interest in investigating the organizational implications of CEOs' political ideologies (Chin et al., 2013; Hutton et al., 2014; Kashmiri & Mahajan, 2017). In today's increasingly complex and uncertain world with grand challenges and geopolitical turmoil confronting decision-makers (Vitriol et al., 2019), ideologies play a central role in decision-making, guiding CEOs as they navigate their firms through challenges where clear-cut, objectively superior strategies rarely exist (Semadeni et al., 2021). Complementing prior research, our study leverages CEOs' political ideologies to address the research gap on individual-level antecedents of firms' GNPIs. Drawing on social identity theory (SIT), we first establish a connection between CEOs' degrees of liberalism and the number of GNPIs their firms produce. We then demonstrate that this link becomes more pronounced as CEO power increases. We further extend our exploration to develop hypotheses probing this relationship under adverse conditions that liberal CEOs[1] may encounter (i.e., a Republican presidency, low consumer green sentiment, or involvement in a sustainability-related scandal). We propose that as CEOs become more politically liberal, they tend to induce their firms to produce more GNPIs when facing adverse conditions beyond their control (e.g., Republican presidency or low consumer green sentiment) and fewer GNPIs in response to adverse conditions resulting from their own actions (e.g., involvement in sustainability-related scandals). Time-lagged panel regression models covering 89 Standard & Poor's (S&P) 500 firms and their 192 CEOs from 2010 to 2020 support our theoretical framework.

Our study makes three important contributions to the academic literature. First, we complement prior efforts that investigated firm-centric antecedents of GNPIs by introducing an individual-level antecedent to these innovations. Analyzing the relationship between individual-level factors and such firm-level outcomes contributes to the GNPI literature as well as to the broader microfoundations movement. Despite the continuous growth of this movement, a systematic review recently highlighted the need for further research on individual-level antecedents of environmental innovations (Palmié et al., 2023). Our study responds to this call.

Second, we extend the body of knowledge about CEOs' influence on firm outcomes. While the existing research in this field typically relies on upper echelons theory (Hambrick, 2007; Hambrick & Mason, 1984), we include SIT to contend that the number of GNPIs that firms produce is driven by the interplay between CEOs' political ideology and boundary conditions. Our study thus offers an intriguing and insightful perspective that incorporates contextual influences into the studies of CEOs' strategic decision-making.

Third, by delving into CEOs' political identities within the SIT framework, we explore how their political identities act jointly with their occupational identities in shaping attitudes, behaviors, and strategic choices on green innovation. Our study thereby advances an underdeveloped area of SIT—the relationship between multiple identities (Greco et al., 2022; Searle et al., 2018; Welbourne & Paterson, 2017). Specifically, our study illustrates the complementarity of CEOs' occupational and political identities—the former influences what they do (making decisions about new products), while the latter influences how they act (increase or decrease the number of green new products). By showing complementarities among identities, our study sheds light on a particularly under-researched relationship between identities (Ramarajan, 2014).

Our study also yields profound practical implications across several dimensions. First, based on our findings, it is crucial for board directors to ensure the seamless integration of CEOs' personal values with organizational goals. This can be achieved by implementing measures designed to detect and mitigate any potential misalignments. Second, sustainability-focused firms can benefit strategically from our insights by actively seeking leaders whose values align with environmental and social responsibility. Moreover, our findings advocate for a transformative shift in perspective among conservative CEOs, encouraging them to view sustainability initiatives not just as ethical imperatives but as strategic assets contributing to enhanced financial performance. Additionally, boards are advised to maintain a vigilant stance toward external triggers influencing CEOs' responses during crises, providing steadfast guidance and support to empower CEOs in navigating challenges effectively. Lastly, investors can utilize our insights by scrutinizing CEOs' political ideologies, exerting influence over firms' strategic direction, and shaping investment decisions aligned with environmental priorities.

[1]When we categorize CEOs as liberal or conservative, we are referring to their political leanings as expressed through their financial support of Democrat or Republican candidates, parties, and associated organizations. It is not necessary for them to be "card-carrying," officially registered members of the respective political party.

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2 | THEORY AND HYPOTHESES

2.1 | Conceptual framework—A social identity perspective on the relationship between CEO's political ideology and GNPIs

A substantial body of research that examines the influence of CEO characteristics on a firm's performance is grounded in upper echelons theory, which posits that top executives' personal characteristics, values, and beliefs, including CEO political ideology, influence firm behavior and performance (Hambrick, 2007; Hambrick & Mason, 1984). Upper echelons theorists have demonstrated that CEOs manifest their political ideologies in various strategic decisions within their firms, such as those related to innovation (Kashmiri & Mahajan, 2017), corporate lobbying efforts and firm value (Unsal et al., 2016), and Research and Development (R&D) expenditure (Hutton et al., 2014). Moreover, researchers have explored how CEO political ideology can influence sustainability-related firm outcomes, including corporate social responsibility (CSR) initiatives (Chin et al., 2013) and environmental litigations (Hutton et al., 2015).

While upper echelons theory emphasizes CEOs' influence on a firm, it sheds little light on the circumstances that stimulate CEOs' likelihood to integrate their political ideology into their strategic decisions and let their ideology guide firm behaviors. SIT (Tajfel, 1974; Tajfel & Turner, 1979, 1986) can illuminate this blind spot, eliciting the contexts in which upper echelons translate their convictions into specific decisions that ultimately shape firm-level outcomes (Golden-Biddle & Rao, 1997; Hillman et al., 2008; Withers et al., 2012).

SIT addresses how individuals think of themselves in social contexts, arguing that individuals identify with certain social groups and derive emotional significance from their group memberships (Sieger et al., 2016). Such identification can extend to a political group representing one's political ideology (Jost, 2006; Tedin, 1987), and it is driven by two fundamental human needs: uncertainty reduction and self-enhancement (Hogg & Terry, 2000; Loi et al., 2013). Identification with a particular group determines what is important to individuals, affects how they interpret information, and offers orientation regarding appropriate attitudes, beliefs, and behaviors (Hogg & Terry, 2000; Langner & Wiedmann, 2015). It also instigates a feeling of connectedness to the fate of the group and provides a frame of reference for establishing one's self-worth (Hogg & Terry, 2000; Sieger et al., 2016). Individuals typically experience an increase in self-worth when they achieve congruence between the norms and stereotypes of their social identity and their behaviors (Sieger et al., 2016; Tajfel & Turner, 1979). For these reasons, examining individuals' social identity makes it possible to "understand and predict [their] behavioral choices and actions" (Sieger et al., 2016, p. 544).

SIT acknowledges that the degree to which individuals use a specific group to define themselves is not uniform across situations (Hogg et al., 1995; Korschun, 2015). The extent to which individuals "attempt to align their actions with the normative behaviors of an identity depends on the strength of identification or salience of that identity" (Hillman et al., 2008, p. 442). Different situations "trigger the salience of different identities [...] and the contextual salience of an identity trumps the general strength of identification" (Withers et al., 2012, p. 837; also see Ashford, 2013; Hogg et al., 1995). In other words, the overall strength of identification with a specific group does not affect individuals' behavior in situations where the respective identity is not salient (Withers et al., 2012). Social identity theorists, therefore, focused on those situations in which the focal identity is likely to become salient to many members of the corresponding group. Their primary interest is adverse situations that threaten the realization of group goals and the positive distinctiveness of the group, arguing that these threats trigger identity salience (Brown, 2020; Tajfel & Turner, 1979, 1986; Withers et al., 2012). Noting its pronounced emphasis on adverse situations, some scholars conclude that "technically, [social identity theory is] a theory about how groups which have been discriminated can boost themselves and can campaign against discrimination" (Brown, 2020, p. 14). Similarly, other scholars believe SIT is "first and last" about social conflict and change (Brown, 2020, p. 12).

Building upon this tradition of SIT, we start our study by validating the association between CEOs' political ideologies and the number of GNPIs generated by their respective firms. Subsequently, we delve into the investigation of internal and external factors that serve to moderate this relationship. Specifically, we focus on three contextual factors that CEOs with increasingly liberal (versus conservative) political ideologies may perceive as threats to their goals: being confronted with a Republican (versus Democrat) presidency, a weak (versus strong) consumer green sentiment, and their firm's involvement in a sustainability-related corporate scandal. Thus, we first examine the relationship between CEOs' political ideologies and their firms' GNPIs (Hypothesis 1) and subsequently assess the interaction between political ideology and CEO power (Hypothesis 2) before exploring how these adverse factors moderate the aforementioned relationship (Hypotheses 3–5). Figure 1 provides an overview of our conceptual framework.

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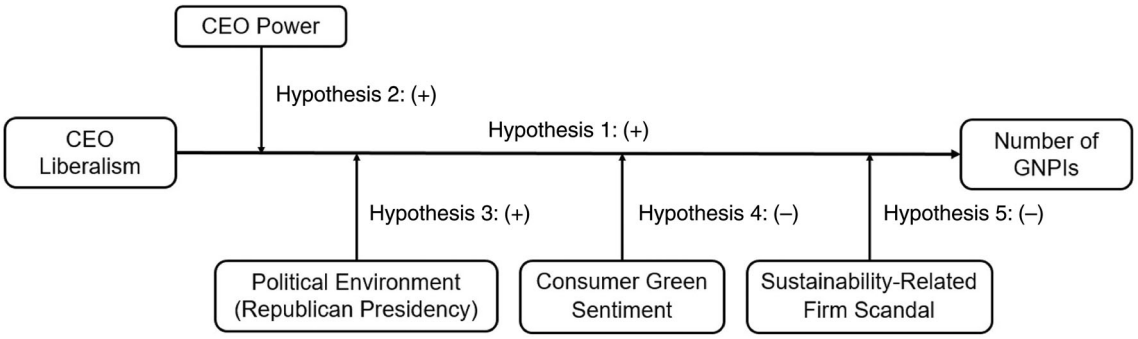

FIGURE 1 Conceptual framework. CEO, Chief Executive Officer; GNPIs, green new product introductions.

2.2 | Association between CEO political ideology and GNPIs

According to social identity theorists, individuals who strongly identify with a social group are more likely to exhibit attitudes and behaviors (e.g., effort, commitment) that align with their group's preferences (Ashforth et al., 2008; Haslam & Ellemers, 2005; Steele & Lovelace, 2023). Such identification can extend to a political group representing one's political ideology (Jost, 2006; Tedin, 1987). In the U.S. context, an individual's political ideology summarizes values and beliefs held by that person along a liberal-conservative continuum (Jost, 2006; Schwartz, 1996) and is commonly associated with one of the two major political parties, Democrats or Republicans (Jost, 2006; Jost et al., 2003). The Democratic Party represents the liberal end of the continuum, while the Republican Party represents the conservative end (Gupta et al., 2017; Hutton et al., 2014; Jost, 2006). The more CEOs identify with either political party, the more this party's values and beliefs will inform their strategic decisions and actions. This is evident in the emerging CEO political orientation literature, which shows that CEOs who lean more toward conservatism tend to be more risk-averse, resulting in lower corporate debt levels for their firms (Hutton et al., 2014). In contrast, CEOs leaning more toward liberalism often exhibit higher tolerance for ambiguity (Kashmiri & Mahajan, 2017), leading their firms to engage more heavily in CSR initiatives (Chin et al., 2013). One of the most prominent differences observed by previous work concerns corporate environmentalism (Jost et al., 2003; Schwartz, 1996). Republicans prefer limited governmental regulation and prioritize economic success, while Democrats are more inclined to advocate for legislation favoring environmental protection (Gustafson et al., 2020; Jost et al., 2003; Schwartz, 2012). Correspondingly, CEOs leaning more toward liberalism have been found to endorse more stringent environmental policies, whereas firms led by CEOs with stronger conservative leanings tend to face higher litigation risks related to environmental issues (Hutton et al., 2015).

GNPIs combine the intricacies of innovation and eco-friendliness, constituting a strategic imperative at the firm level that requires a leader with a strong ideological conviction and a deep commitment to the cause (Dangelico & Pujari, 2010). These attributes align more closely with a more liberal rather than conservative political ideology (Chin et al., 2013; Gustafson et al., 2020; Hutton et al., 2015). CEOs who strongly identify with the liberal political ideology may prioritize environmental sustainability as a way to reinforce their social identity and signal their allegiance to the liberal political group. This heightened salience of their political identity may drive them to champion GNPIs as a means of expressing and affirming their liberal values. Moreover, these liberal-leaning CEOs may also feel compelled to conform to group norms that prioritize environmental sustainability and social responsibility, leading to greater support for GNPIs as a way to adhere to perceived expectations within their political in-group. Therefore, we propose:

> **Hypothesis 1.** *CEO political liberalism is positively associated with the number of GNPIs.*

2.3 | The moderating effect of CEO power

CEO power refers to a CEO's capacity to utilize or mobilize financial, technical, and discursive resources to drive organizational activities (Fleming & Spicer, 2014; Schildt et al., 2020). CEO power is not uniform across firms; it can differ depending on firms' governance structure (Chin et al., 2013; Finkelstein et al., 2009; Zajac & Westphal, 1996). Factors influencing CEO power include whether CEOs also serve on the board of directors, the extent of their financial ownership in the firms, and

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whether they founded the firm. A more powerful CEO typically faces fewer constraints from the board and enjoys greater autonomy and flexibility in making strategic decisions without external interference (Kashmiri & Mahajan, 2017).

SIT principles suggest that individuals with greater power and capacity assert their social identity more extensively and emphatically (Hogg & Terry, 2000; Lyons et al., 2017). Occupying the highest leadership position, CEOs are poised to manifest their political ideologies more prominently in their organization's strategic decisions when they possess greater power within the organization (Chin et al., 2013; Finkelstein, 1992; Kashmiri & Mahajan, 2017). Greater power enables liberal-leaning CEOs to champion GNPIs within their firms, leveraging their influence to align organizational strategies with environmental values. Conversely, conservative CEOs with greater power may resist GNPIs, reflecting their ideological stance and exerting influence to maintain traditional business practices. Therefore, we propose:

> **Hypothesis 2.** *CEO power strengthens the positive association between CEO liberalism and GNPIs.*

2.4 | The moderating effect of the political environment

The national political environment can be a critical enabler or inhibitor of innovation (Thelen, 2018; Yi et al., 2021). Through means such as regulations, subsidies, and advocacy, governments can induce firms to produce innovations that align with governmental preferences (Caerteling et al., 2013; Schweitzer et al., 2022; Song et al., 2020). For example, R&D subsidies provided by the government can steer firms toward innovation activities that align with governmental preferences (Yi et al., 2021).

In the United States, the political environment is fundamentally shaped by the political party in power at the presidential level (Semadeni et al., 2021). Since conservatives are typically less enthusiastic about environmental initiatives than liberals (Chin et al., 2013; Gupta et al., 2017; Hutton et al., 2015), the political environment tends to be less favorable for GNPIs when Republicans hold the presidency. As a result, it might be anticipated that firms would generate fewer GNPIs during a Republican presidency than a Democratic one.

However, SIT suggests a different outlook for firms led by CEOs with a liberal political ideology. This is because the more liberal these CEOs are, the more likely they perceive a Republican presidency as challenging their own ideological beliefs (Semadeni et al., 2021). According to SIT, individuals who identify with a subordinate group often become more attached to the group and advocate for its beliefs and ideology more fiercely when these beliefs clash with those of the dominant group (Brown, 2000; Tajfel & Turner, 1979, 1986). Examples of this phenomenon can be seen in Howard Schultz, CEO of Starbucks, and Hamid Ulukaya, CEO of Chobani, who openly challenged President Trump's 2017 U. S. immigration ban by hiring refugees.

SIT provides several explanations for such behavior (Haslam et al., 2018; Steele & Lovelace, 2023). First, identifying with the disadvantaged group can increase the extent to which achievement benefits individuals' self-esteem. When people identify with the political party that has lost an election, they often recognize that the chances of achieving their party's goals are lower than what they might have been if their party had won the election (Harmel & Janda, 1994; Huddy et al., 2015). Overcoming these odds can make even small successes highly rewarding and satisfying (Benford & Snow, 2000; Steele & Lovelace, 2023). Second, identifying with the disadvantaged group can increase the perceived level of social support and, consequently, the perceived ability to challenge and possibly reverse status differences (Branscombe et al., 1999; Brown, 2000; Haslam & Reicher, 2006). Third, individuals may shift their focus away from their in-group's current, lower status and toward an envisioned higher status in the future (Steele & Lovelace, 2023; Tajfel & Turner, 1986). This shift is nicely illustrated by the saying, "They may have won the battle, but we will win the war" (Steele & Lovelace, 2023, p. 40).

In contrast, individuals identifying with the dominant group are often content with the existing status quo and may have little motivation to change their decisions and actions (Tajfel & Turner, 1986). Taken together, we argue that CEOs with a liberal political ideology will uphold their convictions more vigorously by promoting more GNPIs within their firm when confronted with a Republican presidency instead of a Democrat presidency. Therefore, we propose:

> **Hypothesis 3.** *A Republican presidency strengthens the positive association between CEO liberalism and GNPIs.*

2.5 | The moderating effect of consumer green sentiment

Consumer sentiment encompasses individuals' collective attitudes and opinions prevailing within society (Rocklage et al., 2023). Specifically, consumer green sentiment

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comprises societal attitudes and opinions concerning environmental issues (Vysotska & Vysotskyi, 2022). The level of consumer green sentiment signifies how much importance consumers place on environmental sustainability in purchase and usage decisions (Haws et al., 2014; Schuhwerk & Lefkoff-Hagius, 1995).

High levels of consumer green sentiment often signal a rising demand for eco-friendly products (Chen et al., 2019). Under these conditions, producing more GNPIs makes sense from a purely economic perspective. Thus, even CEOs who assign little inherent value to sustainability have an incentive to promote GNPIs (Gustafson et al., 2020). The more conservative people are, the more they tend to prioritize an economic perspective on environmental issues over the inherent value of environmental protection (Dunlap & McCright, 2008; Feinberg & Willer, 2013). Therefore, we expect more conservative CEOs to increase their support of GNPIs if consumer green sentiment gets stronger and decrease their support if consumer green sentiment weakens.

Individuals prioritizing environmental protection as an inherent goal are expected to respond differently to declining consumer green sentiment. To them, limiting oneself to the economic analysis of short-term business opportunities easily appears as an insufficient or even cynical response. A decline in consumer green sentiment poses challenges to achieving the Sustainable Development Goals (Vysotska & Vysotskyi, 2022), as outlined by the United Nations and advocated by the Democratic Party in the United States (Pipa, 2023). According to SIT, ideologies become cognitively salient when individuals encounter "incongruent environments," especially if the incongruence concerns an emotionally charged topic and is perceived as a threat (Gupta & Briscoe, 2020; Livengood & Reger, 2010). The more liberal individuals are, the more they tend to see environmental protection as an emotionally charged and worrisome issue (Wong-Parodi & Feygina, 2021). Therefore, a greater liberal orientation will increase the salience of declining consumer green sentiment and motivate individuals to respond to the perceived threat and defend their identity (Ashforth & Mael, 1989; Livengood & Reger, 2010). Following this reasoning, CEOs with a more liberal orientation can be expected to increase their support for GNPIs as consumer green sentiment declines. Consequently, SIT suggests that the differences between CEOs representing different political ideologies will be bigger when consumer green sentiment is weak and smaller when consumer green sentiment is strong. Thus, we propose:

> **Hypothesis 4.** *Consumer green sentiment weakens the positive association between CEO liberalism and GNPIs.*

2.6 | The moderating effect of firm scandal

In our study, a firm scandal refers specifically to a sustainability-related scandal. A sustainability-related scandal is a controversy involving a firm or its management that is accused of transgressing formal or informal rules and norms regarding sustainability standards (Giannakis & Papadopoulos, 2016; Hallikas et al., 2020). Such scandals are perceived by CEOs as threats to their organizations (Chin et al., 2013; Jackson & Dutton, 1988; Semadeni et al., 2021), prompting them to take measures to mitigate the consequences and restore their firms' reputation (Chin et al., 2013).

SIT suggests that individuals typically seek to behave in a manner perceived as appropriate by the members of the group they identify with (Withers et al., 2012). Maintaining consistency between one's behavior and the prototypical conduct of one's reference group is a source of self-esteem, whereas a perceived discrepancy can undermine one's self-image (Hogg & Terry, 2000; Tajfel & Turner, 1986). Behaving in accordance with sustainability principles assumes a higher priority in liberal than in conservative ideologies (Chin et al., 2013; Gupta et al., 2017; Hutton et al., 2015). The more CEOs identify as liberals, the more entangled in a sustainability-related scandal tends to elicit feelings of guilt, shame, and cognitive dissonance (Ellemers et al., 2004; Tangney et al., 2007). Thus, CEOs with a stronger liberal identity will experience more cognitive-emotional turmoil when involved in a sustainability-related scandal. Such turmoil can lead to defensive or avoidant behaviors (Carver & Connor-Smith, 2010; Löw et al., 2015).

Moreover, other group members may seek to sanction individuals who violate group norms, in an attempt to protect and reinforce their social identities (Brown, 2020; Festinger, 1950). The more CEOs identify with the group whose members sanction them, the more such sanctions increase the cognitive-emotional turmoil these CEOs are experiencing. They may opt to temporarily scale back their pro-environmental engagement to mitigate exposure to such sanctions.

The extent to which more conservative CEOs support GNPIs is primarily driven by commercial considerations rather than ideological conviction (Chin et al., 2013; Gupta et al., 2017). As a result, they are likely to experience less profound cognitive-emotional turmoil following a sustainability-related scandal. They may even leverage the situation to make a publicity-driven shift toward greater sustainability (Ellemers et al., 2004; Tangney et al., 2007). Stakeholders may respond more favorably to green products launched by more conservative CEOs who turn to sustainability initiatives after being caught in

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sustainability-related scandals ("converts") than to those launched by more liberal CEOs who had championed sustainability before but were then caught violating sustainability-related norms ("sinners") (Janney & Gove, 2011; Wans, 2020). In the aftermath of a sustainability-related scandal, more conservative CEOs might direct more efforts toward GNPIs to restore their firms' public image and to avoid further penalties or negative consequences (Berrone et al., 2013). Thus, we propose:

> **Hypothesis 5.** *Sustainability-related firm scandals weaken the positive association between CEO liberalism and GNPIs.*

3 | METHODOLOGY

3.1 | Data collection

We employed a five-step process to assemble a data set to test our hypotheses. Our data sample combines archival information from multiple sources, encompassing U. S. S&P 500 firms in the fast-moving consumer goods (FMCG) industry that introduced new product innovations in the U.S. market from 2010 to 2020. First, we gathered new product information from Datamonitor's Product Launch Analysis (PLA). The PLA database tracks new product launches and product characteristics (e. g., manufacturers, brands, claims, and package sizes) in the FMCG industry. The PLA database is widely recognized and used by academic scholars (Lamey et al., 2012; Olsen et al., 2014; Srinivasan et al., 2018). We captured all new product launches in eight FMCG categories, including household products, personal care, food, nonalcoholic beverages, alcoholic beverages, pet care and animal feed, other consumer products, and tobacco. Second, we retrieved information on the firms that launched these new products and their financial data from the S&P Capital IQ database. This step allowed us to identify firms registered and headquartered in the United States (henceforth called U.S. firms). Third, we identified the CEOs of the selected firms in the focal time frame and collected information about these CEOs from Compustat's Execucomp database, a data source encompassing corporate executive characteristics and compensations. Fourth, we retrieved the political contributions made by these CEOs from OpenSecrets (www.opensecrets.org), a nonpartisan, independent, and nonprofit U.S. research group that tracks monetary donations in U.S. politics. The OpenSecrets database is frequently used in marketing and management research (Chin et al., 2013; Kashmiri & Mahajan, 2017). Finally, we completed our data set by coding key variables, including the national political environment by the U.S. presidency for each year of observation, consumer green index from the U. S. annual survey by the Yale Program on Climate Change Communication (Yale School of the Environment), and information on firms' news related to firm scandals and controversies from Dow Jones Factiva, a platform that aggregates contents from 30,000 sources, including newspapers, newswires, trade journals, websites, blogs, and multimedia.

As a result, our final data sample comprises 89 firms and 876 firm-year observations. In the period 2010–2020, these firms were led by 192 CEOs. Table 1 provides a comprehensive summary of the data sources, definitions, and measures of the variables used in our study.

3.2 | Measures

3.2.1 | Dependent variable

Our study's dependent variable is the number of *GNPIs* launched by the focal firm in a given year. We measured this variable using the method employed by Olsen et al. (2014), which is based on the 2012 "Green Guides" issued by the U.S. Federal Trade Commission. This approach compares the product claims reported in the PLA database for a product's stock-keeping units (SKUs) to a predefined set of green claims (see Appendix 1). If an SKU features one or more product claims that match one or more entries in the list of predefined green claims, the SKU is categorized as "green." For example, if an SKU in the PLA database features the claim "No antibiotics," which matches one of the 35 green claims listed in Appendix 1, it is considered a green SKU. Subsequently, a product containing one or more green SKUs is categorized as a new green product. The GNPI variable in our study, in turn, quantifies the number of green products that the focal firm introduced in a specific year.

3.2.2 | Independent variable

Following the work of Chin et al. (2013) and Kashmiri and Mahajan (2017), we measure *CEO liberalism* to represent a CEO's political ideology, using his or her personal political contributions through the following four indicators: (1) the number of annual donations made to the Democratic Party and Democratic candidates divided by the total number of donations made to both the Democratic Party/Democratic candidates and the Republican Party/Republican candidates during the CEO's tenure at the focal firm; (2) the dollar amount of annual donations to the Democratic Party and Democratic candidates

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TABLE 1 Summary of measures and data source.

Variable	Operationalization	Data source
Green New Product Introductions	Number of green new products introduced by a firm in the year of observation. Green SKU is first identified by its product claims—if one or more product claims match any of the predetermined 35 green claims. A product is considered green if one or more of its SKUs are green	PLA of datamonitor
CEO liberalism (four-indicator measure)	The average of four indicators measured during the tenure of each CEO: (1) the number of donations the CEO made to Democrat recipients divided by the total number of donations to recipients of both parties, (2) the dollar amount of donations to Democrat recipients divided by the total amount of donations to recipients of both parties, (3) the number of distinct Democratic recipients to which the CEO made donations divided by the total number of distinct recipients of both parties to which the CEO made donations, and (4) the number of years the CEO made donations to Democrat recipients divided by the number of years donations CEO made to either party. Assume a ratio of 0.50 for the indicator if the denominator is 0	OpenSecrets www.opensecrets.org
Political environment	Dummy variable = 0 if the U.S. President is a Democrat in the year of observation; 1 if the U.S. President is a Republican	
Firm scandal	Dummy variable = 1 if the firm has sustainability-related scandal(s) in the year of observation; 0 if the firm has no such scandal(s)	Dow Jones FACTIVA
Consumer green sentiment	An annual indicator represents the U.S. public opinion on climate change, taken from the annual online survey of U.S. consumers from 2008 to 2022	Yale Program on Climate Change Communication
CEO power (three-indicator measure)	The average of the standardized scores of three indicators: in the year of observation, (1) CEO duality as a dummy variable indicating if the CEO was also the board chairman, (2) CEO stock ownership as a percentage of the firm's total shares owned by the CEO, and (3) CEO ownership as a dummy variable indicating if the CEO was also the founder or co-founder	Execucomp
Consumer sentimental index	An annual indicator, derived from simple random surveys conducted in the 48 contiguous States and the DC, measures consumers' optimism about the economy and personal finances, providing a nationally representative sample	University of Michigan, Survey Research Center
Industrial sector	Dummies from 1 to 8 indicating sectors of the FMCP industry in the sample (e.g., 1 = beverage-alcoholic, 2 = beverage-nonalcoholic, 3 = food, 4 = household products, etc.)	PLA of datamonitor
CEO's international experience	Dummy variable: 0 if a CEO has no international experience; 1 if a CEO has	Biography (internet)
CEO's tenure	Number of years a CEO is in position within a firm	Execucomp
CEO change	Dummy variable of a new CEO in a firm (1 = new, 0 = not new)	Execucomp
CEO's gender	The numeric form of the dummy variable CEO's gender. Dummy = 1 for males, 2 for females	Execucomp
CEO's age	Natural logarithm of the CEO's age	Execucomp
Firm size	Natural logarithm of the firm's total employees, which were recorded in thousands	S&P Capital I.Q.
Marketing intensity	(Selling, general, and administrative expenses/total assets) × 100	S&P Capital I.Q.
Year	The calendar year of the observation from 2010 to 2020	Calendar year

Abbreviations: CEO, Chief Executive Officer; SKU, stock-keeping unit; PLA, Product Launch Analysis.

divided by the total dollar amount of donations made to both the Democratic Party/Democratic candidates and the Republican Party/Republican candidates during the CEO's tenure at the focal firm; (3) the number of distinct Democratic recipients to which annual donations were made divided by the total number of distinct recipients of both parties during the CEO's tenure at the focal firm; (4) the number of years annual donations were made to the Democratic Party and Democratic candidates divided by the number of years donations were made to either the Democratic Party/Democratic candidates and the Republican Party/Republican candidates during the

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CEO's tenure at the focal firm. According to Chin et al. (2013), these four indicators collectively represent a CEO's political ideology, respectively indicating "one's behavioral commitment, financial commitment, persistence of commitment, and scope of commitment to a political orientation" (p. 208). For these calculations, we included contributions to individual candidates, party committees, and any political action committees identified as Republican or Democratic supporters. Consistent with previous research, we calculate the CEO's overall degree of liberalism by averaging these four indicators. The resulting index score ranges from zero to one, with a score above 0.50 signifying a liberal-leaning ideology, a score below 0.50 indicating a conservative-leaning ideology, and a score of 0.50 suggesting political neutrality (Chin et al., 2013; Kashmiri & Mahajan, 2017). For instance, in a given year, a CEO with a 6-year tenure over our observation period may have made one donation totaling $1000 to Democrats and three donations totaling $4000 to Republicans, including two distinct Democratic recipients and three distinct Republican recipients, and donated to Democrats in 2 years and to Republicans in four years of their tenure. The CEO's scores for each indicator are as such: liberalism score according to number of donations = 1/4 = 0.25; liberalism score according to dollar value of donations = 1000/5000 = 0.20; liberalism score according to number of recipients = 2/5 = 0.40; liberalism score according to number of years of donation = 2/6 = 0.33. By averaging these four scores, we obtain the CEO's overall score CEO liberalism (0.30 in this example), indicating a Republican-leaning ideology. Following Chin et al. (2013), indicators whose denominator equaled zero were set to 0.50.

3.2.3 | Moderator variables

Following prior research (Chin et al., 2013; Gao & Jain, 2012; Kashmiri & Mahajan, 2017), we measure *CEO power* as the average of the standardized scores of three indicators: (1) CEO duality (dummy variable indicating whether the CEO is also the chairman of a firm); (2) CEO stock ownership (percentage of a firm's outstanding shares that are held by the CEO); (3) CEO firm founder (dummy variable indicating if the CEO has been the founder or co-founder of a firm). Building on the work of Caerteling et al. (2013), Semadeni et al. (2021), and Thelen (2018), the *political environment* is indicated by a dummy variable that signifies which political party is in control of the U.S. presidency. Specifically, the binary variable takes on a value of 1 when a Republican is the U.S. President and 0 when a Democrat is the U. S. President during a specific year within our data sample. To measure *consumer green sentiment*, we utilized the annual survey data of U.S. public opinion regarding climate change conducted by Yale Program on Climate Change Communication from 2008 to 2022. From the survey results, we extracted the annual percentage of participants who expressed personal concern about climate change, encompassing those who considered it to be "extremely," "very," or "somewhat" important. This share denotes the level of consumer green sentiment in the respective year. Following Chin et al. (2013), we employed a binary indicator to account for *sustainability-related firm scandals*, which refer to controversies indicating the violation of social and ecological standards (e.g., environmental pollution, human rights, discrimination). This indicator is assigned a value of 1 for years in which the focal firm was involved in one or more sustainability-related scandals and 0 for years in which the firm was not involved in such scandals.

3.2.4 | Control variables

In line with previous research on CEO political ideology (Chin et al., 2013; Kashmiri & Mahajan, 2017; Semadeni et al., 2021), we have incorporated control variables that encompass various factors across different levels of analysis. At the firm level, we have included controls for industry affiliation, firm size, R&D intensity, marketing intensity, and total number of new products launched in the observation year. At the CEO level, we control demographic attributes, including age, gender, international experience, and CEO tenure. We also control for *CEO change*, considering the possibility that firms may undergo a change in leadership. In this context, we include a binary variable that takes on the value of 1 during a year when a new CEO takes over in the focal firm and 0 during years when the CEO remains unchanged. Finally, we have included control variables for the U. S. *consumer sentiment index*, an annual economic indicator provided by the University of Michigan that measures the level of optimism U.S. consumers have regarding the general state of the economy and their individual financial circumstances, and the *year*.

3.3 | Estimation

To assess our hypotheses, we employed several tests to determine the most appropriate panel model for our data. First, in real-world business contexts, there is often substantial lead time from the initial new product development to the final commercialization. Although the development cycle for consumer products is shorter than

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in many other industries, it typically spans around a year (Griffin, 2002). Our analysis, therefore, incorporates a 1-year lag for the independent variable (e.g., CEO liberalism measured in 2010 corresponds to the number of GNPIs in 2011). Second, the nature of our dependent variable—a firm's number of GNPIs in a given year—suggests using a count estimator. Furthermore, our GNPI variable exhibits excessive zeros (with zero counts at the 50th percentile; cf. Figure 2). The overall average number of GNPIs is low at 1.695 products (SD = 4.504), suggesting that not every firm in our data set launches GNPIs every year. For comparison, the overall average number of all new products (including green and "nongreen" new products) is 12.293 (SD = 42.255). Two different processes may cause a firm to display zero GNPI. On the one hand, a firm may produce innovations but decide against launching green innovations. On the other hand, a firm may engage in deliberate noninnovation (Keupp et al., 2012), precluding the firm from launching green innovations. These alternative processes can result in an excessive amount of zeros in our dependent variable. To account for excessive zeros, our analysis employs a zero-inflated count estimator. We include variables such as firm size, industry, CEO change, and the number of nongreen products in the logit part of the model predicting excessive zeros. Specifically, we use the zero-inflated negative binomial estimator because the Akaike Information Criterion (Akaike, 1974) and the Bayesian Information Criterion (Schwarz, 1978) both indicate that the zero-inflated negative binomial estimator fits our data better than the zero-inflated Poisson estimator. The likelihood ratio test ($p < 0.001$) corroborated the appropriateness of the zero-inflated negative binomial regression for our analysis.

3.4 | Analysis and results

Our final sample comprises 876 observations, representing 89 S&P U.S. firms led by 192 CEOs from 2010 to 2020. Among the 192 CEOs, 176 are males, and 16 are females, with an average age of 55.667 years and an average tenure of 4.521 years (SD = 2.932). CEO liberalism has an overall average of 0.460 (SD = 0.246), indicating a slightly conservative pool of CEOs. The overall average number of GNPIs is 1.695 (SD = 4.504). Our explanatory and moderating variables are not highly correlated. Moreover, their variance inflation factors do not exceed a very low value of 2.310 in any model. These results indicate the absence of multicollinearity among our variables. Table 2 presents descriptive statistics and correlations for our measures.

Table 3 presents the results from the zero-inflated negative binomial regression analysis. The analysis

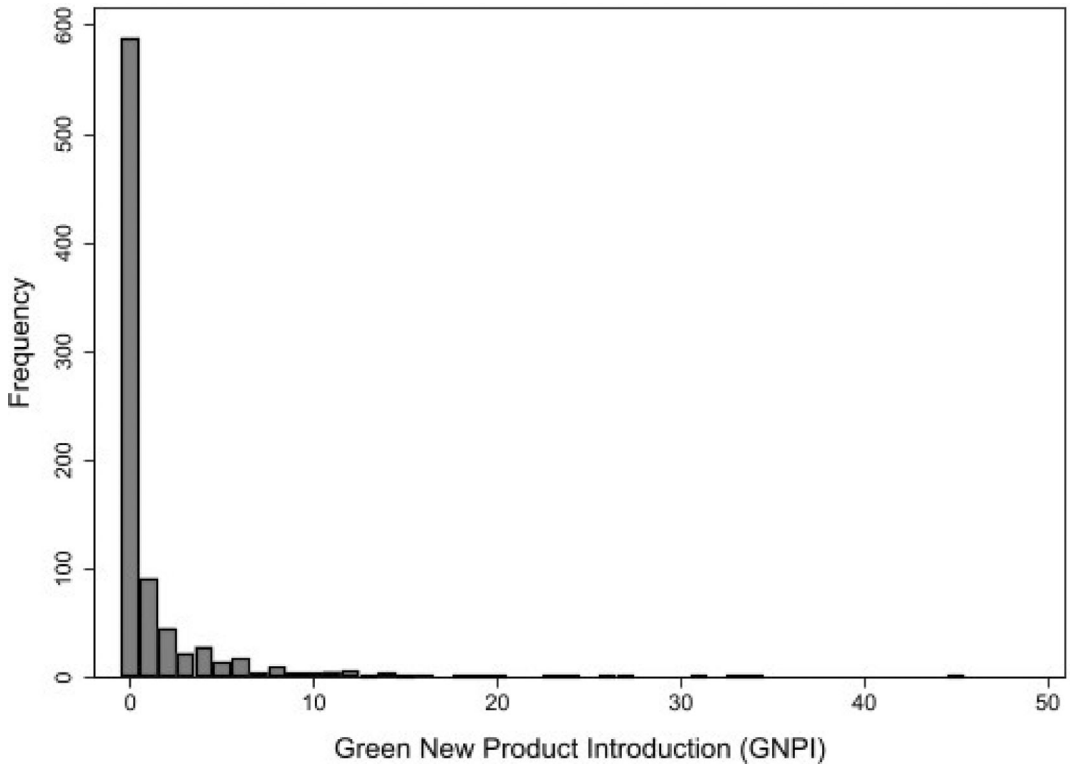

FIGURE 2 Histogram of green new product introductions.

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TABLE 2 Descriptive statistics and correlation matrix.

Variables	*M*	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) GNPI	1.695	4.500	1.000																	
(2) CEO liberalism (1-year-lag)	0.460	0.250	0.059*	1.000																
(3) Political environment	0.337	0.473	−0.078**	0.059*	1.000															
(4) Firm scandal (1-year-lag)	0.200	0.400	0.072**	−0.001	0.000	1.000														
(5) Consumer green sentiment	61.878	3.839	−0.058*	0.079**	0.860***	−0.009	1.000													
(6) CEO power (four-indicator measure)	−0.009	0.711	−0.017	0.038	−0.071**	−0.003	−0.054*	1.000												
(7) CSI	84.700	10.269	−0.174***	0.046	0.597***	−0.037	0.607***	−0.066*	1.000											
(8) Total new products	12.293	42.255	0.679***	0.050	−0.140***	0.043	−0.105***	−0.045	−0.215***	1.000										
(9) CEO change	0.123	0.329	−0.015	0.042	0.093***	0.018	0.057*	−0.188***	0.074**	0.004	1.000									
(10) CEO's tenure	6.377	2.946	−0.119***	−0.011	−0.101***	−0.061*	−0.089***	0.337***	0.099***	−0.097***	−0.331***	1.000								
(11) CEO's age (ln of age)	4.059	0.131	−0.061*	0.023	0.069**	−0.032	0.054*	0.450***	0.106***	−0.061*	−0.186***	0.263***	1.000							
(12) CEO's gender	1.087	0.282	0.121***	0.105***	0.038	−0.035	0.047	0.004	0.065*	0.076**	0.008	0.054*	−0.014	1.000						
(13) CEO's international experience	0.361	0.480	0.093***	0.094***	0.088***	0.070**	0.076**	−0.033	0.075**	0.095***	0.073**	−0.073**	−0.121***	−0.080**	1.000					
(14) Industrial sector	3.751	1.779	0.044	−0.012	−0.005	0.064*	0.002	0.092***	0.011	0.109***	0.043	−0.011	0.012	0.025	0.148***	1.000				
(15) Firm size (ln of employees in '000s)	2.874	1.824	0.087**	0.041	0.047	0.301***	0.044	−0.101***	0.039	0.104***	0.018	−0.006	0.055*	0.076**	−0.05	0.125***	1.000			
(16) R&D intensity (%)	1.158	1.504	0.075*	−0.013	−0.006	0.116***	−0.009	0.044	−0.034	0.065	0.017	0.000	0.034	−0.071*	0.208***	0.221***	0.144***	1.000		
(17) Marketing intensity (%)	25.669	24.711	0.015	−0.017	−0.057*	−0.021	−0.054	0.016	−0.044	0.153***	−0.004	0.030	−0.099***	0.117***	−0.015	0.018	−0.100***	0.030	1.000	
(18) Year (2010–2020)			−0.175***	0.057	0.832***	−0.027	0.703***	−0.083**	0.779***	−0.231***	0.098***	−0.034	0.107***	0.044	0.105***	−0.001	0.048	−0.007	−0.069**	1.000

Abbreviations: CEO, Chief Executive Officer; CSI, consumer sentimental index; GNPI, green new product introduction; R&D, Research and Development.
***$p < 0.01$; **$p < 0.05$; *$p < 0.10$.

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TABLE 3 Results of zero-inflated negative binomial regression analysis with robust option with green new product introductions as the dependent variable.

	Model 1	Model 2	Model 3	Model 4 (full model)
Explanatory variable				
CEO political liberalism (1-year lag)		0.997 (3.51)***	0.829 (2.64)***	26.545 (3.68)***
Proposed moderators				
CEO power			0.195 (1.25)	−0.973 (−2.80)***
Political environment (republican presidency)			0.724 (2.01)**	−0.256 (−0.42)
Consumer green sentiment			−0.061 (−1.80)*	0.126 (2.13)**
Firm scandal (1-year lag)			0.046 (0.23)	0.847 (2.41)**
Interaction with proposed moderators				
CEO power × CEO's political liberalism (1-year-lag)				1.962 (3.99)***
Political environment (republican presidency) × CEO's political liberalism (1-year lag)				2.374 (2.29)**
Consumer green sentiment × CEO's political liberalism (1-year-lag)				−0.425 (−3.52)***
Firm scandal (1-year lag) × CEO's political liberalism (1-year lag)				−1.836 (−3.06)***
Control variables				
Consumer sentimental index	−0.050 (−3.48)***	−0.058 (−3.60)***	−0.044 (−2.68)***	−0.031 (−2.10)**
Total new products	0.012 (3.28)***	0.018 (4.04)***	0.017 (3.92)***	0.015 (4.13)***
CEO change	−0.147 (−0.70)	0.033 (0.14)	0.084 (0.35)	−0.054 (−0.23)
CEO tenure	0.008 (0.25)	−0.019 (−0.46)	−0.027 (−0.63)	−0.061 (−1.59)
CEO's age	−0.064 (−0.07)	1.419 (1.88)*	1.268 (1.61)	0.952 (1.29)
CEO's gender	0.653 (3.32)***	0.679 (3.29)***	0.704 (3.33)***	0.682 (3.54)***
CEO's international experience	0.160 (1.04)	0.244 (1.57)	0.218 (1.31)	0.163 (1.00)
Industry sector	−0.049 (−0.88)	−0.020 (−0.33)	−0.032 (−0.53)	−0.034 (−0.59)
Firm size	−0.070 (−0.93)	−0.068 (−1.05)	−0.074 (−1.08)	−0.039 (−0.55)
R&D intensity	0.098 (1.65)*	0.102 (1.89)*	0.104 (1.81)*	0.138 (2.40)**
Marketing intensity	−0.012 (−2.74)***	−0.016 (−3.70)***	−0.015 (−3.12)***	−0.011 (−2.23)**
Year	0.179 (3.31)***	0.245 (3.65)***	0.167 (2.01)**	0.130 (1.68)*
Wald chi^2	61.38	87.00	97.96	159.49
df	12	13	17	21
p-value	0.000	0.000	0.000	0.000
AIC	1653.11	1371.23	1374.54	1361.18
BIC	1735.65	1456.00	1476.26	1479.85
Max VIF	1.42	1.36	2.21	2.31[a]

Note: Two-tailed tests of significance. The table shows coefficients with *z*-values in parentheses.

Abbreviations: AIC, Akaike Information Criterion; BIC, Bayesian Information Criterion; CEO, Chief Executive Officer; VIF, variance inflation factor; R&D, Research and Development.

[a]Based on mean-centered variables. Dispersion = mean for all models.

***$p < 0.01$; **$p < 0.05$; *$p < 0.10$.

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employs robust standard errors throughout. We proceeded incrementally, beginning with only the control variables in a baseline model (Model 1). Subsequently, we added the independent variable (Model 2) and the moderators (Model 3) before introducing the interaction between our independent variable and the moderators in the final step (Model 4). As shown in Table 3, our full model (Model 4) yields the lowest Akaike Information Criterion value, indicating the model with the best fit. Therefore, we utilize Model 4 to test our hypotheses.

The results indicate statistically significant interaction for all four moderators, with a significant main effect of the independent variable. Hence, the analysis provides substantial support for all five of our hypotheses. Hypothesis 1, which posits a positive association between CEOs' political liberalism and their firms' GNPIs, is supported at $p = 0.000$. This significant association consistently occurs across our incrementally constructed models: Model 2 ($p = 0.000$) and Model 3 ($p = 0.008$) also provide robust support for Hypothesis 1. Hypothesis 2, which predicts a positive interaction between CEO power and their political ideology, is supported at $p = 0.000$. Postestimation analysis reveals that firms of liberal-leaning CEOs tend to release more GNPIs while firms of conservative-leaning CEOs tend to release fewer GNPIs, and this trend becomes more pronounced as CEOs gain more power (see Figure 3). Hypothesis 3, which reasons that a Republican presidency will amplify the positive association between CEO liberalism and GNPIs, is supported at $p = 0.022$. Postestimation inspection reveals that while liberal-leaning CEOs increase the number of GNPIs under a Republican president, conservative-leaning CEOs hardly adjust their endorsement of GNPIs to the political party in power at all (see Figure 4). Hypothesis 4, which argues for a negative interaction between CEO liberalism and consumer green sentiment, is supported at $p = 0.000$. Postestimation inspection reveals that when confronted with weak consumer green sentiment, liberal-leaning CEOs tend to promote GNPIs a lot, but their endorsement declines as consumer green sentiment grows. In contrast, conservative-leaning CEOs tend to increase their support for GNPIs as consumer green sentiment increases (see Figure 5). Finally, Hypothesis 5, which suggests a negative interaction between CEO liberalism and firm scandals, is supported at $p = 0.002$. Postestimation inspection reveals that more liberal CEOs will considerably reduce their support of GNPIs when involved in a scandal. In contrast, more conservative CEOs tend to increase their support of GNPIs when involved in a scandal (see Figure 6). Regarding the control variables, we find that the total number of new products, CEO gender, and R&D intensity are positively associated with GNPIs, while consumer sentiment index and marketing intensity are negatively associated with

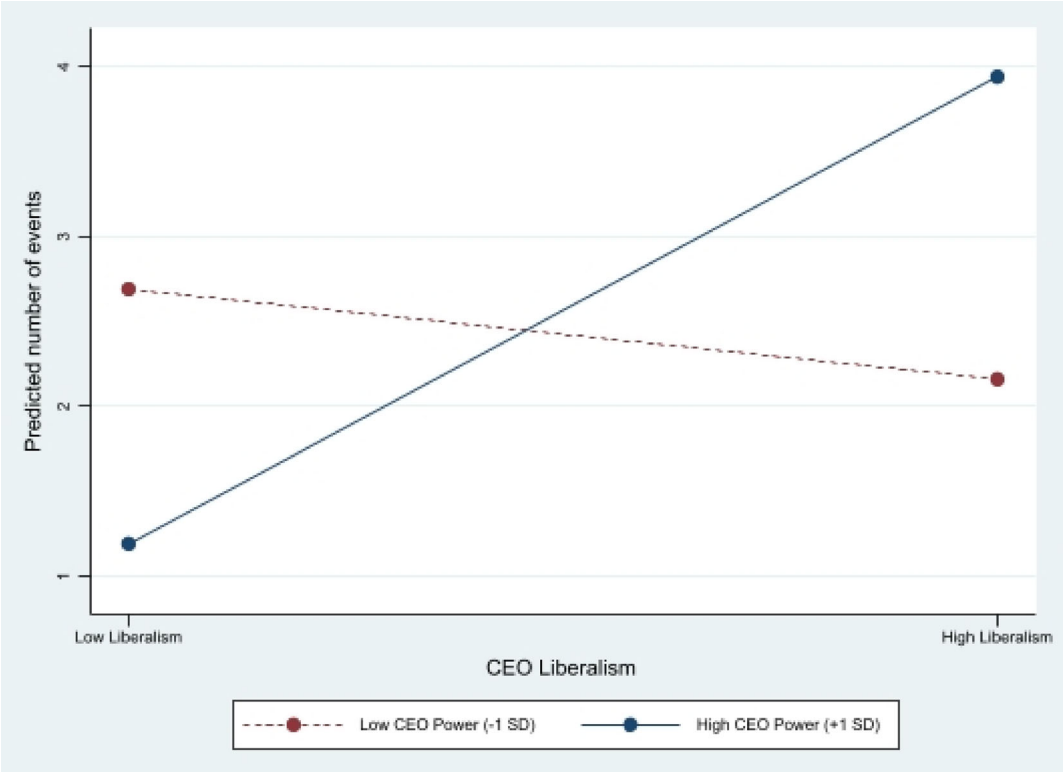

FIGURE 3 The interaction of Chief Executive Officers' (CEOs) political ideology and CEO power on green new product introductions.

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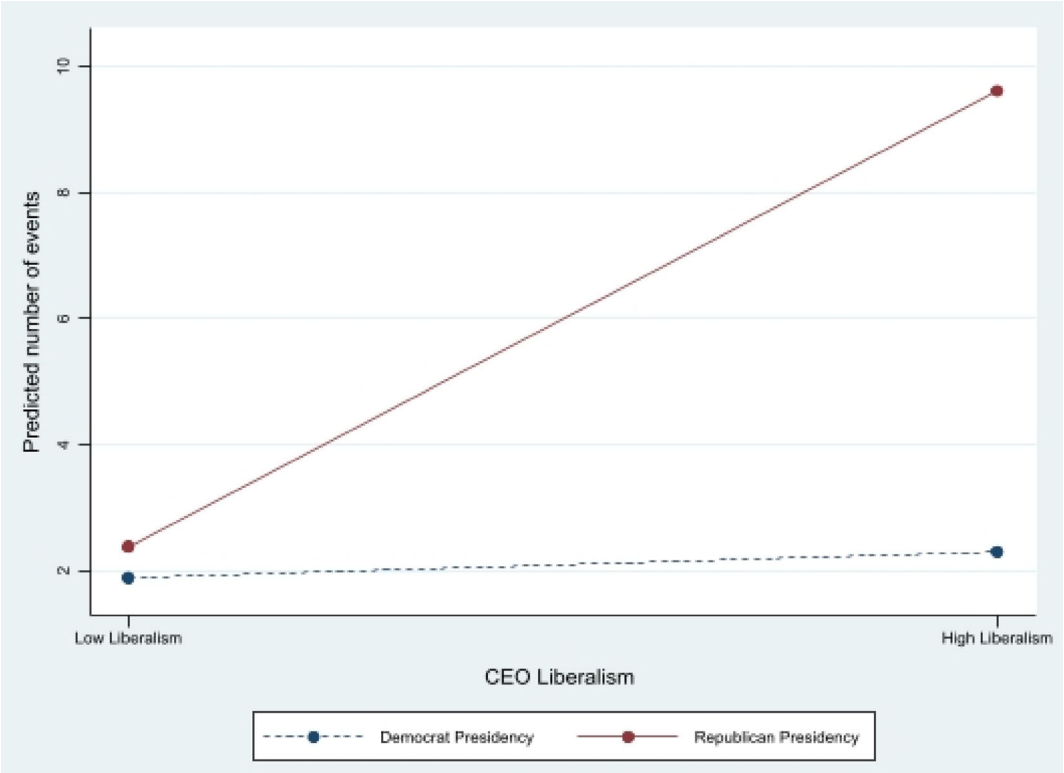

FIGURE 4 The interaction of Chief Executive Officers' (CEOs) political ideology and political environment on green new product introductions.

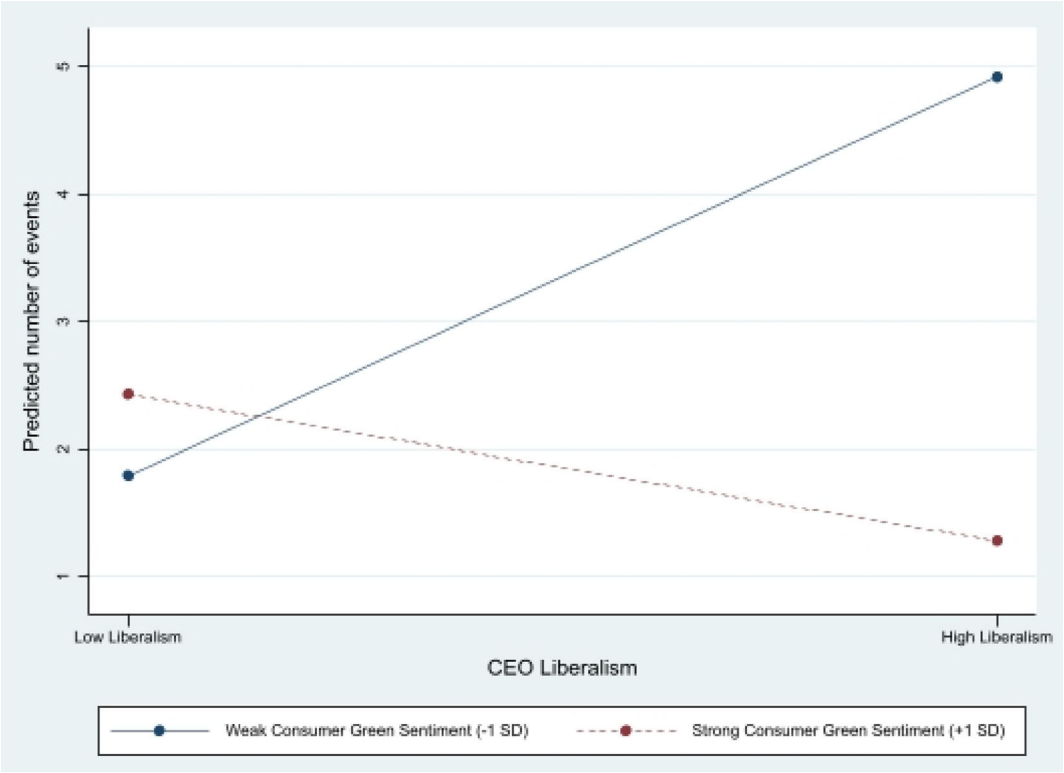

FIGURE 5 The interaction of Chief Executive Officers' (CEOs) political ideology and consumer green sentiment on green new product introductions.

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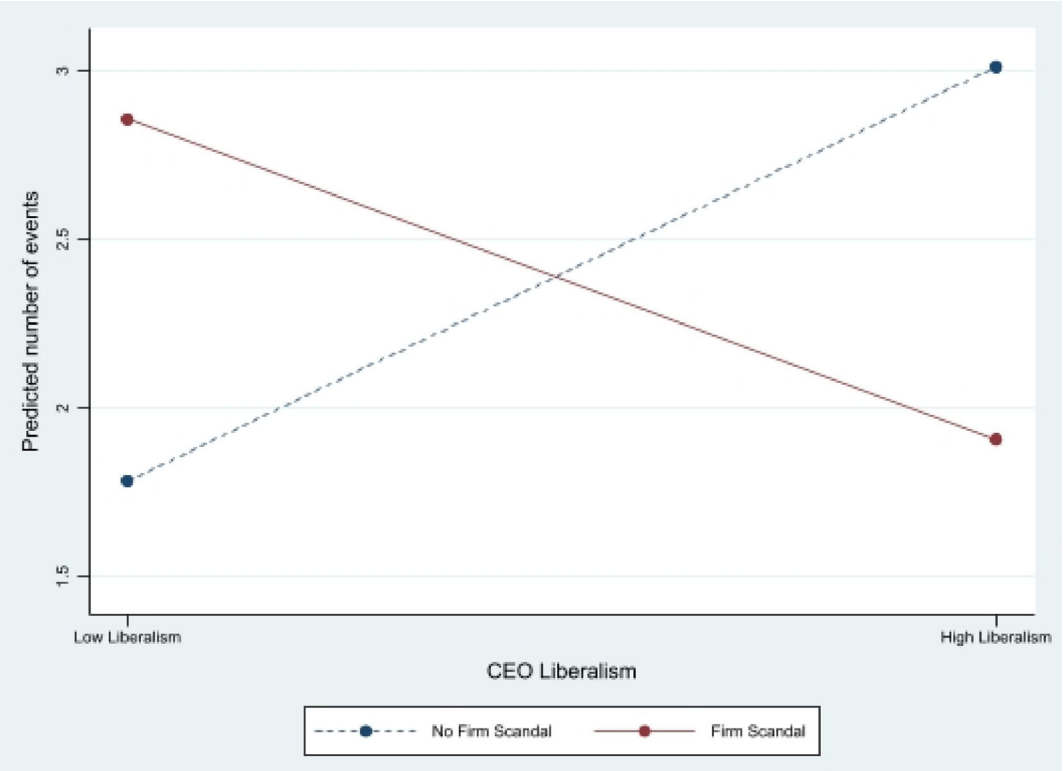

FIGURE 6 The interaction of Chief Executive Officers' (CEOs) political ideology and firm scandal on green new product introductions.

GNPIs (see Table 3). Next, we performed a robustness test to assess the validity of our results.

3.5 | Robustness checks

As previously mentioned, we compared two different zero-inflated count estimators—the zero-inflated negative binomial and the zero-inflated Poisson model—and chose to use the former as it demonstrated better-fit indices than the latter. Therefore, our main analysis employed the zero-inflated negative binomial estimator. In this robustness check, we rerun our analysis using the zero-inflated Poisson estimator with robust standard errors to assess whether the choice of the estimator could drive our results. The zero-inflated Poisson regression model corresponding to Model 4 of our main analysis also supports our theoretical account. The coefficient for Hypothesis 3 is marginally significant ($p = 0.092$), while the coefficients for Hypothesis 1 ($p = 0.001$), Hypothesis 2 ($p = 0.000$), Hypothesis 4 ($p = 0.003$), and Hypothesis 5 ($p = 0.001$) are all statistically significant. A more detailed account of the robustness check is presented in Appendix 2. We also ran a regular negative binomial regression to compare the results, and we found that except for Hypothesis 3, which showed an insignificant interaction effect ($p = 0.112$), all other hypotheses maintained their significance: Hypothesis 2 ($p = 0.000$), Hypothesis 4 ($p = 0.032$), and Hypothesis 5 ($p = 0.036$).

Additionally, we conducted an alternative analysis to further validate our main findings. Specifically, we calculated the ratio of GNPIs to the total number of new products the focal firm launched in the corresponding year. We then used this ratio as the dependent variable, running an econometric panel regression with the robust option corresponding to Model 4. The results indicate consistent significant effects for the main effect of Hypothesis 1 ($p = 0.022$) and most interactions: Hypothesis 2 ($p = 0.039$), Hypothesis 3 ($p = 0.010$), Hypothesis 4 ($p = 0.021$). However, for Hypothesis 5, we found that the interaction effect is not statistically significant ($p = 0.839$).[2] A detailed report of this analysis is included in Appendix 3.

[2]Our main specification (using the absolute number of GNPIs) provides support for Hypothesis 5, while the alternative specification (using the relative number of GNPIs as the share of all new product introductions) does not—this is consistent with our theoretical argument. In developing Hypothesis 5, we argued that more liberal CEOs caught in a sustainability-related scandal experience cognitive-emotional turmoil when they introduce green new products. This turmoil is related to the number of green new products but not to the number of nongreen products they introduce. Thus, the significance disappears when the number of nongreen products is used to calculate the share of GNPIs relative to all new products.

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Thus, the robustness check also provides broad support for our theoretical account. The broadly consistent results from our main analysis and the robustness check indicate that our findings are robust and not substantially influenced by the specific estimation technique.

3.6 | Addressing possible endogeneity

One might argue that firms with "green ambitions" might be inclined to recruit liberal CEOs, so the association between CEO liberalism and firms' GNPIs could be driven by endogeneity. As this argument seems plausible, we have rigorously addressed endogeneity concerns in four distinct ways. First, in both the main analysis and the robustness check reported earlier, we employed a time-lagged approach, regressing a firm's number of GNPIs in a specific year on the political engagement of its CEO in the prior year. This time-lagged approach can mitigate endogeneity concerns (Griffith et al., 2017; Tang et al., 2014; Zaefarian et al., 2017).

Second, we conducted a test to assess whether CEOs are likely recruited based on their political orientation. In this first test, we examined firms within our data set that had multiple CEOs in the focal period and compared these CEOs' degrees of political liberalism. Out of our sample of 89 firms, 68 have experienced CEO turnover during the study period. Our analysis revealed that at a 95% confidence interval, the correlation of CEO liberalism within firms is 0.159, indicating poor reliability according to the interpretation standards of the intraclass correlation coefficient (ICC) (Cicchetti, 1994; Koo & Mae, 2016). Therefore, the political orientations of multiple CEOs within the same firm are not highly correlated, suggesting that firms do not hire CEOs based on their political orientation.

Third, we focused on CEO turnover in our sample, comparing the previous year's levels of GNPIs (GNPI $(t-1)$) in a firm with the new CEO's degree of liberalism in the focal year (CEO liberalism(t)) or the following year (CEO liberalism($t+1$)). The result showed no correlation between a firm's previous GNPI levels and its new CEO's degree of liberalism in the focal or subsequent year. These findings further validate that political orientation is not a criterion in firms' executive recruitment processes. There is no indication that firms selectively hire CEOs with liberal and conservative leanings based on companies' commitment to GNPIs. These findings align with prior literature, indicating that "*political inclinations are relatively incidental in CEOs' appointment and not a seriously endogenous attribute*" (Chin et al., 2013).

Finally, we tested the possibility that firms might opt to hire more liberal CEOs following a sustainability-related scandal as a means to restore the firm reputation. Adopting the approach of Chin et al. (2013), we divided the 89 firms in the sample into two groups based on their history of firm scandals. Of the 36 firms that have not experienced any such scandals during the observation period, the mean score of CEO liberalism is 0.440. The corresponding mean score for the 53 firms that have experienced at least one scandal is 0.472. Both groups' average scores are close to the overall average CEO liberalism (0.460) and not significantly different from one another ($p > 0.050$), supporting the conclusion that variations in CEO political ideologies across firms are generally not driven endogenously by firm-level factors (cf. Chin et al., 2013).

Our comprehensive tests consistently indicate that endogeneity is an unlikely cause of our findings. These test results align with prior research that has suggested endogeneity is not a serious concern within the context of political ideology (Chin et al., 2013; Kashmiri & Mahajan, 2017).

4 | DISCUSSION AND IMPLICATIONS

Grounded in a social identity perspective, our study has developed a theoretical framework delineating the relationship between CEOs' political ideologies and their firms' GNPIs and the boundary conditions that can moderate this association. Combining data from seven sources, we constructed a longitudinal data set covering 89 firms and their 192 CEOs from 2010 to 2020. Time-lagged panel regression analyses have yielded robust empirical evidence to support our proposed theoretical account. Our results reveal that firms led by liberal CEOs tend to create more GNPIs than those led by conservative CEOs. The association between CEO liberalism and firms' GNPIs becomes more pronounced as CEOs gain more power within their organizations. Moreover, liberal CEOs will drive their firms to generate more GNPIs when facing adverse factors beyond their control (Republican presidency or weak consumer green sentiment), whereas they tend to initiate fewer GNPIs when confronted with adverse conditions for which they are to blame (involvement in sustainability-related scandals). These findings have important implications for both management theory and practice.

4.1 | Theoretical contribution

Our findings contribute to various streams of academic literature. First, they expand upon the limited research

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on the antecedents to firms' GNPIs. The few existing studies on this topic commonly attribute differences in firms' green innovation performance to variations in firm-level factors, for example, corporate expenditures (Brunnermeier & Cohen, 2003), corporate objectives (Chang, 2011; Dangelico & Pujari, 2010), and core competencies (Chen, 2008). In contrast, our study complements the predominant firm-centric explanations of GNPIs by exploring the "human side of innovation" (Weiss et al., 2022, p. 283). Approaching firm-level phenomena from a human perspective acknowledges the role of individual agency and can offer particularly rich and well-substantiated explanations (Barney & Felin, 2013; Contractor et al., 2019). Over the last decade, more and more scholars have recognized that management science displayed too little appreciation of the human side for most of its existence (Foss, 2011; Palmié et al., 2023). This realization led to the emergence of an outright "microfoundations movement," which seeks to understand how human cognition and action impact organizational outcomes (Felin et al., 2015; Foss, 2011). Although innovations' dependency on human cognition has long been established and is widely acknowledged (Amabile, 1988; Simon, 1991; Weiss et al., 2022), the influence of individual-level factors on firm-level innovation remained relatively under-researched and continued to offer many opportunities for future research (cf. Gupta et al., 2007). Consequently, the microfoundations movement has also begun to pervade the innovation management domain. A systematic literature review of the movement in this domain recently identified a persistent shortage of research on the microfoundations of sustainability innovation (Palmié et al., 2023). Offering a fresh, individual-level perspective on GNPI, our study simultaneously fills gaps in the GNPI literature and the microfoundations movement in the innovation management domain. It also connects the GNPI literature with the microfoundations movement.

Second, our study advances the body of knowledge on the association of CEOs' political ideology and firm outcomes, which still represents a relatively underdeveloped area within the extensive literature examining the influence of CEOs on their respective firms (Kashmiri & Mahajan, 2017). Prior studies in this domain have explored how CEOs' political ideology influences various organizational variables, such as CSR (Chin et al., 2013), diversification of firm strategy (Whitler, 2020), litigation risks (Hutton et al., 2015), stock returns (You et al., 2020), R&D investment (Hutton et al., 2014), and innovation propensity (Kashmiri & Mahajan, 2017). While the extant work on the influence of CEOs in general and of their political ideology in particular is usually grounded in upper echelons theory (Hambrick, 2007; Hambrick & Mason, 1984), our study leverages SIT to contend that the number of GNPIs that firms produce is driven by the interplay between CEOs' political ideology and boundary conditions. Following the traditional trajectory of SIT, our theoretical framework concentrates on "adverse conditions" that place the attainment of the goals of CEOs with a liberal (versus conservative) political ideology at risk (cf. Brown, 2020; Tajfel, 1981; Withers et al., 2012). Our theoretical account provides nuanced insights into CEOs' reactions to adversity. On the one hand, liberal CEOs tend to initiate more GNPIs when the adverse condition is beyond their control (Republican presidency or weak consumer green sentiment). On the other hand, they tend to initiate fewer GNPIs in response to adverse conditions for which they bear responsibility (involvement in sustainability-related scandals). Our study offers an intriguing and insightful perspective to account for contextual influences in studies of CEOs' strategic decision-making.

Finally, our study contributes to SIT by illuminating the relationship between two distinct identities of CEOs. When CEOs increase or decrease the number of GNPIs based on their political ideologies, they simultaneously express their political identities and their occupational identities as the top decision-makers in their firms (cf. Fuchs et al., 2019; Wowak et al., 2022). Early social identity research often assumed that only one identity could be salient at any given time, suggesting that as one identity becomes more prominent, others necessarily become less so (see Ashforth et al., 2008; Sluss & Ashforth, 2007). Over time, social identity theorists increasingly acknowledged that individual behavior can be guided by the interplay of multiple identities (Ramarajan, 2014; Welbourne & Paterson, 2017). This acknowledgment implies that scholars need to understand how multiple identities work together in shaping behavior (Greco et al., 2022; Searle et al., 2018). To date, the scientific community's knowledge about the relationships between multiple identities has repeatedly been found to be underdeveloped (Greco et al., 2022; Ramarajan, 2014; Searle et al., 2018; Welbourne & Paterson, 2017). Seminal syntheses of research on multiple identities suggest three types of relationships that may exist among multiple identities: conflict, combination ("enhancement"), and convergence ("overlap") (Ashforth et al., 2008; Ramarajan, 2014). While prior work has examined identity conflict and identity overlap to some extent, identity enhancement—which comprises synergies and complementarities among identities—represents a "less explored but equally important" type of relationship (Ramarajan, 2014, p. 614). Our study depicts a case of identity enhancement, revealing complementarities among political and occupational identities. Specifically, the two

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identities are complementary in that the occupational identity delineates the *boundaries of action* (what to do?) and the political identity the *content of action* (how to do it?). In our example, acting on their occupational identity enables CEOs to make decisions regarding their firms' new product portfolio, while acting on their political identity allows them to decide whether to increase or decrease the number of green new products. These findings advance our understanding of the relationships among multiple identities. We believe that conceptualizing identities as driving different aspects of action (what versus how) provides a promising foundation for future research to develop a fully-fledged theoretical mechanism of identity complementarity. Furthermore, by shedding light on how CEOs' political identities influence their workplace decisions, our study responds to the ongoing calls for further research—notably, empirical efforts (Banks et al., 2016; Greco et al., 2022)—into the relationship between identities from different domains such as politics and work (Hillman et al., 2008; Ramarajan, 2014), underscoring SIT's ability to draw a rich picture of organizational leadership.

4.2 | Managerial implications

Our study underscores the considerable influence of CEOs' political ideologies on firms' green innovation efforts, highlighting the critical role of robust corporate governance. Whether consciously or unconsciously, CEOs may make decisions that deviate from their firms' objectives. Based on our insights, board directors should take proactive steps to establish measures to ensure the seamless integration of personal values with organizational goals. This entails instituting safeguards to detect and mitigate any potential misalignments between CEOs' political ideologies and corporate objectives.

Firms can strategically leverage our insights in executive recruitment. Recognizing the positive association between liberal CEOs and green innovation, sustainability-oriented firms should actively seek out executives whose values align with a strong commitment to environmental and social responsibility. Simultaneously, we advocate for instigating a mindset shift among conservative CEOs, encouraging them to embrace sustainability initiatives as strategic advantages that not only conform to societal expectations but also bolster financial performance.

Our study also sheds light on CEOs' stress levels during external crises or adverse conditions. Boards should remain attuned to the external factors triggering CEOs' reactions, providing necessary guidance and support during challenging times. By offering resources and a supportive environment, boards empower CEOs to navigate crises effectively while ensuring decisions align with the organization's long-term sustainability goals.

Investors can extract valuable insights from our study by analyzing information about CEOs' political ideologies. This data can be instrumental in anticipating the level of firms' green innovation outcomes, providing a nuanced understanding of the strategic direction and corporate values. Investors can strategically allocate resources, supporting firms with similar values and environmental priorities and influencing firms' investment strategies and decisions.

4.3 | Limitations and future research

Like any research endeavor, our study has limitations, which, in turn, pave the way for opportunities in future research. First, our focus on large U.S. firms within the FMCG industry, driven by the availability and specificity of our data sources, may limit the generalizability of our findings. To enhance the robustness and applicability of our insights, future research could consider extending the investigation to include firms from diverse industries and countries. Replicating our study in different national contexts may pose challenges related to data availability and the measurement of political ideology. Our measure, adopted from prior work (Chin et al., 2013; Kashmiri & Mahajan, 2017), is rooted in the U.S. two-party system. For countries with a multiple-party system, alternative measures might be necessary to assess the political ideologies of CEOs.

Second, aligned with the upper echelons tradition (Chin et al., 2013; Gupta et al., 2017; Scoresby et al., 2021), our paper strictly focuses on CEOs as focal actors. Future research could pursue a more comprehensive perspective, exploring different organizational levels: top-management teams, middle managers, front-line managers, and other employees. Such investigations might uncover how political ideologies, especially variations within and across hierarchical levels, influence the internal political landscape of innovation, moving from the "human side of innovation" (Weiss et al., 2022) to the "political game of innovation" (Schweitzer et al., 2024).

Third, while our study reveals a significant correlation between the CEO's political values and the firm's green outcomes, and despite our efforts to alleviate endogeneity concerns, we refrain from asserting causality due to the complexity of the relationship. Future research could build upon our findings to explore the causal links between CEO characteristics and their strategic decisions, providing a more nuanced understanding of the underlying mechanisms.

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Finally, upper echelons scholars have identified a plethora of CEO characteristics that influence various firm outcomes. Future research could extend our work by investigating the relationship between other CEO characteristics and firms' GNPIs, as well as the interplay between CEOs' political ideologies and other CEO characteristics in the context of firms' GNPIs.

5 | CONCLUSION

Our study marks a first step toward a better understanding of individuals' influence on firms' green innovation. We demonstrate that CEOs' political ideology—and hence even individual-level factors emerging outside of the work domain—is linked to the development of sustainable products and that this association is moderated by boundary conditions. Drawing on SIT, we provide a nuanced explanation of how CEOs respond to adverse conditions. Our theoretical account reasons that liberal CEOs will initiate more GNPIs if they are not accountable for the adverse condition (Republican presidency, weak consumer green sentiment) but fewer GNPIs if they are responsible for it (involvement in sustainability-related scandals). By integrating seven databases into a longitudinal data set of 89 firms and 192 CEOs over the period 2010–2020, we provide strong empirical evidence to support our theoretical framework. Our study can make substantial contributions to an individual-level, microfoundational perspective on sustainability innovations, our knowledge about the organizational implications and boundary conditions of the CEO's political ideology, and the treatment of political and occupational identities in SIT. Each of these domains offers ample opportunities for future research. We hope our findings can serve as a stepping stone for further exploration in these directions.

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