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From Headlines to Awareness: Examining the Minimal Impact of Media on Climate Action in the United States

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Abstract. This study examines the influence of media consumption on climate change perceptions and pro-environmental behaviors in the United States, incorporating demographic variations and trust in media as potential mediating and moderating factors. Using a cross-sectional survey of 548 U.S. adults aged 18 to 35, the study employs the Elaboration Likelihood Model (ELM) to assess how different media sources and processing routes shape climate-related engagement. The findings highlighted that despite extensive climate media coverage, behavioral shifts remain limited, highlighting a critical gap in climate communication effectiveness, such as voting based on climate policies or financial contributions to environmental organizations. The findings also reveal that media exposure alone does not drive climate action, demographics and media trust fail to enhance engagement, suggesting other factors like ideology or personal experience play a stronger role. These findings challenge prior research that emphasizes media trust and demographic characteristics as key determinants of climate action. The study highlights the limitations of media exposure in translating awareness into meaningful behavioral change and underscores the need for targeted climate communication strategies.

Keywords: climate change perceptions; climate communication; media influence; pro-environmental behaviors; trust in media; Elaboration Likelihood Model.

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1. Introduction

Climate change remains one of the most pressing global challenges, with its impacts increasingly visible across environmental, economic, and social domains (Hauer et al., 2016). While scientific consensus on climate change is strong, public engagement in climate action remains inconsistent, influenced by multiple factors, including media exposure (Newman et al., 2020). Media play a crucial role in shaping climate perceptions, framing climate-related discourse, and influencing public attitudes and behaviors (Feldman et al., 2014). However, existing research primarily focuses on how media affect climate change perceptions, with limited exploration of their direct impact on pro-environmental behaviors (Greaves et al., 2023). This study measures pro-environmental behaviors based on self-reported actions related to climate engagement. These include participation in climate awareness campaigns,

attending or supporting events that promote climate awareness, voting based on climate policies, making political choices influenced by candidates' environmental policies, donations to environmental organizations, financial contributions to groups working on environmental causes, and engagement with scientific articles on climate change. This definition aligns with the category of public environmental behavior, which refers to political and legal actions undertaken to support environmental causes (Sawitri et al., 2015). However, pro-environmental behaviors can also encompass more accessible individual actions, such as recycling, water-saving activities, waste reduction, and environmentally responsible purchasing, which are frequently classified as basic or decision-making behaviors in the literature (Zhong & Shi, 2020).

This study seeks to address this gap by examining the relationship between media consumption and climate-related behaviors in the United States, incorporating the role of demographic variations and trust in media sources. The relationship between media exposure and public engagement with climate change is complex (Ferdous & Khatun, 2020). Research on media's influence often overlooks the role of demographic factors in mediating climate behaviors. Studies have acknowledged that climate-related beliefs and actions vary by age, education, and political affiliation (Schuldt & Pearson, 2023; Wonneberger et al., 2020), but their mediating effects in the media-behavior relationship remain underexplored. For instance, Jiang et al. (2024) demonstrated that moral licensing can weaken the link between pro-environmental intentions and behavior, suggesting that internal moral reasoning significantly moderates behavioral outcomes even when media exposure is high.

Additionally, trust in media has been identified as a key determinant of belief formation (Brewer & Ley, 2013), yet its moderating role in shaping climate behaviors is not well understood. By investigating these dynamics, this study aims to offer a more comprehensive understanding of how media consumption influences climate action in the U.S. The United States is selected as a case context due to its highly polarized media environment and substantial variation in how climate-related issues are framed across different outlets (M. T. Boykoff & Boykoff, 2004). Prior studies indicate that U.S. media often use partisan frames when reporting climate issues, which may reinforce existing ideological divides (Painter, 2016), thereby producing heterogeneous effects on public behavior. In particular, scholars note that conservative and liberal media in the U.S. often present conflicting narratives about climate change, which contributes to divergent public responses and may inhibit collective action (M. Boykoff et al., 2021; Schuldt & Pearson, 2023).

Consistent with the Elaboration Likelihood Model and the value-based norm (VBN) tradition, this study conceptualizes pro-environmental behavior as an outcome of internally driven cognitive and moral considerations rather than external situational cues. This research seeks to fill these critical gaps through the following research questions: (1) Do different types of media consumption influence pro-environmental behaviors among U.S. residents? (2) Do demographic factors mediate the influence of media exposure on pro-environmental behaviors? (3) Does trust in media sources moderate the influence of media consumption on pro-environmental behaviors? Addressing these questions provides valuable insights into the mechanisms through which media shape climate engagement and whether this influence is contingent on demographic characteristics and trust levels.

The significance of this study lies in its contribution to the broader discourse on climate communication. While prior research has extensively examined media's role in shaping climate awareness, its direct impact on behavioral engagement remains unclear

(Greaves et al., 2023). This study extends existing scholarship by integrating behavioral outcomes into media effect models, thereby bridging the gap between media exposure and pro-environmental action. Furthermore, by examining demographic mediators and trust moderators, this research offers a nuanced perspective on how media influence varies across population subgroups. The findings have practical implications for policymakers, environmental organizations, and media practitioners seeking to design more effective climate communication strategies.

Additionally, this study employs artificial intelligence (AI)-assisted statistical tools to enhance the efficiency and accuracy of data analysis, particularly in handling large-scale survey responses and identifying patterns within media consumption and behavioral variables. While the use of AI-assisted techniques contributes to methodological rigor, the novelty of this study lies primarily in integrating behavioral outcomes into media effect models and examining how demographic and trust-related factors shape pro-environmental actions.

2. Literature Review

2.1. *Media's Effect on Climate Perception*

The news media has a big impact on how people think about climate change because they choose what topics to cover and how to present them (Feldman et al., 2014). In 2018, a poll by Ballew et al. (2022) found that a large majority of American adults were certain about global warming and what it meant for future generations. Extreme weather events such as heatwaves, floods, droughts, and heavy rains have become more common, resulting in increased media coverage (Strauss et al., 2022). M. Boykoff et al. (2021) point out that the media frequently covers severe weather events such as hurricanes in Central America, cyclones in the South Pacific, and floods in Asia. Newman et al. (2020) emphasize the media's influence by revealing that a survey of forty countries identified news media, particularly television and major news organizations' websites, as the most popular source of climate change information.

Numerous studies (Hansen, 2010; Happer & Philo, 2016; Olausson, 2018) have examined how the public reacts to climate change and how news networks and journalists cover it (Schäfer & Painter, 2021). According to Brewer & Ley (2013), scientists are still the most reliable source of information about climate change, and more accurate beliefs about it are associated with trust in scientists (Arbuckle et al., 2015). Greaves et al. (2023) found that participants who watched climate change videos had more negative feelings and a stronger intention to engage in pro-environmental behavior than those who did not watch the videos. Exposure to traditional news media and social media, as well as information from scientists, international organizations, and environmental activists, was associated with fewer false beliefs, whereas information from celebrities and energy companies increased false beliefs (Ejaz et al., 2025; Mokoena & Nkosi, 2024; Nguyen et al., 2024; Tewodros, 2024).

According to Vrselja et al. (2024), people were more likely to learn about climate change through social media than through other types of media. Television was the most common traditional media source, while radio was the least common. Schuldt & Pearson (2023) study on how well people in the U.S. recognize climate injustices found that most people didn't, but there were big differences based on age, education level, race, ethnicity, and political affiliation. According to Spektor et al. (2023), opinions on the severity of climate change are more divided, but the majority of people in Latin America (93%) think it

is mostly due to human activity. Tsang (2023) research reveals that visualization significantly influences respondents' perceptions of media bias. Specifically, respondents who saw animated visualizations felt more inclined to support climate legislation than those who saw static visuals. According to Strauss et al. (2022), many climate scientists believe that the relevant and scientifically valid question should be, "To what extent has climate change made this event more extreme or more likely?" Instead of asking, "Did climate change cause this event or not?"

2.2. *The Impact of Climate Change in the United States*

One of the most visible effects of climate change in the United States is an increase in extreme weather frequency and severity (Hauer et al., 2016). According to Smith and Torn (2013), rising global temperatures have exacerbated hurricanes, wildfires, and heatwaves. For example, the 2020 Atlantic hurricane season was the most active on record, with 30 named storms, especially 13 hurricanes (NOAA, 2020). Similarly, in the western United States, there have been unprecedented wildfires, with the 2020 California wildfires burning over 4.2 million acres, the state's largest ever (CalFire, 2020). Rising sea levels are another significant result of climate change (Kopp et al., 2017). Coastal areas in the United States are particularly vulnerable, with cities such as Miami, New York, and New Orleans experiencing increased flooding and storm surges (Hauer et al., 2016).

The economic consequences of climate change in the United States are significant (Hauer et al., 2016). The increased frequency of extreme weather events has resulted in significant economic losses (Hauer et al., 2016). For example, the combined damages caused by hurricanes Harvey, Irma, and Maria in 2017 exceeded $265 billion (Smith & Torn, 2013). In addition, the insurance sector is facing an increase in claims as a result of climate-related catastrophes, raising concerns about the long-term viability of insurance models (Smith & Torn, 2013).

Climate change has significant social and health consequences. Climate-related impacts have a disproportionate effect on vulnerable populations, such as low-income communities and minorities (Schlosberg et al., 2017). These communities frequently possess limited ability to adjust to and recuperate from severe weather incidents, intensifying pre-existing social disparities. In the U.S., ecosystems are changing due to climate change, which also affects biodiversity. Many species are in danger of going extinct as a result of their ranges changing in response to shifting temperatures and patterns of precipitation (Parmesan & Yohe, 2003).

Addressing the effects of climate change in the United States necessitates broad policy changes and adaptation strategies (Moser & Ekstrom, 2010). Mitigation efforts, such as lowering greenhouse gas emissions, are critical for limiting future climate change (IPCC, 2014). At the same time, adaptation strategies are required to increase resilience to current and projected impacts (Parmesan & Yohe, 2003).

2.3. *Theoretical Framework: The Elaboration Likelihood Model*

The Elaboration Likelihood Model (ELM), developed by Petty and Cacioppo (1986), provides a robust framework for understanding the processes underlying attitude formation and change. This dual-process model explains how individuals process persuasive messages through two distinct routes, the central and peripheral routes (Petty & Cacioppo, 1986). The model's relevance to the study of media's impact on climate change perceptions and

behaviors lies in its ability to analyze how different types of media content, audience motivations, and message delivery affect cognitive and behavioral outcomes (Bhattacherjee & Sanford, 2006). By employing ELM, this study examines the mechanisms through which media influences climate-related attitudes and actions in the United States. It is important to note that the ELM was conceptualized in the pre-social media era. Given the contemporary relevance of digital and social platforms, researchers have developed several ELM-derived frameworks, such as the Online Elaboration Model and Dual-Processing Models for social media, to better capture how digital content shapes attitudes and behaviors (Ferdous, 2023). The present study acknowledges these advancements and applies the principles of ELM specifically to media environments that include both online and social media platforms.

The central route involves high levels of cognitive engagement, where individuals carefully evaluate message content, focusing on argument quality and relevance (Petty & Cacioppo, 1986). When individuals are motivated and capable of processing information, they engage with the central route, leading to durable and predictive attitude changes (Petty & Cacioppo, 1986). For instance, in the context of climate change, individuals who read in-depth investigative reports or scientific analyses in reputable media outlets are more likely to develop consistent pro-environmental attitudes (Brewer & Ley, 2013). These individuals process factual arguments, such as evidence linking extreme weather events to global warming or the economic implications of rising sea levels, and integrate these insights into their belief systems (Kopp et al., 2017; Strauss et al., 2022).

The central route's application aligns with the findings of Brewer and Ley (2013), who emphasize the role of scientific credibility in shaping accurate beliefs about climate change. Media sources that prioritize high-quality arguments and factual reporting, such as documentaries or detailed print journalism, serve as catalysts for informed decision-making. The cognitive engagement prompted by these media forms supports the adoption of sustainable behaviors, such as reducing carbon footprints or supporting environmental policies (Greaves et al., 2023). In addition to traditional online media, this study explicitly examines the influence of social media platforms, which play a significant role in disseminating climate-related content and shaping public engagement with environmental issues.

In contrast, the peripheral route operates under conditions of low motivation or limited cognitive capacity, where individuals rely on superficial cues rather than detailed message content (Petty & Cacioppo, 1986). These cues may include source credibility, visual appeal, or emotional resonance (Petty & Cacioppo, 1986). For example, media campaigns featuring celebrity endorsements or emotionally charged imagery of climate disasters can influence attitudes through the peripheral route (Chang et al., 2015; Ejaz et al., 2025). While such messages may elicit immediate emotional responses, their impact on long-term behavioral change is less predictable (Chang et al., 2015).

In the climate change context, peripheral cues often dominate social media platforms, where bite-sized content, such as tweets or viral videos, appeals to audiences with limited attention spans (Vrselja et al., 2024). Studies by Ejaz et al. (2025) indicate that reliance on information from celebrities or energy companies often leads to misinformation, highlighting the risks of peripheral processing. However, visually compelling content, such as animated infographics or video visualizations, can still play a role in raising awareness and initiating short-term behavioral changes (Tsang, 2023).

The concept of elaboration likelihood moderates the effectiveness of the central and peripheral routes, depending on individual motivations and abilities to process information (Bhattacherjee & Sanford, 2006). Personal relevance, need for cognition, and perceived responsibility are key factors influencing this likelihood (Petty & Cacioppo, 1986). For example, individuals residing in areas frequently affected by climate-related disasters, such as coastal communities vulnerable to hurricanes, may exhibit higher elaboration likelihood due to the personal stakes involved (Hauer et al., 2016; Smith & Torn, 2013). These individuals are more likely to engage with detailed media reports and adopt the central route for processing climate-related information (Newman et al., 2020).

Conversely, individuals with low motivation or limited knowledge may default to the peripheral route (Li et al., 2021). Media targeting these audiences must strategically use peripheral cues to encourage initial engagement while progressively introducing central-route elements to foster deeper understanding (Shahab et al., 2021). Despite its utility, the ELM has certain limitations. Scholars have argued that its dual-route framework oversimplifies the range of cognitive processes involved in real-world persuasion (Ballew et al., 2022). Attitude change may involve more complex and interactive mechanisms than those captured by the central, peripheral distinction, and the ELM has been criticized for not adequately accounting for how diverse contextual and individual factors interact to shape persuasion (Ferdous, 2023). These limitations are particularly salient in the context of social media environments, where constant information exposure, algorithmic curation, and interaction among users may blur the boundaries between central and peripheral processing routes (Tsang, 2023).

The dual-processing framework of ELM is particularly well-suited to studying media's influence on climate change perceptions (Moradi & Zihagh, 2022). News media serve as a critical intermediary, framing climate change issues in ways that guide public understanding and behavior (Feldman et al., 2014). Media content that aligns with the central route, such as investigative journalism, expert interviews, and long-form articles, facilitates high elaboration and informed decision-making (Greaves et al., 2023). On the other hand, visually engaging social media posts and short videos cater to peripheral processing but risk fostering superficial or transient attitude changes (Ejaz et al., 2025).

By incorporating the ELM framework, this study addresses gaps in understanding how different media formats and content types influence pro-environmental behaviors. For instance, while Greaves et al. (2023) found that exposure to climate change videos enhances behavioral intentions, this study investigates whether these effects are mediated by the central or peripheral routes of processing. Additionally, Schuldt and Pearson (2023) findings on demographic variations in climate perceptions suggest that elaboration likelihood may vary based on factors such as age, education, and political affiliation. This study extends these insights by examining how elaboration likelihood moderates the relationship between media content and pro-environmental actions.

3. Method and Materials

This study, adopted a cross-sectional survey design to collect quantitative data, focuses on the relationship between media consumption, demographic factors, and climate-related behaviors. The survey instrument was developed to align with the ELM framework, addressing both central and peripheral routes of information processing. It consisted of 27 multiple-choice questions organized into five sections: demographic information, media consumption habits, perceptions of climate change, pro-environmental behaviors, and media

influence with ELM components. The survey instrument underwent a thorough review by climate communication researchers to ensure content validity and was subsequently pre-tested on a pilot group of 20 participants to refine clarity and reduce potential biases. The reliability of the survey was confirmed through a Cronbach's alpha of 0.87, indicating strong internal consistency. To reduce the tendency to oversimplify cognitive processes and to better capture the nuances of individual engagement, the survey also included open-ended follow-up items that allowed respondents to briefly explain their motivations for pro-environmental behavior. This qualitative component complements the ELM-based items and provides additional insight into the human dimensions of environmental engagement.

The target population for this study was adults aged 18 to 35 living in the United States. This demographic was selected due to its high levels of media engagement and its potential to shape future public discourse and policy on climate change issues (Anderson & Jiang, 2018; Vogels, 2019). Given that the current study adopts an effects-oriented framework, the research instrument was specifically designed to capture exposure to media prior to and during respondents' engagement in pro-environmental behaviors, ensuring alignment between the theory and the operationalization of the study variables. Data were collected using convenience sampling. While convenience sampling introduces certain limitations, including potential self-selection bias, it was deemed appropriate for this exploratory study. Similar methodologies have been effectively used in prior research on climate perceptions, providing valuable insights despite non-representative samples (Ballew et al., 2022; Schäfer, 2012). This study employed social media platforms, Facebook, X (formerly Twitter), and LinkedIn to reach a diverse and geographically dispersed sample. Given social media's extensive reach and cost-effectiveness, it serves as a viable recruitment method for studies examining public attitudes and behaviors on climate change.

The survey was administered online using Google Forms over a four-week period, from March 1st to March 31st, 2024. Participants were informed of the study's purpose and provided voluntary, informed consent before proceeding. Anonymity was ensured, and no identifiable information was collected. A total of 548 participants completed the survey, representing a diverse cross-section of young adults. Although the cross-sectional design does not directly observe respondents before and after media exposure, the questionnaire explicitly asked respondents to indicate whether each reported behavior was undertaken after exposure to climate-related media content (e.g., "After seeing or reading climate-related content, did you engage in the following…?"). These self-reported indicators provide a proxy measure of behavioral change following media exposure.

Data analysis was conducted using Stata 18.5 BE software to investigate the relationships between media consumption, demographic variables, and pro-environmental behaviors. Descriptive statistics were used to summarize demographic characteristics, media consumption habits, and self-reported behaviors. Correlation analysis examined the strength and direction of associations between media types, trust levels, and behaviors. Multivariate regression analysis was employed to identify the predictive power of media consumption on pro-environmental behaviors, with demographic factors included as moderators. Additional analyses included chi-square tests to assess group differences and cross-tabulations to explore demographic patterns in media preferences and behaviors. All data were assessed for reliability and validity to ensure the robustness of findings.

This study acknowledges several limitations inherent to the chosen sampling method. Convenience sampling through social media platforms may have introduced self-selection bias, as participants with higher interest in climate change or greater media engagement

were likely overrepresented. Additionally, reliance on digital access excluded individuals without internet connectivity or social media presence. These factors limit the generalizability of the findings, which should be interpreted with caution. Furthermore, as the study relies on self-reported retrospective assessment of behaviors after media exposure, it cannot fully establish pre-exposure baselines. Future studies employing longitudinal pre-post research designs are encouraged to capture more precise changes in pro-environmental behaviors over time. Despite these limitations, the chosen approach allowed efficient access to the target demographic of young adults, a group highly active on social media and central to understanding the interplay between media and climate perceptions (Anderson & Jiang, 2018; Vogels, 2019). The study's exploratory nature further justified this sampling strategy, prioritizing accessibility, and initial insights into the research topic.

Ethical considerations were paramount throughout the study. Approval was obtained from University's Institutional Review Board (IRB Approval FY2024-218), and all participants provided informed consent. The survey adhered to strict ethical guidelines, ensuring confidentiality and anonymity in data collection and analysis.

4. Results

For the first research question, we wanted to examine whether media consumption influences pro-environmental behaviors among U.S. residents, the analysis incorporated descriptive statistics, chi-square tests, correlation analysis, and multivariate regression with robust standard errors. A total of 548 observations were included in the analysis.

The descriptive analysis reveals key patterns in media consumption and pro-environmental behaviors. Respondents consumed an average of 2–3 hours of media daily (M=2.39, SD=0.84), with online news and social media identified as the most frequently consumed types of media (M=2.96, SD=1.20). Engagement with climate-related media was relatively low, with an average frequency of encountering climate news (M=1.91, SD=0.92) and moderate engagement with scientific articles on climate change (M=3.06, SD=1.02). Pro-environmental behaviors showed varying levels of engagement. Participation in climate awareness campaigns was low (M=1.85, SD=0.22), while voting based on climate policies (M=3.86, SD=0.85) and donations to environmental organizations (M=3.38, SD=0.59) were reported more frequently. Table 1 summarizes the descriptive statistics for the key variables.

Table 1. Summary Statistics of Key Variables

Variable	Mean	Standard Deviation	Number of Observations	Min	Max
Hours of Media Consumption	2.39	0.84	548	1	5
Type of Media Consumed Most Frequently	2.96	1.20	548	1	6
Frequency of Encountering Climate News	1.91	0.92	548	1	6
Engagement with Scientific Articles	3.06	1.02	548	1	5
Participation in Climate Awareness Campaigns	1.85	0.22	548	1	2
Voting Based on Climate Policies	3.86	0.85	548	1	5
Donations to Environmental Organizations	3.38	0.59	548	2	4
Motivation for Pro-Environmental Actions	1.92	0.88	548	1	5

Chi-square tests revealed no significant associations between the type of media consumed and pro-environmental behaviors. For example, no significant relationship was found between media type and participation in climate awareness campaigns (x^2=3.43, p=0.487), voting based on climate policies (x^2=7.19, p=0.969), or donations to environmental organizations (x^2=12.41, p=0.134). Similarly, correlation analysis showed weak relationships between hours of media consumption and pro-environmental behaviors. Hours of media consumption had a small positive correlation with participation in climate awareness campaigns (r=0.1188) and voting based on climate policies (r=0.0671). However, these correlations were not strong enough to suggest meaningful relationships.

Multivariate regression models with robust standard errors were employed to further explore these relationships, controlling for demographic variables such as age, gender, race/ethnicity, education, current residence, and political affiliation. Table 2 presents the regression results.

Table 2. Influence of Media Consumption on Pro-Environmental Behaviors

Variables	Coefficient (Standard Error)	t-value	Significance	Confidence Interval
Frequency of Pro-Environmental Actions	0.048 (0.061)	0.79	.431	[-0.072, 0.168]
Participation in Climate Awareness Campaigns	0.030 (0.013)	2.19	.029	[0.003, 0.057]
Voting Based on Climate Policies	0.075 (0.042)	1.75	.081	[-0.009, 0.158]
Donations to Environmental Organizations	0.019 (0.031)	0.61	.542	[-0.042, 0.080]
Motivations for Pro-Environmental Actions	-0.084 (0.041)	-0.10	.924	[-0.086, 0.078]
Constant (Y-intercept)	2.812 (0.448)	5.80	.000	[1.866, 3.765]
Number of Cases	548			
R^2	.017			
Adjusted R^2	.007			
F-Test	3.08		.029	
Root MSE	0.559			

Notes: Models were run with robust standard errors

The regression results indicate that hours of media consumption had a statistically significant but small positive effect on participation in climate awareness campaigns (β=0.030, p=0.029). None of the other behaviors showed statistically significant relationships with either hours or type of media consumed. Furthermore, demographic variables such as age, gender, education, and political affiliation were not significant predictors in any model. The adjusted R^2 value of 0.007, indicating that the models explained a minimal proportion of variance in pro-environmental behaviors.

To ensure the robustness of the models, diagnostic tests were conducted. The Breusch-Pagan/Cook-Weisberg test and Cameron & Trivedi's decomposition of the IM-test indicated heteroskedasticity, which was addressed using robust standard errors. The Ramsey

RESET test confirmed no omitted variable bias (p=0.4679), and the Variance Inflation Factor (VIF) test revealed no multicollinearity, with all VIF values below 1.03.

The second research question investigates whether demographic factors mediate the relationship between media consumption and pro-environmental behaviors. A three-step regression approach was employed to determine whether media exposure influences demographic factors, whether media consumption directly predicts pro-environmental behaviors, and whether including demographic factors in the model reduces or eliminates the effect of media exposure. The analysis included 548 observations and incorporated descriptive statistics, mediation analysis, and post-estimation tests to ensure model robustness.

To provide an overview of the sample composition, frequency distributions were calculated for age, gender, race/ethnicity, education, residence, and political affiliation. These demographic variables were examined as potential mediators in assessing the relationship between media exposure and pro-environmental behaviors. The sample was relatively balanced across age groups, with the largest proportion of respondents falling in the 23–27 (33.21%) and 28–32 (33.03%) age ranges. 16.24% of the participants were in the 18–22 category, while 17.52% were aged 33–35. Regarding gender distribution, 57.30% of respondents identified as female (n=314), while 41.97% were male (n=230), and 0.73% identified as non-binary or other.

The racial composition was largely homogeneous, with 97.63% of respondents identifying as White, followed by 2.01% as Black or African American, and 0.36% as other racial groups. In terms of education, the highest proportion of respondents held a Bachelor's degree (33.21%), followed by Master's degree (21.90%), and Doctorate or professional degrees (17.70%). A smaller percentage reported some college experience (10.58%) or only a high school diploma (16.61%). The sample was fairly distributed across geographic locations, with 38.32% residing in urban areas, 39.78% in suburban areas, and 21.90% in rural regions. Politically, 58.58% of respondents identified as Democrats, 39.42% as Independents or affiliated with other parties, and only 2.01% as Republicans.

To assess the role of media consumption in influencing pro-environmental behaviors, descriptive statistics were calculated for key variables related to media exposure and pro-environmental behaviors. Respondents reported an average daily media consumption of 2.39 hours (SD = 0.84), with a range from less than an hour (1) to more than six hours (5). The most frequently used media type was online news and social media (M=2.96, SD=1.20), indicating a strong reliance on digital platforms for information. Engagement with climate-related media was relatively low, with an average frequency of encountering climate news (M=1.91, SD=0.92) and moderate engagement with scientific articles (M=3.06, SD=0.88). Pro-environmental behaviors varied across the sample. Participation in climate awareness campaigns was very low (M=1.85, SD=0.22), indicating that only a small fraction of the sample actively engaged in environmental advocacy. Voting based on climate policies showed moderate engagement (M=3.86, SD=0.85), while donations to environmental organizations were occasional (M=3.38, SD=0.59). The primary motivation for engaging in pro-environmental behaviors was largely driven by personal responsibility and concern for future generations rather than direct media influence.

Table 3. Summary Statistics of Media Consumption and Pro-Environmental Behaviors

Variable	Mean	Standard Deviation	Number of Observations	Min	Max
Hours of Media Consumption	2.39	0.84	548	1	5
Type of Media Consumed Most Frequently	2.96	1.20	548	1	6
Frequency of Encountering Climate News	1.91	0.92	548	1	6
Primary Media Source for Climate Information	3.10	1.17	548	1	4
Engagement with Scientific Articles	3.06	1.02	548	1	5
Participation in Climate Awareness Campaigns	1.85	0.22	548	1	2
Voting Based on Climate Policies	3.86	0.85	548	1	5
Donations to Environmental Organizations	3.38	0.59	548	2	4
Motivation for Pro-Environmental Actions	1.92	0.88	548	1	5

A three-step mediation process was conducted to assess whether demographic factors mediate the influence of media consumption on pro-environmental behaviors. The first step evaluated whether media exposure significantly predicts demographic factors (age, gender, race/ethnicity, education, residence, and political affiliation). The results indicate that media consumption does not significantly predict most demographic characteristics. None of the media exposure variables (hours of media, type of media, frequency of encountering climate news, or engagement with scientific articles) were significant predictors of age ($p=0.431$), gender ($p=0.452$), race/ethnicity ($p=0.843$), or education ($p=0.534$). A weak but statistically significant association was found between media consumption and political affiliation ($\beta=0.04$, $p=0.048$), suggesting that individuals consuming more media are slightly more likely to align with specific political identities. However, this effect is minimal.

The second step examined whether media consumption directly predicts pro-environmental behaviors. The results indicate that hours of media consumption significantly predict participation in climate awareness campaigns ($\beta=0.030$, $p=0.029$). However, no significant relationships were found for other pro-environmental behaviors (frequency of environmental actions, voting for climate policies, donation behavior, and motivation for environmental engagement). The final step introduced demographic factors into the regression model alongside media consumption. The results indicate that demographic factors do not significantly mediate the relationship between media consumption and pro-environmental behaviors. The effect of media consumption on participation in climate awareness campaigns remained significant ($\beta=0.028$, $p=0.031$), even after controlling for demographics.

Table 4. Influence of Media Consumption and Demographics on Pro-Environmental Behaviors

Variables	Coefficient (Standard Error)	t-value	Significance	Confidence Interval
Frequency of Pro-Environmental Actions	0.048 (0.061)	0.79	.431	[-0.072, 0.168]
Participation in Climate Awareness Campaigns	0.028 (0.012)	2.19	.031	[0.002, 0.054]
Voting Based on Climate Policies	0.071 (0.041)	1.75	.080	[-0.008, 0.153]
Donations to Environmental Organizations	0.018 (0.029)	0.61	.548	[-0.040, 0.078]
Motivations for Pro-Environmental Actions	-0.082 (0.039)	-0.10	.920	[-0.083, 0.075]
Constant (Y-intercept)	2.812 (0.448)	5.80	.000	[1.866, 3.765]
Number of Cases	548			
R^2	.017			
Adjusted R^2	.007			
F-Test	3.08		.029	
Root MSE	0.559			

Notes: Models were run with robust standard errors

To ensure the robustness of the results, post-estimation tests were conducted. The VIF test revealed no multicollinearity (VIF=1.03). The Breusch-Pagan test indicated heteroskedasticity ($p<0.0000$), so robust standard errors were applied. The Ramsey RESET test confirmed that there were no omitted variables ($p=0.5612$). The analysis concludes that demographics do not mediate the relationship between media consumption and pro-environmental behaviors, except for weak effects on political affiliation.

For the third research question, we wanted to examine whether trust in media moderates the relationship between media consumption and pro-environmental behaviors. A moderated regression analysis was conducted in three steps: first, assessing the direct effect of media consumption on pro-environmental behaviors; second, testing the effect of trust in media; and third, introducing an interaction term (media consumption × trust in media) to determine whether trust significantly moderates this relationship. To establish the overall level of trust in media sources, descriptive statistics were computed. The mean trust level was 3.96 (SD=0.81, Min=1, Max=5), indicating that respondents generally exhibited moderate to high levels of trust in media as a source of climate change information. The frequency distribution showed that only 1.64% of respondents reported no trust in media at all, while 4.74% expressed low trust. In contrast, 62.23% reported mostly trusting media, and 20.99% completely trusted media sources. This distribution indicates that most participants rely on media content for climate change information, though a small fraction of the sample remains skeptical.

To examine the role of trust in media as a moderator, a series of hierarchical regression models were conducted. First, media consumption was regressed on pro-environmental behaviors. The results indicated that media consumption alone was not a strong predictor of pro-environmental behaviors. The only significant effect was observed for

participation in climate awareness campaigns (β=0.031, p=0.020), suggesting that individuals who consumed more climate-related media were slightly more likely to engage in advocacy efforts. However, no significant effects were found for voting, donations, or individual environmental actions. Following this, trust in media was included as an independent variable in the regression models. While it was expected that trust in media would strengthen pro-environmental behaviors, the regression results showed that trust alone did not significantly predict engagement in such behaviors. To assess the moderation effect, interaction terms (media consumption × trust in media) were included in the regression models. The results, summarized in Table 5, indicate that none of the interaction terms were statistically significant, meaning that trust in media does not moderate the relationship between media consumption and pro-environmental behaviors.

Table 5. Influence of Trust in Media on Pro-Environmental Behaviors

Variables	Coefficient (Standard Error)	t-value	Significance	Confidence Interval
Frequency of Pro-Environmental Actions	-0.054 (0.056)	-0.97	.330	[-0.165, 0.056]
Participation in Climate Awareness Campaigns	0.031 (0.013)	2.33	.020	[0.005, 0.058]
Voting Based on Climate Policies	-0.067 (0.042)	-1.60	.111	[-0.150, 0.015]
Donations to Environmental Organizations	0.022 (0.030)	0.73	.463	[-0.038, 0.083]
Motivations for Pro-Environmental Actions	-0.012 (0.042)	-0.03	.977	[-0.081, 0.083]
Constant (Y-intercept)	3.015 (0.184)	16.35	.000	[2.653, 3.377]
Number of Cases	548			
R^2	.012			
Adjusted R^2	.006			
F-Test	1.28		.270	
Root MSE	0.595			

Notes: Models were run with robust standard errors

To ensure the robustness of the model, post-estimation diagnostic tests were conducted. The Variance Inflation Factor (VIF) test showed that the mean VIF was 1.01, indicating that multicollinearity was not a concern. The Breusch-Pagan/Cook-Weisberg test for heteroskedasticity produced a chi-square value of 9.53 (p=0.0020), indicating the presence of heteroskedasticity, which was accounted for by using robust standard errors in all regression models. The Ramsey RESET test for omitted variable bias yielded (p=0.1326), confirming that the model was correctly specified and did not suffer from omitted variable bias. These findings suggest that media consumption alone does not strongly predict pro-environmental behaviors, except for a small but significant effect on participation in climate awareness campaigns. Trust in media does not independently predict engagement in pro-environmental behaviors.

Furthermore, the interaction between media consumption and trust in media was not statistically significant, suggesting that trust in media does not moderate the relationship between media consumption and pro-environmental behaviors. The results indicate that trust in media may not play a critical role in influencing whether individuals translate climate- related media exposure into environmental engagement. Future research may explore alternative moderators, such as political ideology or scientific literacy, to better understand how individuals convert climate-related media exposure into meaningful pro-environmental actions.

5. Discussion

The findings of this study provide nuanced insights into the complex relationship between media consumption and climate-related behaviors, revealing both expected patterns and surprising limitations. While has emphasized the role of media in shaping climate change awareness and behavior (Feldman et al., 2014; Newman et al., 2020), this study demonstrates that media consumption has only a small but statistically significant effect on participation in climate awareness campaigns and does not strongly predict other forms of pro-environmental behavior, such as voting based on climate policies or financial contributions to environmental organizations. This suggests that while media can increase climate awareness, it does not necessarily translate into sustained behavioral engagement.

A major finding of this study is that while media exposure does influence participation in awareness campaigns, it does not significantly predict other pro-environmental behaviors. This contrasts with studies that suggest a stronger link between media consumption and climate-related action (Greaves et al., 2023; Schuldt & Pearson, 2023). The low adjusted R^2 values in the regression models indicate that media exposure explains only a small fraction of variance in climate behaviors. This weak predictive power suggests that other factors, beyond media exposure, play a more significant role in driving climate-related engagement.

One possible explanation for this limited effect is the distinction between passive awareness and active engagement. While media coverage may shape climate knowledge and attitudes, behavior change requires additional factors such as social norms, personal experiences with climate change, and political ideology (Newman et al., 2020; Spektor et al., 2023). Additionally, the Elaboration Likelihood Model (ELM) suggests that people process information differently depending on motivation and ability (Petty & Cacioppo, 1986). If audiences engage primarily through the peripheral route, such as social media and emotionally charged headlines, rather than the central route, such as in-depth reports and scientific articles, they may develop temporary concern rather than long-term commitment to climate action (Ejaz et al., 2025). Given the increasing prevalence of social media as a dominant source of climate news (Vrselja et al., 2024), it is possible that many individuals are exposed to climate information in ways that encourage only short-term emotional reactions rather than sustained behavioral shifts.

Another significant finding is that trust in media did not moderate the relationship between media exposure and pro-environmental behavior. This challenges prior research that suggests media trust enhances the credibility and impact of climate messages (Brewer & Ley, 2013). One possible reason for this is the highly polarized media landscape in the United States, where news consumption is often shaped by political ideology rather than trust levels alone (M. Boykoff et al., 2021; Painter, 2016). For example, conservative media audiences tend to be more skeptical of climate change and less likely to engage in climate action

(Schuldt & Pearson, 2023), while liberal media audiences already have high climate awareness and may not be significantly influenced by additional media exposure. Thus, rather than media trust itself, it may be the type of media consumed, whether partisan or nonpartisan, that drives behavioral differences. The lack of a significant moderating effect of media trust raises important questions about whether other factors, such as personal values, exposure to climate-related disasters, or political ideology, play a more decisive role in driving action. Future research should explore whether political ideology serves as a stronger moderator than media trust in shaping climate behaviors. Additionally, qualitative studies could examine how individuals interpret climate messages within their ideological frameworks, revealing whether partisan media reinforces existing beliefs or promotes engagement.

Another surprising result is that demographic factors, including age, gender, education, and political affiliation, did not significantly mediate the relationship between media exposure and climate behavior. This contradicts previous research suggesting that younger, more educated individuals are more likely to engage in climate action (Schuldt & Pearson, 2023; Wonneberger et al., 2020). One possible explanation is that climate messaging has become more homogenized across demographics, reducing the role of traditional socio-demographic differences. With widespread digital access to climate content, younger and older generations alike are exposed to similar narratives, leading to comparable engagement levels. Alternatively, it is possible that personal experiences with climate change, such as exposure to extreme weather events, play a stronger role in behavior than demographic characteristics. The increasing prevalence of climate-related disasters may be a more powerful motivator for action than demographic factors alone, suggesting that media effects may be contingent on individuals' lived experiences rather than their educational or political background. Future research should examine whether geographic factors, such as living in disaster-prone areas, are stronger predictors of climate engagement than age or education. Additionally, longitudinal studies tracking climate attitudes and behaviors over time could provide deeper insights into whether demographic differences emerge as climate change worsens.

While this study provides important insights, several limitations must be acknowledged. The study relied on convenience sampling via social media, which may have introduced self- selection bias, favoring individuals already interested in climate issues. Additionally, the sample was overwhelmingly White, with 97.63% of respondents identifying as White, limiting its applicability to more diverse racial and ethnic groups. Prior research suggests that climate concerns vary significantly across racial demographics, with Black and Latino communities often exhibiting higher climate concern than White Americans (Ballew et al., 2022). Future research should employ probability-based sampling methods to enhance representativeness and include racially diverse populations. A more diverse sample would allow for a better understanding of how different racial and ethnic communities engage with climate media and whether their experiences with climate change shape their behaviors differently.

Another limitation is the study's cross-sectional design, which captures only a snapshot in time. It is unclear whether media consumption leads to behavior change or if individuals already engaged in climate action seek out more climate-related media. While the study establishes correlations, it does not determine causality. Future research should employ longitudinal or experimental designs to assess causal effects of media exposure on climate action over time.

Additionally, this study examined only a narrow set of climate behaviors, focusing on awareness campaigns, voting, and donations. Other behaviors, such as energy conservation, sustainable consumption, and corporate activism, were not included in the analysis. These behaviors may be more directly influenced by media consumption, particularly when individuals receive actionable recommendations from media sources. Future studies should investigate a broader range of climate actions to better understand how media influences behavioral engagement beyond political participation. Furthermore, given the deep political divisions in climate discourse, future studies should examine the role of partisan media in shaping not only climate beliefs but also resistance to climate policies. The increasing prevalence of misinformation in climate discourse also warrants further exploration, as exposure to misinformation may counteract the effects of accurate climate reporting, leading to confusion or inaction.

This study contributes to the growing literature on climate communication by examining how media consumption influences climate change perceptions and behaviors in the U.S. The findings suggest that while media exposure increases participation in climate awareness campaigns, it does not strongly predict other pro-environmental behaviors. Demographic factors do not significantly mediate the relationship between media and climate action, and trust in media does not moderate this relationship. These findings challenge assumptions about the direct role of media in shaping climate action and highlight the need to consider political ideology, personal experiences, and social influences as potential drivers of climate behavior.

Future research should explore whether different media formats, such as visual storytelling versus traditional journalism, lead to different levels of engagement, how political ideology interacts with media effects, and whether longitudinal exposure to climate messaging fosters deeper behavioral change. Examining alternative forms of engagement, such as corporate sustainability efforts and digital activism, could also provide a more comprehensive understanding of how media-driven climate awareness translates into action. By addressing these questions, future studies can contribute to more effective climate communication strategies that translate awareness into meaningful action.

6. Conclusion

This study investigated the role of media in shaping climate change perceptions and behaviors in the United States. Using the Elaboration Likelihood Model (ELM) as a theoretical framework, it examined whether different types of media consumption influence pro-environmental behaviors, whether demographic factors mediate these effects, and whether trust in media moderates this relationship. The findings revealed that while media consumption had a small but significant effect on participation in climate awareness campaigns, it did not strongly predict other pro-environmental behaviors, such as voting based on climate policies or donating to environmental organizations. Additionally, demographic factors did not mediate the influence of media consumption on climate behaviors, and trust in media did not moderate the relationship, challenging some prior assumptions in climate communication research (Brewer & Ley, 2013; Greaves et al., 2023; Schuldt & Pearson, 2023).

These findings underscore the complexity of translating media exposure into tangible climate action. While media serves as an important source of climate information, mere exposure does not necessarily lead to engagement in pro-environmental behaviors. This aligns with the ELM framework, which suggests that information processing varies based on

cognitive motivation and message delivery (Petty & Cacioppo, 1986). The weak role of demographics suggests that climate messaging may be reaching audiences more uniformly than previously thought, possibly due to the widespread availability of climate content across platforms (Wonneberger et al., 2020). However, the lack of a significant moderating effect of media trust raises questions about whether other factors, such as personal values or direct climate experiences, play a more decisive role in driving action (Ejaz et al., 2025; Strauss et al., 2022).

While the findings offer valuable insights into the attitudes and behaviors of a specific subgroup of young adults, they should not be generalized to the broader U.S. population. Future research should aim to employ probabilistic sampling methods to enhance representativeness and address potential biases. Future research should explore additional moderators, such as political ideology and scientific literacy, to determine their role in shaping climate engagement. Longitudinal studies could assess whether media influence on behavior evolves over time, while experimental research could isolate the effects of different media formats. Examining alternative forms of engagement, such as corporate sustainability efforts and digital activism, could provide a more comprehensive understanding of how media-driven climate awareness translates into action. By addressing these gaps, future studies can contribute to more effective climate communication strategies and policy interventions

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