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Cable News Media's Influence on Climate Change Beliefs: A Partisan Comparison

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Abstract

The current, fragmented media landscape coupled with partisan views toward scientific issues has made it difficult for members of the public to achieve mutual understanding toward critical issues like climate change. Selective media exposure, media's credibility in reporting science and reporting climate change, trust in science, along with demographic characteristics of consumers are all expected to influence the public's belief in climate change. However, effects may differ across partisan lines. The purpose of this study was to understand how cable news media influences Illinois residents' beliefs in climate change across political ideological groups. An online survey was completed by 506 respondents, and respondents were categorized as conservative, moderate, or liberal based on a political ideology question. Differences were noted between political groups for variables of interest. Most notably, liberals believed more in climate change compared to conservatives or moderates. Cable news use also followed party lines, and regression analyses found the media influenced climate change beliefs disproportionately across the political groups; conservatives were influenced the most. Trust in science was a positive predictor for all three groups; however, only conservatives and moderates were directly influenced by cable news media use.

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Introduction and Problem Statement

The media landscape has evolved over the past 30 years, and, rather than seeing opposing opinions in the news, consumers gained the ability to choose from a variety of programs and select sources that presented information that already supported their views (Iyengar & Hahn, 2009; Mullainathan & Schleifer, 2005; Prior, 2007). The 24/7 cable news cycle, with programs like Fox News and CNN, can present politically polarized information that scholars believe shape and reinforce partisan opinions (de Zúñiga et al., 2012; Grieco, 2020; Iyengar & Hahn, 2009). One of these polarized issues in the media is climate change, and, despite scientific consensus that climate change is happening (Cook et al., 2013), there is a stark divide in U.S. opinions between the Democratic (liberal) and Republican (conservative) parties when concerning climate change (Abeles et al., 2019; Antonio & Brulle, 2011). In the 1990s, Republican party campaigns against climate science and policy emerged, infiltrating conservative media channels and challenging the scientific consensus, which eventually led to the belief that there was scientific controversy over climate change amongst most Republicans (Dunlap & McCright, 2008). By 2019, only 21% of Republicans believed climate change should be a top priority for U.S. policy compared to 67% of Democrats (Oliphant, 2019). Despite climate change posing a major threat to agricultural development (Food and Agricultural Organization [FAO], 2023), public skepticism may thwart any successful efforts related to mitigation and adaptation strategies. In order to lessen the effects of climate change on agricultural development, public information campaigns related to climate change adaptation and mitigation practices will need to overcome media bias and resonate with target audiences. Therefore, the purpose of this study was to understand cable news media's influence on Illinois residents' belief in climate change across political ideological groups.

Theoretical and Conceptual Framework

Media effects theories, including selective exposure theory (Freedman & Sears, 1965) and source credibility (Perloff, 2008), provided the conceptual framework for this research. Freedman and Sears (1965) hypothesized that people selectively exposed themselves to information in the media that supported their current attitudes, beliefs, and political predispositions. The concern associated with selective media exposure was the media would have polarizing effects on their audiences (Stroud, 2011). As a result, it would be difficult for the public, along with policy makers, to achieve mutual understanding related to critical issues facing the nation (Feldman et al., 2014). Past research has supported the hypothesis that political ideology drives partisan selection of media sources. Conservatives have typically preferred Fox News compared to CNN, while liberals prefer channels like CNN and MSNBC over Fox News (Grieco, 2020; Iyangar & Hahn, 2009; Stroud, 2007). Additionally, Republicans are more likely to list Fox News as their main political news source while Democrats tend to use multiple news sources (Grieco, 2020).

Feldman et al. (2012) determined that Fox News typically presented climate change in a dismissive tone compared to CNN, with the latter presenting the issue as both human-caused

and urgent. In further support of the selective exposure theory, researchers have concluded increased exposure to Fox News was associated with a weaker belief in climate change and watching CNN was associated with greater acceptance related to the scientific consensus around climate change (Feldman et al., 2012). Interestingly though, Feldman et al. (2012) also found that Republicans' beliefs in climate change were strongly linked to cable news channel use compared to Democrats. The authors concluded that Republicans, while skeptical of climate change in general, were less skeptical when viewing media that supported the urgency of climate change (Feldman et al., 2012).

While selective media use has been linked to polarized beliefs in climate change (Feldman et al., 2012; Feldman et al., 2014), the media's credibility in presenting information about science in general and climate change specifically may have an influence on beliefs. Positive perceptions of source credibility have been found to have strong effects on attitude when knowledge around a topic is limited (Hovland & Weiss, 1951), and credibility is often linked to the honesty, expertise, and goodwill of the source (Perloff, 2008). However, there has been a decline in media trust in the U.S. over recent years, resulting in only 35% of Republicans trusting national news media in 2021 compared to 78% of Democrats (Gottfried & Liedke, 2021). This decline in trust has likely influenced the media's credibility in reporting topics related to science and climate change.

Socio-Structural Variables and Belief in Climate Change

Interactions between political affiliation and other socio-structural variables have been associated with belief in climate change as well. In a sample of New Zealanders, Milfont et al. (2015) found that belief of climate change was higher among individuals who were younger, female, liberal, educated, and belonging to minority groups. While in the U.S., conservative white males are more likely to be climate change skeptics (McCright & Dunlap, 2011). Past studies have explored the role of partisan media on consumers' beliefs in climate change (Feldman et al., 2012; Feldman et al., 2014); however, there is evidence that media credibility and socio-structural variables are also important to consider when trying to understand the media's effects on consumers' climate change beliefs. Because Americans have divided attitudes toward climate change despite high levels of trust in science (Funk et al., 2019), trust in science was also included in this framework to provide a holistic understanding of how people across political ideologies form beliefs toward climate change.

Purpose

The purpose of this study was to understand cable news media's influence on Illinois residents' belief in climate change across political ideological groups. The following objectives guided this research: (a) Describe the demographic characteristics of liberals, moderates, and conservatives; (b) Describe the differences in trust in science between political ideological groups; (c) Describe the difference in climate change beliefs between political ideological groups; (d) Describe the differences in cable news media use between political ideological

groups; and (e) Determine how demographics, trust in science, cable news use, and media credibility predict Illinois residents' beliefs in climate change across political ideological groups.

Methods

We used a quantitative survey design to fulfill the purpose of this survey. The population for our study was Illinois residents 18 years or older. We distributed an online survey via a Qualtrics panel to Illinois residents in April of 2019. While this data was collected prior to the 2020 COVID-19 pandemic, it still presents meaningful findings related to how the media can influence public opinion when accounting for political ideology. Additionally, trust in science has only slightly decreased since the time of this study (Kennedy et al., 2022), and trust in the media already differed across political groups, although the difference has widened (Gottfried & Liedke, 2021). We used quota sampling to help increase the generalizability of the sample by matching respondents' demographics to the 2017 Illinois Census demographics for gender, race, income, and education. We received a total of 506 responses that met the criteria for our quota. The demographics are presented in further detail in Objective 1.

Our study examined six questions along with demographic questions from a 29-question instrument. These questions asked about respondents' trust in science, media use, belief in climate change, perceived credibility of climate change in the news, perceived credibility of science in the news, and political ideology. The sample had 176 liberals, 185 moderates, and 145 conservatives. We measured *cable news use* with a check-all-that-apply question that asked respondents what news organizations they received news from in an average week. There were a total of 30 options (including "Other") for respondents to choose from. For the purpose of this study, only three cable news sources were used for analysis and selected to represent a conservative-leaning source (Fox News), a liberal-leaning source (CNN), and a moderate source (ABC News; Grieco, 2020; Mitchell et al., 2014). Fox News and CNN were specifically selected due to their historical polarized presentation of climate change (Feldman et al., 2012). In the sample, 35.0% used ABC News, 31.6% used CNN, and 30.6% used Fox News.

We measured media's credibility (Cronbach's α = .81) when reporting science with a 5-item, 5-point, bipolar semantic differential scale adapted from Frewer et al. (1996). Respondents were asked to mark the appropriate answer from a set of adjectives to complete the phrase, "I believe the information presented in the media about science is…" We used the same scale to measure media's credibility (Cronbach's α = .90) when reporting climate change, but the prompt was altered to say, "I believe the information presented in the media about climate change is…" Both constructs were created by calculating the average for the items. We measured belief in climate change (Cronbach's α = .95) with a 7-item, 5-point Likert-type scale. The scale ranged from 1 = strongly disagree to 5 = strongly agree, with a neutral middle. This scale was adapted from Langer Research Associates (2018) and Milfont et al. (2015). Trust in science (Cronbach's α = .81) was adapted from the National Science Board's (2018) Science and Engineering Indicators Report and was measured with 10 items on a 5-point Likert-type scale with the same labels as belief in climate change. Demographic questions were also included.

The questionnaire was reviewed by a panel of experts to assess the face validity of the instrument, and we conducted a pilot study to ensure the online instrument was working and the constructs were reliable. All data were analyzed in SPSS Statistics version 25. We used descriptive statistics and ANOVAs to answer Objectives 1 through 3. A multilinear regression was used to fulfill Objective 5. The data file was split so separate regressions were run for liberal, moderate, and conservative groups to understand how the conceptual framework predicted climate change belief across the groups. Assumptions for the multilinear regression and ANOVAs were met prior to analysis.

Findings

Objective 1: Describe the Demographic Characteristics of Liberals, Moderates, and Conservatives

The demographic characteristics for the sample along with the respondent groups of liberals, moderates, and conservatives can be found in Table 1. Conservatives were mostly white (90.3%) males (53.8%) with an average age of 49.38 (*SD* = 15.00). Approximately, one-third (31.3%) of the conservatives' highest level of education was high school, nearly 40% earned at least $75,000 a year, and a quarter of the conservative respondents lived in a rural county (25.5%). Moderate respondents were mostly female (54.6%) with an average age of 42.27 (*SD* = 17.43), and their demographic characteristics reflected the demographics for the sample. Approximately one-third of the moderate respondents' highest level of education was high school (31.3%). More than half of the moderate respondents made less than $50,000 a year (54%). Liberal respondents were mostly female (56.3%) and had the largest representation of African American or Black (22.7%) or Hispanic (13.1%) respondents out of the three groups. This was the youngest group at 39.22 (*SD* = 14.31), and the majority of liberal respondents had earned at least a 4-year degree (47.8%). Only 11.4% of the liberal respondents lived in a rural area.

Table 1

Description of Respondents Across Political Ideological Groups

	Sample (*n* = 506) %	Liberals (*n* = 176) %	Moderates (*n* = 185) %	Conservatives (*n* = 145) %
Gender				
Male	47.2	43.8	45.4	53.8
Female	52.8	56.3	54.6	46.2
Race/Ethnicity				
White	76.5	67.0	74.6	90.3
Black or African American	15.2	22.7	15.1	6.2
Hispanic	10.3	13.1	12.4	4.1
Asian, Native Hawaiian, or Pacific Islander	5.7	8.0	5.9	2.8
American Indian or Alaskan Native	0.4	0.0	1.1	0.0
Two or More Races	1.2	1.7	1.6	0.0
Other	1.0	0.6	1.6	0.7
Education				
High School Degree or Less	28.9	23.0	31.3	31.3
Some College, No Degree	23.1	19.9	26.5	22.8
2-Year Degree	9.3	8.5	9.7	9.7
4-Year Degree	23.7	29.0	20.0	22.1
Graduate School or Professional School	15.0	18.8	12.4	13.7
Household Income				
Less than $25,000	21.7	22.2	25.9	15.9
$25,000 -$49,999	24.1	21.0	28.1	22.8
$50,000 - $74,999	19.0	20.5	15.1	22.1
$75,000 - $149,999	26.9	25.0	23.8	33.1
$150,000 or more	8.2	11.4	7.1	6.2
Children Living at Home	38.9	40.9	40.0	35.9
Rural County	16.0	11.4	13.0	25.5

Objective 2: Describe the Differences in Trust in Science Between Political Ideological Groups

Liberals (M = 3.83, SD = 0.73), moderates (M = 3.70, SD = 0.60), and conservatives (M = 3.58, SD = 0.57) agreed they trusted science. An ANOVA determined there was a significant association between political ideology and trust in science ($F(2,503) = 5.65$, $p < .01$); however, the effect size was small ($\eta^2 = 0.02$; Cohen, 1988). Follow-up tests indicated that liberals had a higher trust

in science compared to conservatives ($p < .01$, Table 2). There were no differences between moderates and liberals or moderates and conservatives.

Table 2

Follow-up Bonferroni Tests Between Groups and Trust in Science

J	*I*	*Mean Diff (J-I)*	*SE*	*p-value*
Liberal	Moderate	0.13	0.07	0.16
	Conservative	0.24	0.07	0.00**

Note. **p<.01

Objective 3: Describe the Difference in Climate Change Beliefs Between Political Ideological Groups

When broken down by group, liberals ($M = 4.23$, $SD = 0.73$) and moderates ($M = 3.83$, $SD = 0.80$) agreed that climate change was happening while conservatives neither agreed nor disagreed that they believed in climate change ($M = 3.00$, $SD = 1.20$). An ANOVA determined there was a statistically significant association between political ideology and climate change belief ($F(2,501) = 78.16$, $p < .01$, $\eta^2 = 0.24$). Liberals believed more in climate change compared to moderates or conservatives ($p < .01$) and moderates believed more in climate change compared to conservatives ($p < .01$; Table 3).

Table 3

Follow-up Bonferroni Tests Between Groups and Climate Change Beliefs

J	*I*	*Mean Diff (J-I)*	*SE*	*p-value*
Liberal	Moderate	0.43	0.10	0.00**
	Conservative	1.27	0.10	0.00**
Moderate	Liberal	-0.43	0.10	0.00**
	Conservative	0.84	0.10	0.00**
Conservative	Liberal	-1.27	0.10	0.00**
	Moderate	-0.84	0.10	0.00**

Note. **p<.01

Objective 4: Describe the Differences in Cable News Media Use Between Political Ideological Groups

The respondents' cable news use is reported in Table 4. The largest percentage of liberals watched CNN (40.9%), while moderates watched ABC News (41.6%) and conservatives watched Fox News (42.1%). Chi-square analyses determined there were significant differences across political ideological groups for watching Fox News ($\chi^2(2) = 21.10$, $p < 0.01$, Cramer's V = .20) and watching CNN ($\chi^2(2) = 17.24$, $p < 0.01$, Cramer's V = .20). There was a larger percentage of liberals or moderates watching CNN compared to conservatives. Additionally, there was a

smaller percentage of liberals watching Fox News compared to moderates or conservatives. There were no differences in the percentage of each group for watching ABC News ($\chi^2(2) = 5.66$, $p = .06$).

Table 4

Political Ideological Groups' Cable News Media Use

	Liberals (*n* = 176) *%(n)*	Moderate (*n* = 185) *%(n)*	Conservative (*n* = 145) *%(n)*	Total (*n* = 506) *%(n)*
Fox News	$18.8(33)_a$	$33.0(61)_b$	$42.1(61)_b$	30.6(155)
ABC News	$31.3(55)_a$	$41.6(77)_a$	$31.0(45)_a$	35.0(177)
CNN	$40.9(72)_a$	$32.4(60)_a$	$19.3(28)_b$	31.6(160)

Note. A letter key was assigned to each column category. Subscripts of the same letter denote frequencies that are not statistically different from one another between the corresponding categories at an alpha level of 0.05.

Liberals (*M* = 3.40, *SD* = 0.85), moderates (*M* = 3.19, *SD* = 0.82), and conservatives (*M* = 2.89, *SD* = 0.86) believed the media was somewhat credible when reporting science. However, an ANOVA determined there was a statistically significant association between political ideological group and the media's credibility for reporting science ($F(2,503) = 9.90$, $p < .01$, $\eta^2 = .03$). Similarly, liberals (*M* = 3.40, *SD* = 1.05), moderates (*M* = 3.17, *SD* = 0.96), and conservatives (*M* = 2.60, *SD* = 1.14) believed the media was somewhat credible when reporting climate change. An ANOVA was statistically significant for an association between political ideology and the media's credibility for reporting climate change ($F(2,503) = 24.08$, $p < .01$, $\eta^2 = .09$).

The follow-up tests for both ANOVAs are reported in Table 5. There was a significant difference between liberals' and conservatives' perceptions of the media's credibility in reporting science ($p < .01$); liberals believed the media to be more credible. There were no differences between liberals' and moderates' perceptions of the media's credibility in reporting climate change, but conservatives perceived the media to be less credible than both moderates and liberals ($p < .01$).

Table 5

Follow-up Bonferroni Tests Between Groups and Media's Credibility

Media's Credibility in reporting…	*I*	*J*	*Mean Diff (I-J)*	*p-value*
Science	Liberal	Moderate	0.20	0.07
		Conservative	0.42	0.00**
Climate Change	Conservative	Liberal	-0.80	0.00**
		Moderate	-0.57	0.00**

Note. **p<.01

Objective 5: Determine how Demographics, Trust in Science, Cable News Use, and Media Credibility Predict Illinois Residents' Beliefs in Climate Change Across Political Ideological Groups

The findings for Objective 5 can be found in Table 6. The model was statistically significant across all three political ideological groups. The model was able to explain 29% of the variance in climate change belief for liberals (R^2 = .29, F(16,157) = 3.98, p < .01), 30% for moderates (R^2 = .40, F(16,168) = 4.54, p < .01), and 45% for conservatives (R^2 = .45, F(16,128) = 6.47, p < .01).

For liberals, the only significant predictors were having a graduate/professional degree and trust in science. Liberal respondents with a graduate or professional degree had a stronger belief in climate change compared to those with a high school education or less (b = 0.59, p < .01). Additionally, as trust in science increased for liberal respondents, belief in climate change increased as well (b = 0.39, p < .01). The predictors in the model for moderate respondents differed from the liberal respondents. Watching Fox News, trust in science, and the media's credibility in presenting climate change information were significant predictors. Moderate respondents who watched Fox News were less likely to believe in climate change compared to those who did not watch Fox News (b = -0.31, p = .01). Additionally, as trust in science (b = 0.37, p < .01) or credibility of climate change information (b = 0.18, p = .02) increased, belief in climate change increased.

Predictors for conservatives' beliefs in climate change included watching ABC News, credibility of climate change information, and trust in science. Conservatives who watched ABC News were more likely to believe in climate change compared to those who did not watch (b = 0.42, p = .03). Positive perceptions of the media's credibility in reporting climate change were associated with increased beliefs in climate change (b = 0.54, p < .01), and as trust in science increased, so did beliefs in climate change (b = 0.31, p = .04).

Table 6

Predictors for Liberals', Moderates', and Conservatives' Beliefs in Climate Change

	Liberals		Moderates		Conservatives	
	b	*p*	*b*	*p*	*b*	*p*
Constant	2.35	0.00	1.71	0.00	0.43	0.48
Children	0.06	0.57	0.01	0.91	0.18	0.31
Education						
Some College	0.30	0.06	0.05	0.72	0.01	0.96
2-Year Degree	0.08	0.72	0.18	0.37	0.17	0.59
4-Year Degree	0.28	0.09	-0.07	0.69	-0.24	0.34
Graduate School or Professional Degree	0.59	0.00**	0.27	0.17	0.28	0.32
Income						
$25,000 - $49,999	-0.09	0.60	0.25	0.10	-0.19	0.51
$50,000- $74,000	-0.13	0.45	-0.16	0.39	-0.03	0.93
$75,000 or more	-0.14	0.43	0.25	0.13	0.06	0.82
Males	0.09	0.40	-0.17	0.12	-0.20	0.27
Rural County	-0.30	0.08	-0.09	0.58	-0.23	0.22
CNN	0.13	0.25	0.13	0.28	0.22	0.31
ABC News	-0.02	0.85	0.01	0.95	0.42	0.03*
Fox News	-0.14	0.33	-0.31	0.01**	-0.32	0.06
Climate Change News Credibility	0.05	0.43	0.18	0.02*	0.54	0.00**
Science News Credibility	0.01	0.88	0.05	0.55	0.05	0.70
Trust in Science	0.39	0.00**	0.37	0.00**	0.31	0.04*
R^2	0.29		.30		.45	
F	3.98	0.00**	4.53	0.00**	6.46	0.00**

Note. *$p < .05$, ** $p < .01$

Conclusions, Discussion, and Recommendations

The results from this study illustrated an asymmetrical influence of cable news media effects on climate change beliefs across political ideology groups. When considering trust in science, liberals possessed a higher trust in science compared to conservatives; however, the small effect size makes this difference almost negligible (Cohen, 1988). Similarly, liberals believed more in climate change compared to moderates or conservatives. These findings were consistent with previous research that political affiliation was associated with climate change beliefs (Abeles et al., 2019; Antonio & Brulle, 2011). There appeared to be political affiliation related to cable news media use as well. As expected, the largest percentage of conservatives watched Fox News, while moderates watched ABC News, and liberals watched CNN, which supported the theory of selective media exposure (Freedman & Sears, 1965). Additionally,

conservatives were found to believe the media was less credible when reporting science or climate change compared to liberals, which was consistent with relevant literature (Gottfried & Liedke, 2021). Overall, respondents' trust in science, belief in climate change, perceptions of credibility, and media use diverged across party lines, most notably between liberals and conservatives.

Interestingly, the conceptual model did not have equal effects across the political ideological groups and could account for approximately 30% of the variance in climate change beliefs for liberals and moderates and 45% of the variance for conservatives, which were large effect sizes (Cohen, 1988). This finding supported Feldman et al.'s (2012) conclusion that Republicans' views of climate change were strongly linked to media use compared to Democrats. However, it should be noted that liberals typically receive news from multiple news outlets (Grieco, 2020), which may have influenced these results. Despite past literature concluding that Fox News influenced audiences' beliefs in climate change (Feldman et al., 2012; Feldman et al., 2014), watching it was not a predictor for conservatives' beliefs. However, watching ABC News was a positive predictor of climate change belief for this group. ABC News was considered a "moderate" channel (Mitchell et al., 2014) and is assumed to have reported climate change with limited bias. This finding reflected Feldman et al.'s (2012) conclusion that conservatives were more accepting of climate change when exposed to media that reported its urgency. Trust in science and source credibility were also found to positively influence belief in climate change, but *credibility* questions only asked about media in general and did not specify cable news media, which may have also influenced these findings.

It has been well documented that climate change is a leading threat facing the future of global food production (Nhemachena et al., 2020; Praveen & Sharma, 2019). To help lessen the effects of climate change on agricultural development (FAO, 2023), there will need to be public support for policy and practice related to adaptation and mitigation strategies. Agricultural development practitioners will need to develop targeted public information campaigns to inform attitudes and behaviors related to climate change and should consider segmenting their audiences by political ideology. While it can be difficult to overcome the effects of selective media exposure, working with reporters at "neutral" news organizations to share scientific information can help reach potentially polarized audiences when communicating about climate change. However, practitioners will also need to address trust in science and perceptions of the media's credibility when communicating about climate change to see shifts in climate change beliefs. Therefore, public information campaigns should not only focus on the severity of climate change but also provide information about how the research was conducted and what news sources provide accurate and unbiased information around the topic. Inviting researchers and reporters to hold discussions at community events could be one way to begin to foster trust between the public, scientists, and the media. In an effort to expand this research, qualitative interviews or focus groups with individuals from each political ideological group should be conducted to better understand how they utilize cable news media and how media effects influence their climate change beliefs. Expanding this research to explore news media sources more broadly, including talk radio, podcasts, and newspapers, would also provide a greater understanding for the influence of news media on climate change beliefs. Conducting

content analyses for how these news media sources present climate change would also provide greater context for future research. Additionally, replicating this study on a national scale and in other countries would also help to build a more holistic framework for developing audience-centered public information campaigns related to climate change.

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