

Media Use, Cross-National Samples, and the Theory of Planned Behavior: Implications for Climate Change Advocacy Intentions

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As the threat continues to grow from climate change, it is imperative to examine the applicability of psychological theories tied to behavior change to this important issue. In this study, we apply the theory of planned behavior to the issue of climate change. Using a purposive sample of 312 Brazilians, 312 Costa Ricans, 311 Nigerians, and 315 Americans, we examine the extent to which media effects (e.g., liberal, conservative, and nonpartisan media use) correlate with three key predictors of behavioral intention with the model: attitudes toward behavior, subjective norms, and perceived behavioral control. We assess our model across four countries around the globe (i.e., Brazil, Costa Rica, Nigeria, and the United States).

Keywords: theory of planned behavior, media use, nationality, environmental intentions

A number of countries around the world appear poised to make a philosophical shift to the right even as environmental issues threaten their way of life. Costa Rica, a relatively small country that boasts 5% of the world's biodiversity and 3 million ecotourists every year (Costa Rica Country Profile, 2018; United Nations Framework Convention on Climate Change, 2005), entertained electing three right-wing presidential hopefuls, each of whom rejects gay rights and supports opening the country to oil drilling and mining (Fuchs, 2018). These candidates were bolstered by Costa Rica's right-leaning press and conservative, evangelical factions (Fuchs, 2018; Murillo, 2018). Conservative news may have also influenced attitudes in Brazil along politicized lines. Conservative actors used social media platforms and traditional news media to amplify the backlash against leftist government officials (Damgaard, 2018; Von Bülow, 2018). This strategic use of media arguably aided in the election of President Jair Bolsonaro, a conservative leader who regards environmental protections as a needless impediment to Brazil's economic

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development (Damgaard, 2018; Fuchs, 2018; Nugent, 2018; Von Bülow, 2018). Another country with constituents who may be influenced by conservative media is Nigeria.

A recent *Business Insider* article describes Nigeria as one of the most conservative countries in the world (Hancock, 2017). This claim is based on the Social Progress Index, which examines countries' religious and LGBT tolerance, focus on carbon emissions and recycling, press freedom, and access to education. Nigerian media outlets, specifically newspapers, have been described as heavily influenced by political powers in the country (Aginam, 2010; Ojo, 2003), and even its military has been found to use media to assuage its conservative base (Searcey & Akinwotu, 2018). In short, across the globe, the impact of media ideology (e.g., liberal, conservative, and nonpartisan) may ultimately affect how constituents view politicized issues. In this study, we examine one such issue, climate change advocacy intentions, and the extent to which media shape or affect individuals' intentions through a variety of key psychological antecedents. Given that the aforementioned examples are anecdotal, this study employs a quantitative purposive sampling methodology to understand how media use translates into advocacy intentions among populations in Brazil, Costa Rica, Nigeria, and the United States.

The countries chosen share several attributes that made them attractive for inclusion in this cross-national study. These include a free press with a mix of conservative and liberal media and actors, relatively similar climate futures as modeled by the Climate Impact Lab (Climate Impact Lab, 2019), and economies that cover a broad middle in economic potential in metrics such as the Global Competitiveness Index of the World Economic Forum (World Economic Forum, 2017). Their differences also make them attractive—their economies are quite different, with Brazil's robust economy nearly equaling the combined GDP of all of Africa (World Economic Forum, 2017). Costa Rica, on the other hand, depends heavily on tourism and ranks highly in strong potential economic competitiveness, while the predicted future economies of Nigeria and Brazil show a trend downward (World Economic Forum, 2017). Looking at these factors—similar media environments, similar futures, and varying economies (some with strong ties to natural resources and tourism)—this study seeks to explore what differences there might be in environmental behavioral intentions on a country-by-country basis through the theory of planned behavior (TPB; Ajzen, 1985, 1991).

TPB is a popular behavioral change theory that has been used to better understand human actions and their antecedents (Ajzen, 1985, 1991). TPB emphasizes the role of attitudes, subjective norms, and perceived behavioral control in forming behavioral intentions, which collectively account for considerable variance in individuals' actual behavior (Ajzen, 1991). Despite its broad appeal, scholars continue to improve on the model and test its applicability across topics and contexts (e.g., Chen & Tung, 2014; Yadav & Pathak, 2016). There remain gaps in the theory that deserve attention, however. Existing scholarship, for instance, has noted that more insight is needed regarding influences on the key components of the theory (Ajzen, 2011). To date, inadequate research has holistically examined the origins or influences of attitudes toward proenvironmental behavior, subjective norms, and perceived behavioral control. Two potentially influential yet underexplored factors that are included in our study to extend the model are media and the diversity of audiences (e.g., Brazil, Costa Rica, the United States, and Nigeria). To date, TPB remains fairly detached from the media effects literature.

Media Use, Effects, and the Theory of Planned Behavior

Research indicates that media are the chief source of information and a principal dynamic shaping people's climate-change-related salience and attitudes (Arlt, Hoppe, & Wolling, 2011; Carvalho, 2010). Given the well-documented knowledge-behavior gap (see Hornik, 1989), however, knowledge and public awareness do not necessarily translate into behavior change. News media access may shape environmental behavior via alternate routes, for instance, by influencing people's attitudes and impressions of social approval related to the behavior, and by reinforcing individuals' perceptions of behavioral control—hence, the contribution of TPB.

According to TPB, human behavior is determined by three factors: attitudes toward the behavior, or beliefs about engaging in a particular behavior; subjective norms, or perceptions of social pressure to perform the behavior (Davis, Ajzen, Saunders, & Williams, 2002; Spartz, Yi-Fan Su, Griffin, Brossard, & Dunwoody, 2017); and perceived behavioral control, or beliefs that people have about their capability to successfully accomplish a behavior (Ajzen, 1991, 2002). Together, attitudes, subjective norms, and perceptions of behavioral control help predict behavioral intention, which is assumed to be the immediate antecedent of behavior (Ajzen, 2002). Given a sufficient degree of actual control over the behavior, people are expected to carry out their intentions when the opportunity arises (Ajzen, 2002).

TPB has been used to examine a number of environmental issues, including littering (Cialdini, Reno, & Kallgren, 1990), recycling (Aguilar-Luzon, Garcia-Martinez, Calvo-Salguero, & Salinas, 2012; Rhodes et al., 2015), energy savings and carbon reduction (Chen, 2016), and general proenvironmental behaviors (Liao, Ho, & Yang, 2016; Masud et al., 2016). Studies that have incorporated TPB as a framework, to the best of the authors' knowledge, have largely looked at populations in aggregate without exploring comparative differences across cultures. Moreover, few of these studies have included media as a direct influence on attitudes, subjective norms about proenvironmental behaviors, or perceptions of behavioral control.

Media and Attitudes

Media effects scholarship has found that the mass media enhance people's environmental awareness and are a primary factor in shaping individuals' attitudes (Arlt et al., 2011; Carvalho, 2010). The media utilize frames that affect how people perceive and feel about climate change and that appear, under the right circumstances, to be influential in mobilizing individuals to either embrace or reject proenvironmental orientations. For instance, research shows that conservative news consumption results in antienvironmental perspectives and stimulates questions about whether anthropomorphic climate change actually exists (Feldman, Myers, Hmielowski, & Leiserowitz, 2014; Hmielowski, Feldman, Myers, Leiserowitz, & Maibach, 2014).

In the U.S. in particular, popular conservative outlet Fox News has been found to provide more coverage of global warming and climate change relative to other leading liberal nonpartisan news outlets; however, it relegates climate change to the status of political correctness and as an example of the overindulgences of progressivism (Ahern & Formentin, 2016). By contrast, use of liberal and nonpartisan

media outlets facilitates more favorable attitudes regarding environmental issues and results in an increased willingness to act to solve these problems (Feldman et al., 2014; Hmielowski et al., 2014). For instance, liberal networks have been found to more accurately cover the actual causes and impacts of climate change (Ahern & Formentin, 2016). Not surprisingly, Fox News coverage has been determined to be associated with weaker beliefs in the scientific consensus on climate change (Krosnick & MacInnis, 2010). The bulk of such research, however, has been conducted in Europe and North America, and little is known about public orientations toward proenvironmental behaviors in developing countries (Vignola, Klinsky, Tam, & McDaniels, 2013).

Overall, even though globally and domestically, proenvironmental attitudes appear to be increasingly more favorable, they appear to be insufficient in stimulating mitigative behavior to an extent that makes a difference (Gifford, 2011). Subjective norms about proenvironmental behaviors and perceived behavioral control may also play pivotal roles.

Media and Subjective Norms About Proenvironmental Behaviors

Subjective norms are behavioral expectations that individuals envision others have about them (Ajzen & Fishbein, 1980; Davis et al., 2002). Individuals have been found to be sensitive to cues from colleagues, family members, friends, and even media about behaviors that may lead to ridicule; as a result, they conform (Bearden, Netemeyer, & Teel, 1989; Burnkrant & Cousineau, 1975; Tajfel & Turner, 1986; Yanovitzky & Stryker, 2001). Ultimately, individuals use interpersonal and media-driven inferences to decide their own behavior, aligning their actions to fit the expectations of those around them whom they value, either in their immediate social setting or in a larger cultural manner (Cialdini et al., 1990; Spartz et al., 2017).

Climate change has received extensive media attention since the summer of 1988, and research has shown that overall, climate change coverage has increased in all countries (Kempton, 1991; Moser, 2010; Schmidt, Ivanova, & Schäfer, 2013). Proenvironmental international and national news coverage within the countries and regions in this study have been generally homogenous in describing climate change as a time bomb (partly) caused by human activity and with an unquestionable need for countermeasures (Lück, Wessler, Wozniak, & Lycarião, 2018; Semujju, 2013; Shehata, & Hopmann, 2012). It is plausible that ever-increasing global news coverage, along with increasingly devastating environmental disasters, may work in concert to stimulate norm reinforcement, or perceptions that reference groups care about individuals' treatment of the environment (Yanovitzky & Stryker, 2001), leading to social pressure and shaping audiences' intentions to adopt mitigating behaviors.

Media and Perceived Behavioral Control

People endeavor to control situations that can alter their lives; however, if they intuit they have insufficient power to produce the results they want, they will not attempt to change things (Bandura, 1997). Conviction that the things one can do will make a significant difference is a prerequisite to making any personal effort (Heath & Gifford, 2006). This is known as self-efficacy (Bandura, 1986, 1997) and is a major catalyst of intentions—in this case, to combat climate change. Individuals are also less likely to

cooperate in a social dilemma if they believe that the efficacy of their cooperative behavior for producing the desired effect is low (Kerr, 1992).

For many people, climate change is a vast, nebulous, and distant global environmental concern that is so overwhelming, they believe their own best efforts will do little to ameliorate its effects (Heath & Gifford, 2006; Oskamp, 2000). In particular, uninformed audiences are unlikely to proactively engage in proenvironmental behaviors partly because they may not know what environmental actions are recommended, and partly because they may not be aware of the power they have as part of a collective. Research by Huang (2016) demonstrates that when individuals have higher levels of self-efficacy in mitigating global warming, they are likely to be more interested in obtaining updated information for possible solutions and to act independently or collectively. Conversely, this study contends that access to media is the determinant to individuals' perceptions of their self-efficacy, in turn affecting their intentions to adopt proenvironmental behavior—which in this study is operationalized specifically as climate change advocacy intentions. The following hypotheses are proposed based on the preceding discussion:

- H1: Liberal, conservative, and nonpartisan news consumption will have direct relationships with participants' attitudes, perceptions of subjective norms, and perceived behavioral control. Specifically, conservative news consumption will be associated with lower levels of the three antecedent variables. Liberal and nonpartisan news will be associated with higher levels of these three variables.*
- H2: Participants' attitudes, perceptions of subjective norms, and perceived behavioral control will be associated with higher levels of climate change advocacy intentions.*
- H3: There will be indirect relationships for liberal, conservative, and nonpartisan news consumption on intentions through attitudes, perceptions of subjective norms, and perceived behavioral control. The indirect relationships for conservative news will be negative, while the indirect relationships for liberal and nonpartisan news will be positive.*

Media Use, Media Effects, and Nationality

Respondents from the chosen demographics in this study have significant access to television, radio, Internet, and print news. Nigeria is one of Africa's largest media markets, ranking 10th globally in Internet usage (Aderibigbe, 2015) and comprising hundreds of radio stations, TV networks, and cable and direct-to-home satellite channels (Akingbulu, 2012). Nigeria also has scores of diverse and well-respected national and local newspapers (Akingbulu, 2012). Costa Rica, similarly, has numerous private and public TV stations and radio stations (Costa Rica Country Profile, 2018). Costa Rica also has 4.2 million Internet users, representing 86% of the population (Costa Rica Country Profile, 2018), and lays claim to multiple major weekly (e.g., *El Financiero*) and daily (e.g., *La Nacion*) national newspapers (Costa Rica Country Profile, 2018).

Brazil is South America's largest media market and has hundreds of TV stations (Brazil Country Profile, 2018). Brazil also has a radio market that is second only to the United States in the Americas

(UNESCO, 2013). Additionally, as of 2017, 139 million Brazilians were online, representing approximately 50% of the country's population (Brazil Country Profile, 2018). As of 2013, roughly 5,000 papers were operating in Brazil ("Media in Brazil," n.d.).

The U.S. is well known for its media markets, with more than 10,000 commercial radio stations and hundreds of subscription satellite radio channels (U.S. Country Profile, 2017). The U.S. also has hundreds of TV stations, with primary content options ranging from network news and shows to cable and satellite programming (U.S. Country Profile, 2017). In addition, more than 169 million adults in the U.S. read a newspaper each month in print, online, or through mobile apps ("Hispanic Influence," 2016). Finally, roughly 9 in 10 American adults, including racial/ethnic minorities and majorities (92% White, 85% Black, 86% Latino), regularly access the Internet (Pew Research Center, 2019).

Overall, options for news access globally are relatively unparalleled. However, conservative, liberal, and nonpartisan media use may look relatively different based on the country being studied. In the U.S., recent research in the form of a content analysis of climate change coverage on Fox News, CNN, and MSNBC suggests that conservative media take a more dismissive tone toward climate change than liberal channels do (Feldman et al., 2012). Fox News interviewed a greater ratio of climate change doubters to believers, potentially contributing to the negative association between conservative news viewership and acceptance of global warming; conversely, viewing CNN and MSNBC is associated with greater acceptance of climate change and global warming (Feldman et al., 2012). Liberal and conservative media (and nonpartisan media as well) may therefore impact attitudes toward climate change and apathy toward engaging in proenvironmental behaviors, especially among strong partisans.

In Brazil, popular and elite media outlet Globo (Boykoff & Luedeke, 2016), the largest media corporation in the country and voice of the conservative middle class, has been tied to conservative politicians and agendas (Damgaard, 2018; van Dijk, 2017). Described as right-wing media, Globo has been accused by scholars of using its resources, such as the *O Globo* newspaper and Globo Jornal Nacional, a prominent TV news program, to attack the left wing-party and its leaders (van Dijk, 2017). However, Brazil's coverage of climate change appears to be relatively extensive (Painter, 2014), conflicting with notions of conservative attitudes to climate change. For instance, while there appears to be a high presence of climate coverage in Brazilian media, it appears to be less skeptical or dismissive. Reasons for its high presence include the interest of one of the owners of Globo, who is also Vice President for Corporate Social Responsibility and a chair of World Wildlife Fund (WWF); strong interest in climate change among the political and business elites; high levels of general concern about climate change; and interest in the Amazon among the wider population (Painter, 2014). In the case of Brazil, conservative news may not be as antienvironmental as in the U.S.

Political actors in Nigeria, namely its military, have used social media to endorse perspectives held by American conservative leaders (Searcey & Akinwotu, 2018). Coverage of climate change and its relationship to conservative and liberal influencers, however, appears to be minimal. In a series of interviews, Tagbo (2010) found that climate change is unobtrusive and therefore not a front-page subject, except when there is a strong local political and economic dimension to it—which she describes as rarely being the case. As such, conservative media in a country like Nigeria may not address climate change in a

politicized manner, or its coverage may be so minimal that it does not have the same type of effect it would have in the U.S. Additionally, given that most of Nigeria's population works in agriculture (Food and Agriculture Organization, 2019), it is expected that media overall will be more proenvironmental than conservative media in the U.S. Conservative, liberal, and nonpartisan news may also differ in Costa Rica, a country that primarily boasts nonpartisan media throughout its history (Salzman & Salzman, 2009). Salzman and Salzman (2009) contend that media in Costa Rica have historically been owned by three groups that have neither been tied to the government, nor do these groups have a history of repression; the media ideology of these ownership groups also reflects the country's democratic environment. Accordingly, liberal, conservative, and nonpartisan news media may impact climate change advocacy intentions through attitudes toward climate change, subject norms, and perceived behavioral control between countries in different ways (see Figure 1). The preceding discussion leads to the following hypotheses and the following proposed model:

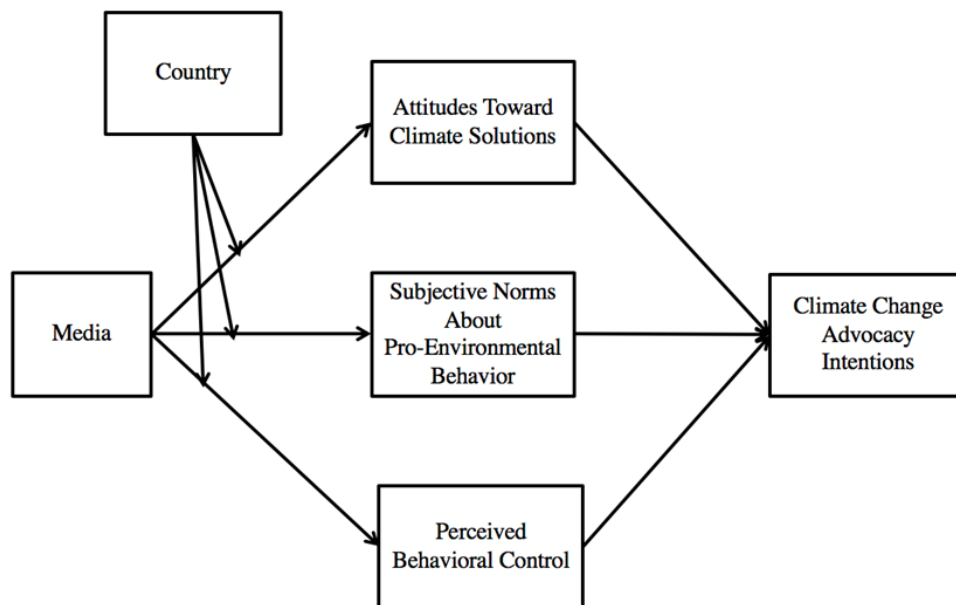


Figure 1. Proposed moderated mediation model: Incorporating media and cross-national participants to the theory of planned behavior.

H4: Liberal, conservative, and nonpartisan news consumption's relationship with participants' attitudes, perceptions of subjective norms, and perceived behavioral control will be moderated by participants' nationality (i.e., American, Brazilian, Costa Rican, and Nigerian). Conservative media use will be negatively impactful for the U.S., but not for the other developing countries. Liberal and nonpartisan media use on the three antecedent variables will be positively impactful for all four countries.

H5: Nationality will have a significant effect on the indirect relationships for media on behavioral intentions through attitudes, perceptions of subjective norms, and perceived behavioral control.

Method

Environmental orientations of 312 Brazilians, 312 Costa Ricans, 311 Nigerians, and 315 Americans were measured as part of a purposive quota sample using a single multilevel survey. Institutional review board exemption was received in March 2018. Data collection was conducted through online survey services, Qualtrics and Clear Voice Research. Clear Voice Research, in conjunction with Qualtrics, recruited all respondents. For the international sample, the survey was translated into three languages (i.e., Spanish, Yoruba, and Portuguese), and respondents were then given the option to take the survey in the language of their choice. Each survey participant received a cash value reward of approximately \$2.

After a screening for age (respondents had to be 18 years of age and older) and current residence in the countries being examined, a total of 1,250 individuals completed the survey (see Table 1). The overall average age was 36.53 years ($SD = 13.28$), with a range of 18–86, and 40.0% of the sample was male. Respondents reported living in a variety of environments, including 42.8% in large cities (i.e., population > 250,000), 19.5% in medium-size cities (i.e., population 50,000–250,000), 12.4% in suburbs, 12.2% in small inland cities, 6.2% in small coastal cities, and 6.8% on farmland. The sample had a diverse level of educational attainment as well: 21.4% had a high school diploma or less, 20.1% had attended some college, 6.9% had attended a technical or vocational school, 5.4% had an associate's degree, 33.4% had a bachelor's degree, and 12.8% had a graduate degree.

Table 1. Descriptive Statistics for Brazilian, Costa Rican, Nigerian, and American Participants.

	Brazil	Costa Rica	Nigeria	United States
Composition	312	312	311	315
Age (36.31, SD 13.27) (SD)	36.42 (12.47)	34.03 (10.58)	29.91 (7.00)	45.63 (15.97)
Gender (41.5 M/58.5 F) Male	125 (40.1%)	125 (40.1%)	124 (39.9%)	126 (40.0%)
Female	187 (59.9%)	147 (59.9%)	187 (60.1%)	189 (60.0%)
Social Class				
Upper class	4 (1.3%)	1 (.3%)	10 (3.2%)	8 (2.6%)
Upper middle class	21 (6.8%)	51 (16.4%)	37 (12.0%)	40 (13.2%)
Middle class	245 (79.8%)	247 (79.4%)	247 (79.9%)	220 (72.8%)
Lower class	37 (12.1%)	12 (3.9%)	15 (4.9%)	34 (11.3%)
Education				
High school grad or less	95 (30.4%)	58 (18.6%)	33 (10.6%)	82 (26.0%)
Some college	65 (20.8%)	101 (32.4%)	29 (9.3%)	56 (17.8%)
Trade or vocational school	23 (7.4%)	36 (11.5%)	8 (2.6%)	19 (6.0%)
Associate's degree	4 (1.3%)	17 (5.4%)	9 (2.9%)	38 (12.1%)
Bachelor's degree	94 (30.1%)	70 (22.4%)	183 (58.8%)	70 (22.2%)

Graduate or professional degree	31 (9.9%)	30 (9.6%)	49 (15.8%)	50 (15.9%)
Living Environment				
Farm & open spaces	8 (2.6%)	33 (10.6%)	12 (3.9%)	32 (10.2%)
Small coastal city < 50K	8 (2.6%)	31 (9.9%)	7 (2.3%)	32 (10.2%)
Small inland city < 50K	21 (6.7%)	65 (20.8%)	8 (2.6%)	59 (18.7%)
Medium-sized city 50K–250K	67 (21.5%)	89 (28.5%)	31 (10.0%)	57(18.1%)
Suburb	14 (4.5%)	34 (10.9%)	25 (8.0%)	82 (26.0%)
Large city > 250K	194 (62.2%)	60 (19.2%)	228 (73.3%)	53 (16.8%)
News Media Use: Days per Week				
Newspapers	2.67 (2.14)	2.71 (2.31)	3.45 (2.20)	2.70 (2.26)
Internet	6.66 (1.87)	6.39 (1.98)	6.76 (1.72)	5.36 (2.59)
Television	6.07 (2.31)	5.61 (2.29)	5.53 (2.37)	5.26 (2.63)
Radio	3.98 (2.57)	3.06 (2.27)	4.86 (2.47)	3.37 (2.44)

Note: $N = 1,250$.

Measurement Instruments

Media Use. Three measures were used to measure media use. The average of two items each was used to ascertain how often respondents used liberal sources (e.g., liberal cable TV channels and liberal news apps; Cronbach's $\alpha = .76$; $M = 4.10$, $SD = 1.87$) and conservative sources (Cronbach's $\alpha = .81$; $M = 3.87$, $SD = 1.87$) for news. Respondents also reported on a single item how often they relied on nonpartisan channels as a news source. Items used were drawn from Leiserowitz and Akerlof (2010).

Climate Change Advocacy Intentions. The average of three items was used to measure intentions ($M = 4.60$, $SD = 1.61$). These items were drawn from the Pisano and Lubell (2015) scale and included "Writing letters, emails, or phoning government officials to urge them to take action to reduce climate change," "Attending a community meeting or rally about climate change," and "Volunteering with or donating money to an organization working to reduce climate change" (Cronbach's $\alpha = .89$).

Attitudes Toward Climate Solutions. A scale was created from the average of four 7-point items ($M = 5.73$, $SD = 1.15$), which included "I support efforts to reduce climate change even if they mean I personally incur greater costs," and "This country should do whatever it takes to reduce climate change." Items used were drawn from Leiserowitz and Akerlof (2010) to create the index (Cronbach's $\alpha = .78$).

Subjective Norms About Proenvironmental Behavior. The average of responses across five items was used to determine participants' perceptions of subjective norms ($M = 4.93$, $SD = 1.33$). Sample items from the Davis et al. (2015) scale included "My friends and family think acting in a proenvironmental manner is important," "People who are important to me think that I should be proenvironmental," and "People whose opinion matters to me think proenvironmental behavior is vital" (Cronbach's $\alpha = .93$).

Perceived Behavioral Control. A scale was created from the average of five items measuring respondents' perceptions of effectiveness of engaging in proenvironmental behaviors ($M = 5.51$, $SD = 1.18$).

Scale items, drawn from Masud and colleagues' (2016) study, included "I have the ability to reduce the impact of climate change in this country," and "If everyone takes action, we could reduce the impact of climate change in this country." A coefficient alpha from the five scale items was computed ($\alpha = .91$).

Sociodemographics. Demographic variables used in the study were age, gender, income/economic class (e.g., upper class, upper middle class), education (e.g., no formal education to graduate/professional degrees), religiosity (e.g., "How often do you attend religious services, pray, or practice religious rituals these days?"), and political ideology (e.g., extremely liberal to extremely conservative).

Analysis Plan

All analyses in this study were conducted using IBM SPSS 24. For multiple mediation analyses, the Hayes (2013) SPSS macro PROCESS (model 4) was applied with three significant mediators, while for interactions, the SPSS macro PROCESS (model 1) was used, applying nationality with its four levels (American, Brazilian, Costa Rican, and Nigerian) for each single analysis. Finally, for the serial moderated mediation model analysis, SPSS macro PROCESS (model 7) was used. As recommended by Hayes, the regression/path coefficients are all in unstandardized form because standardized coefficients generally have no useful substantive interpretation. To derive estimates of indirect effects and the confidence intervals associated with these indirect effects, bootstrapping was used. Confidence intervals were generated via 5,000 bootstrapped estimates for each analysis.

Results

The first set of analyses looked at the relationships among the three measures of media use (e.g., liberal, conservative, and nonpartisan) and the three endogenous TPB variables (i.e., perceived behavioral control, subjective norms, and attitudes toward climate solutions). First, relationships between liberal media use and the three TPB variables were examined. As was consistent with H1, we found that liberal media were associated with perceived behavioral control, subjective norms, and attitudes toward climate solutions. In each case, the more people reported using liberal media sources, the more likely they were to report more positive attitudes toward climate solutions ($\beta = 0.2063$, 95% CI = 0.1599–0.2526, $t = 8.733$, $p = .0001$), greater perceived social pressure from important others to perform environmental behaviors ($\beta = 0.1665$, 95% CI = –0.1124–0.2207, $t = 6.034$, $p < .0001$), and higher levels of perceived behavioral control ($\beta = .1781$, 95% CI = 0.1297–0.2265, $t = 7.221$, $p < .0001$).

The relationships between conservative media use and the three variables of interest were evaluated next. Of the three relationships assessed, two were significant. Results show that greater use of conservative media is associated with less favorable attitudes toward climate solutions ($\beta = -0.0898$, 95% CI = –0.1351 – –0.0446, $p < .001$), and with higher levels of perceived subjective norms ($\beta = 0.0656$, 95% CI = 0.0126–0.1185, $p = .0152$). There was no significant relationship between conservative media and perceived behavioral control.

Third, relationships between nonpartisan media use and the three TPB variables were examined. Of the three relationships assessed, one was significant. Results revealed a significant relationship between

nonpartisan media use and perceived behavioral control ($\beta = -0.0566$, 95% CI = 0.0180–0.0952, $p < .01$). Essentially, the greater one's consumption of nonpartisan news, the greater one's belief that his or her personal and collective actions can impact climate change. H1 was therefore partially supported.

Next, we examined the relationships among perceived behavioral control, subjective norms, and attitudes toward climate solutions with our measure of climate change advocacy intentions. All three key variables tied to the TPB were directly and significantly associated with climate change advocacy intentions. As predicted, the more favorable one's attitudes toward climate solutions ($\beta = 0.1179$, $SE = .0375$, 95% CI = 0.0444–0.1915, $p < .01$), and the greater one's level of perceived behavioral control ($\beta = 0.2352$, $SE = .0355$, 95% CI = 0.1657–0.3048, $t = 6.634$, $p < .001$) and perceptions that important people in one's life want him or her to care for the environment ($\beta = 0.4896$, $SE = .0301$, 95% CI = 0.4305–0.5487, $p < .001$), the greater his or her climate change advocacy intentions. H2 was supported.

Tests were then conducted on the indirect relationships for different media throughout the three TPB variables on the measure of climate change advocacy intentions. We begin with the indirect relationship for liberal media. Results for liberal media found that all three indirect relationships were significant. In essence, liberal media were associated with more favorable attitudes toward climate solutions (point estimate = .0243, 95% CI = 0.0076–0.0431), perceptions of subjective norms (point estimate = .0815, 95% CI = 0.0508–0.1129), and higher levels of perceived behavioral control (point estimate = .0554, 95% CI = 0.0340–0.0799), which then translated into higher levels of climate change advocacy intentions.

Next, we examined the indirect relationships for conservative media use. Of the three indirect relationships estimated, two were significant. A significant indirect relationship was found for conservative media through attitudes (point estimate = $-.0106$, 95% CI = 0.0208 – -0.0027) and subjective norms (point estimate = .0321, 95% CI = 0.0038–0.0624). In short, greater use of conservative media was associated with greater perceptions that important individuals in participants' lives want them to be proenvironmental, which then translated into greater climate change advocacy intentions. On the other hand, greater use of conservative media was associated with less favorable attitudes toward climate solutions, leading to lower climate change advocacy intentions. The indirect relationships for conservative media through perceived behavioral control were not significant. Last, we examined the indirect relationships for nonpartisan media use. None of the three indirect relationships estimated was statistically significant. H3 was partially supported.

Interaction effects were then examined to assess whether the relationships between media use measures and the endogenous TPB variables vary by country. To evaluate these interactions, Costa Rica was treated as the reference group. Proposed interactions, therefore, examine the relationship between media use and cross-national categories (e.g., Brazil, the U.S., and Nigeria) compared with Costa Rica. We begin with examining these interactions with liberal news consumption. We found that the relationship between liberal news consumption varied by country for all three TPB variables. A graph of the interactions (see Figure 2) shows that liberal news had a significantly stronger effect on attitudes toward climate solutions for Brazilians as compared with Costa Ricans ($\beta = 0.116$, $SE = 0.0485$, $p < .05$), for Americans as compared with Costa Ricans ($\beta = 0.165$, $SE = 0.0473$, $p < .01$), and for Nigerians as compared with Costa Ricans ($\beta = 0.185$, $SE = 0.0517$, $p < .01$).

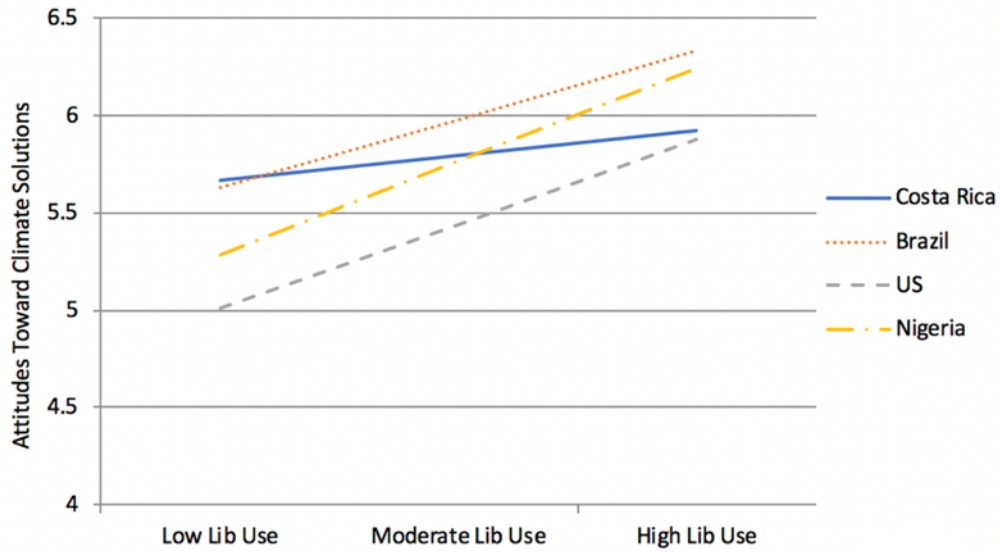


Figure 2. Liberal media by nationality on attitudes toward climate solutions.

Next, our results showed that the relationship between liberal news and subjective norms varied by nationality. Liberal news had a significantly greater effect on subjective norms for Americans than Costa Ricans ($\beta = 0.1162$, $SE = 0.0557$, $p < .05$), as well as a significantly greater effect on subjective norms for Nigerians than Costa Ricans ($\beta = 0.147$, $SE = 0.0609$, $p < .05$). Although the means trended in a similar direction, liberal news use was not a significant predictor of subjective norms for Costa Ricans (see Figure 3).

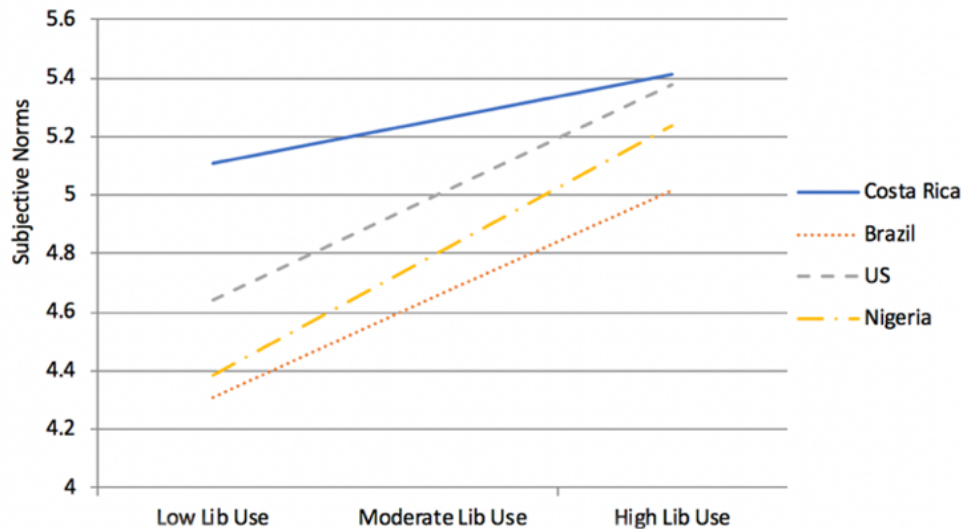


Figure 3. Liberal media by nationality on subjective norms about proenvironmental behavior.

Consistent with the previous analyses testing for interactions, the relationship between liberal news and perceived behavioral control varied by nationality. Liberal news had a significantly stronger effect on perceptions of behavioral control for Americans than Costa Ricans ($\beta = 0.160$, $SE = 0.0494$, $p < .01$), as well as a significantly stronger effect on perceptions of behavioral control for Nigerians than Costa Ricans ($\beta = 0.222$, $SE = 0.0541$, $p < .001$).

Interactions with conservative news consumption were then examined. The relationship between conservative news consumption varied by country for two of the three TPB variables. The relationship between conservative news and attitudes toward climate solutions varied significantly by nationality. Conservative news consumption had a stronger effect on American attitudes than it did on those of Costa Ricans. Conservative news translated to significantly less favorable attitudes toward climate solutions for Americans relative to Costa Ricans ($\beta = -0.113$, $SE = 0.0493$, $p < .05$). On the other hand, conservative news translated to significantly more favorable attitudes toward climate solutions for Nigerians as opposed to Costa Ricans ($\beta = 0.109$, $SE = 0.0513$, $p < .05$; see Figure 4).

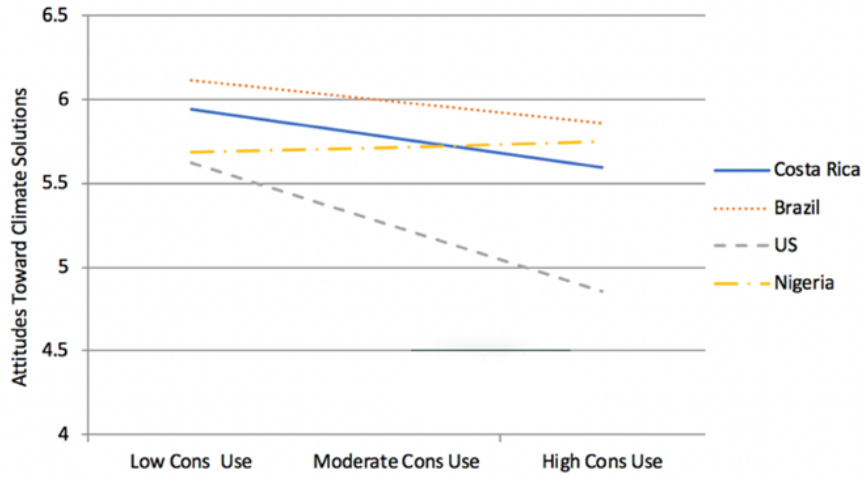


Figure 4. Conservative media by nationality on attitudes toward climate solutions.

The interaction between conservative news consumption and subjective norms was not significant by nationality. However, the interaction between conservative news and nationality on perceived behavioral control was significant. Conservative news translated to significantly greater perceptions of behavioral control for Nigerians as opposed to Costa Ricans ($\beta = 0.128, SE = 0.0539, p < .05$).

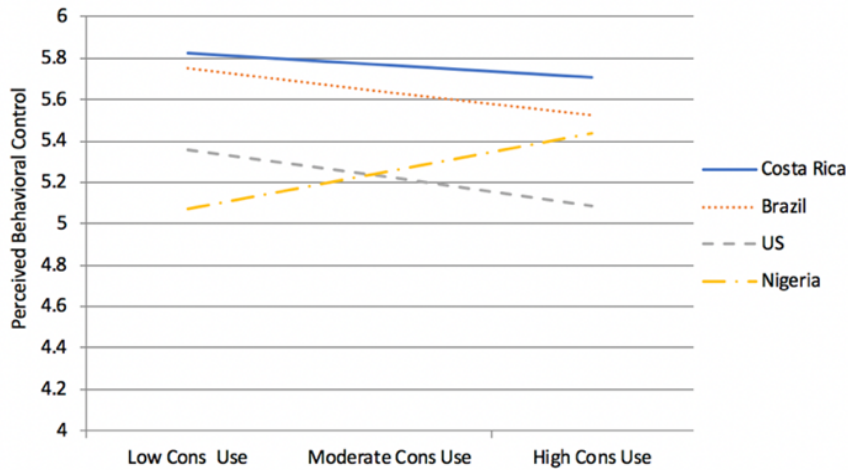


Figure 5. Conservative media by nationality on perceived behavioral control.

Last, interactions between nonpartisan news consumption and nationality were examined. The relationship between nonpartisan media use varied by nationality for two TPB variables. Results determined that the relationship between nonpartisan media use and attitudes toward climate solutions varied by nationality. Nonpartisan media use led to significantly more favorable attitudes toward climate solutions among Nigerians than Costa Ricans ($\beta = 0.1219$, $SE = 0.0439$, $p < .01$). Nonpartisan media use also led to significantly greater perceptions of behavioral control among Nigerians than Costa Ricans ($\beta = 0.1012$, $SE = 0.0461$, $p < .05$; see Figure 5). H4 was partially supported.

Finally, we tested our full serial moderated mediation model (see Table 2), specifically analyzing whether the indirect relationship of liberal media through subjective norms on intentions varied by country. The indirect relationship was present among all four groups: Americans (point estimate = .098, 95% CI = 0.059–0.138, $p < .05$), Brazilians (point estimate = .101, 95% CI = 0.058–0.146, $p < .05$), Costa Ricans (point estimate = .05, 95% CI = 0.017–0.083, $p < .05$), and Nigerians (point estimate = .120, 95% CI = 0.077–0.168, $p < .05$). The indirect relationship of liberal media through perceived behavioral control on intentions also varied by country. The indirect relationship was present among Americans (point estimate = .087, 95% CI = 0.0545–0.1231, $p < .05$), Brazilians (point estimate = .06, 95% CI = 0.0296–0.0919, $p < .05$), and Nigerians (point estimate = .109, 95% CI = 0.0712–0.1492, $p < .05$). The indirect relationship of liberal media through attitudes toward climate solutions on intentions by country was not significant.

Table 2. Conditional Indirect Relationships on Behavioral Intentions.

	Conditional Indirect Relationships
Liberal → Attitudes → Intentions (U.S.)	0.007 (–0.006–0.022)
Liberal → Attitudes → Intentions (Brazil)	0.005 (–0.004–0.015)
Liberal → Attitudes → Intentions (Costa Rica)	0.002 (–0.002–0.005)
Liberal → Attitudes → Intentions (Nigeria)	0.007 (–0.006–0.022)
Liberal → Sub. Norm → Intentions (U.S.)	0.098 (0.059–0.138)
Liberal → Sub. Norm → Intentions (Brazil)	0.101 (0.058–0.146)
Liberal → Sub. Norm → Intentions (Costa Rica)	0.050 (0.017–0.083)
Liberal → Sub. Norm → Intentions (Nigeria)	0.120 (0.077–0.168)
Liberal → PBC → Behavior Intentions (U.S.)	0.087 (0.055–0.1231)
Liberal → PBC → Behavior Intentions (Brazil)	0.060 (0.030–0.092)
Liberal → PBC → Behavior Intentions (Costa Rica)	0.025 (–0.001–0.051)
Liberal → PBC → Behavior Intentions (Nigeria)	0.109 (0.072–0.149)
Conservative → Attitudes → Intentions (U.S.)	–0.081 (–0.021– 0.001)
Conservative → Attitudes → Intentions (Brazil)	0.003 (–0.001–0.010)
Conservative → Attitudes → Intentions (Costa Rica)	0.001 (–0.003–0.006)
Conservative → Attitudes → Intentions (Nigeria)	0.009 (–0.001–0.022)
Conservative → Sub. Norm → Intentions (U.S.)	0.036 (–0.002–0.074)
Conservative → Sub. Norm → Intentions (Brazil)	0.073 (0.035–0.116)
Conservative → Sub. Norm → Intentions (Costa Rica)	0.068 (0.035–0.102)
Conservative → Sub. Norm → Intentions (Nigeria)	0.111 (0.071–0.153)
Conservative → PBC → Intentions (U.S.)	0.008 (–0.027–0.041)

Conservative → PBC → Intentions (Brazil)	0.027 (−0.002–0.056)
Conservative → PBC → Intentions (Costa Rica)	0.034 (0.006–0.064)
Conservative → PBC → Intentions (Nigeria)	0.093 (0.057–0.130)
Nonpartisan → Attitudes → Intentions (U.S.)	0.003 (−0.002–0.010)
Nonpartisan → Attitudes → Intentions (Brazil)	0.002 (−0.001–0.006)
Nonpartisan → Attitudes → Intentions (Costa Rica)	0.001 (−0.003–0.004)
Nonpartisan → Attitudes → Intentions (Nigeria)	0.006 (−0.002–0.017)
Nonpartisan → Sub. Norm → Intentions (U.S.)	0.058 (0.027–0.091)
Nonpartisan → Sub. Norm → Intentions (Brazil)	0.033 (−0.001–0.068)
Nonpartisan → Sub. Norm → Intentions (Costa Rica)	0.037 (0.007–0.068)
Nonpartisan → Sub. Norm → Intentions (Nigeria)	0.065 (0.030–0.101)
Nonpartisan → PBC → Intentions (U.S.)	0.045 (0.020–0.072)
Nonpartisan → PBC → Intentions (Brazil)	0.041 (0.018–0.065)
Nonpartisan → PBC → Intentions (Costa Rica)	0.028 (0.005–0.051)
Nonpartisan → PBC → Intentions (Nigeria)	0.063 (0.038–0.092)

Note: PBC = perceived behavioral control

We then analyzed whether the indirect relationship for conservative news consumption varied by country. First, the indirect relationship of conservative news consumption through subjective norms on intentions was significant by country. Specifically, a positive indirect relationship was present among Brazilians (point estimate = .073, 95% CI = 0.035–0.1116, $p < .05$), Costa Ricans (point estimate = .068, 95% CI = 0.035–0.102, $p < .05$), and Nigerians (point estimate = .111, 95% CI = 0.071–0.153, $p < .05$). The indirect relationship of conservative media through perceived behavioral control on intentions also varied by country. The indirect relationship was present and also positive among Costa Ricans (point estimate = .034, 95% CI = 0.006–0.064, $p < .05$) and Nigerians (point estimate = .093, 95% CI = 0.057–0.130, $p < .05$), but not Americans and Brazilians.

Indirect relationships for nonpartisan news consumption by country were also examined. Some of these relationships were found to be significant. In particular, the indirect relationship of nonpartisan news consumption through subjective norms on intentions was significant among Americans (point estimate = .058, 95% CI = 0.027–0.091, $p < .05$), Costa Ricans (point estimate = .037, 95% CI = 0.007–0.068, $p < .05$), and Nigerians (point estimate = .065, 95% CI = 0.030–0.101, $p < .05$). Indirect relationships for nonpartisan news consumption through perceived behavioral control on intentions were also present, and again were significant among all four cross-national groups (i.e., Americans; point estimate = .045, 95% CI = 0.02–0.072, $p < .05$), Brazilians (point estimate = .041, 95% CI = 0.018–0.065, $p < .05$), Costa Ricans (point estimate = .028, 95% CI = 0.005–0.051, $p < .05$), and Nigerians (point estimate = .063, 95% CI = 0.038–0.092, $p < .05$). Overall, H5 was partially supported.

Discussion

Overall, our hypotheses were supported. The results of the study reinforce our proposed moderated mediation model. Media use is a factor of some import at a global and domestic level, influencing individuals' climate change advocacy intentions even as those relationships vary based on national classifications.

Our study found that the more people report consuming liberal news, the more likely they are to report positive attitudes toward climate solutions, greater perceived subjective norms about proenvironmental behavior, and higher levels of perceived behavioral control. The more people report using conservative news, the less favorable their reported attitudes toward climate solutions are. Overall, increased exposure to either liberal or conservative news ideological frameworks enhances perceptions of social pressures to act in ecologically conscious ways.

Findings from our study also highlight the significance of TPB's three key variables to intentions, and the indirect effects of media on intentions through those three variables. The more favorable the respondents' attitudes toward climate solutions, and the greater their perceived level of behavioral control and perceptions of social pressures, the greater their climate change advocacy intentions.

Theoretical Implications

Early perceptions of media effects positioned them as compelling and broadly persuasive (Neuman & Guggenheim, 2011). Early audiences were also depicted as passive, undifferentiated, atomized, and highly susceptible to media's influence. Since then, media effects have come to best be understood to exist within the contexts of social relationships and cultural systems (McQuail, 1983). The results of our study reinforce this notion; the effects of incorporating media on the three key predictors of behavioral intentions appear to be distilled through cultural groups.

Our findings overall make several contributions to the existing literature. First, this study extends theoretical work being done on TPB and highlights the influence that media ideology can have in determining environmental intentions. Second, the findings of this study highlight the value of scrutinizing audience diversity when using TPB. Integrating TPB with media effects scholarship while examining different factions provides insight about the comparative degree to which certain media factors enhance or depress climate change mitigation intentions for specific cultural subgroups.

Despite our findings, however, more needs to be done to understand media's impact across disparate populations. Future studies can use a variety of methodologies to better understand the structure of messages of conservative and liberal news media internationally in order to determine what frames, information inclusion and exclusion, or experts (advocates or skeptics) are being used that resonate positively with disparate audiences in support of mitigative proenvironmental intentions.

For instance, a unique finding was that conservative media had a positive impact on Nigerian perceptions of behavioral control and their attitudes toward climate solutions, while liberal and conservative media had fewer significant effects (positive or negative) on Costa Ricans' proenvironmental orientations.

Both Nigeria and Costa Rica have significantly less developed national media than the U.S. and Brazil. Additionally, oil has been a major component of Nigeria's economy for some time, but agriculture is the mainstay of its population—highlighted by recurring nationally reinforced agrarian programs (Uche, 1989). Furthermore, mass media evolved along regional and ethnic lines, with no national political party appeals to national (as opposed to regional) audiences (Uche, 1989). As such, where conservative media may reinforce certain consistent constructs, such as strong military support, when it comes to climate change, those messages may be more proenvironmental in Nigeria than in the U.S. or other countries. Very little empirical research exists regarding Costa Rica and its media beyond its historical nonpartisanship nature, but the value of ecotourism to its economy has been widely documented. Accordingly, conservative media there may not incorporate the same degree of skepticism around climate change. Future studies need to address these potential rationales.

Limitations

This study is limited by the use of the electronic survey method, which limits participation to those with both computer and Internet access. Additionally, the study did not include other potentially key nationalities, such as respondents from China, which is one of the top two emitters of greenhouse gases in the world. Finally, this may not be a representative international sample because it does not represent a random sampling of populations from the examined countries—only those who have opted in for Qualtrics' panels. However, as Ansolabehere and Schaffner (2014) have noted, opt-in Internet panels have been found to produce estimates that are as accurate as probabilistic samples.

Additionally, attitude toward proenvironmental behavior—although determined to have a significant relationship with climate change advocacy intentions, as assessed in the present study—was not a direct measure of attitudes specific to the environmental intentions used in the study. Although this approach has also been successfully used in other studies (e.g., Davis et al., 2002; Masud et al., 2016), future research should highlight these factors more specifically.

Another limitation is that, unlike some cross-national studies, we elected not to use multilevel regression analysis. In the past, some scholarship seeking to estimate "country effects" on socioeconomic outcomes of individuals employed regression analysis in which individual-level outcomes are modeled as a function of both individual-level and country-level characteristics (see Nawrotzki, 2012; Pisano & Lubell, 2015). Recent research, however, indicates that when the number of countries in a multicountry data set is small, model estimates of individual- and country-level effects and their standard errors can lead to inferences that may be inaccurate. Monte Carlo simulations indicate that 25 countries are required for linear models and 30 countries for logit models, at the very minimum (Bryan & Jenkins, 2016).

Conclusion

In conclusion, our study finds support for our communication process model examining the conditional indirect effects of ideological news media outlets on intentions through attitudes, subjective norms, and perceived behavioral control, while using different cross-national groups to show that media may operate differently within the TPB framework for specific subgroups.

References

- Aderibigbe, N. (2015, May 26). Nigeria leads Internet usage in Africa. *Ventures Africa*. Retrieved from <http://venturesafrica.com/nigeria-leads-internet-usage-in-africa/>
- Aginam, A. (2010). *Media and democratization in Nigeria: State, capital and civil society* (Unpublished doctoral dissertation). Simon Fraser University Library. Burnaby, BC, Canada.
- Aguilar-Luzon, M. C., Garcia-Martinez, J. M. A., Calvo-Salguero, A., & Salinas, J. M. (2012). Comparative study between the theory of planned behavior and the value-belief-norm model regarding the environment, on Spanish housewives' recycling behavior. *Journal of Applied Social Psychology, 42*(11), 2797-2833. doi:10.1111/j.1559-1816.2012.00962.x
- Ahern, L., & Formentin M. (2016). More is less: Global warming news values on Fox compared to other U.S. broadcast news outlets. *Electronic News, 10*(1), 45-65. doi:10.1177/1931243116628513
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 11-39). Berlin, Germany: Springer-Verlag.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211. doi:10.1016/0749-5978(91)90020-T
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology, 32*(4), 665-683. doi.org/10.1111/j.1559-1816.2002.tb00236.x
- Ajzen, I. (2011). Theory of planned behavior. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of the theories of social psychology* (Vol. 1, pp. 438-459). Thousand Oaks, CA: SAGE Publications.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitude and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Akingbulu, A. (2012). *Public broadcasting in Africa series: Nigeria*. Oxford, UK: African Books Collective.
- Ansolabehere, S., & Schaffner, B. F. (2014). Does survey mode still matter? Findings from a 2010 multi-mode comparison. *Political Analysis, 22*(3), 285-303. doi:10.1093/pan/mpt025
- Arlt, D., Hoppe, I., & Wolling, J. (2011). Climate change and media usage: Effects on problem awareness and behavioural intentions. *International Communication Gazette, 73*(1-2), 45-63. doi:10.1177/1748048510386741

- Bandura, A. (1986). From thought to action: Mechanisms of personal agency. *New Zealand Journal of Psychology, 15*, 1–17.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.
- Bearden, W. O., Netemeyer, R. G., & Teel, J. E. (1989). Measurement of consumer susceptibility to interpersonal influence. *Journal of Consumer Research, 15*(4), 473–481. doi:10.1086/209186
- Boykoff, M., & Luedeke, G. (2016). Elite news coverage of climate change. *Oxford research encyclopedia of climate science*. Retrieved from https://sciencepolicy.colorado.edu/admin/publication_files/2016.23.pdf
- Brazil country profile. (2018, April 5). *BBC News*. Retrieved from <http://www.bbc.com/news/world-latin-america-18909529>
- Bryan, M. L., & Jenkins, S. P. (2016). Multilevel modelling of country effects: A cautionary tale. *European Sociological Review, 32*(1), 3–22. doi:10.1093/esr/jcv059
- Burnkrant, R. E., & Cousineau, A. (1975). Informational and normative social influence in buyer behavior. *Journal of Consumer Research, 2*(3), 206–215. doi:10.1086/208633
- Carvalho, A. (2010). Media(ted)discourses and climate change: A focus on political subjectivity and (dis)engagement. *WIREs Climate Change, 1*(2), 172–179. doi:10.1002/wcc.13
- Chen, M. F. (2016). Extending the theory of planned behavior model to explain people's energy savings and carbon reduction behavioral intentions to mitigate climate change in Taiwan—moral obligation matters. *Journal of Cleaner Production, 112*(2), 1746–1753. doi:10.1016/j.jclepro.2015.07.043
- Chen, M. F., & Tung, P. J. (2014). Developing an extended theory of planned behavior model to predict consumers' intention to visit green hotels. *International Journal of Hospitality Management, 36*, 221–230. doi:10.1016/j.ijhm.2013.09.006
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*(6), 1015–1026. doi:10.1037/0022-3514.58.6.1015
- Climate Impact Lab. (2019). *Climate impact map: Modeling for median probability of high emissions model in 20 years*. Retrieved from <http://www.impactlab.org/map/#usmeas=absolute&usyear=1981-2010&gmeas=change-from-hist&gyear=2020-2039&tab=global&gvar=tas-annual&grcp=rcp85&gprob=0.5>

- Costa Rica country profile. (2018, April 3). *BBC News*. Retrieved from <https://www.bbc.com/news/world-latin-america-19414705>
- Damgaard, M. (2018). Cascading corruption news: Explaining the bias of media attention to Brazil's political scandals. *Opinião Pública, Campinas, 24*(1), 114–143. doi:10.1590/1807-01912018241114
- Davis, L. E., Ajzen, I., Saunders, J., & Williams, T. (2002). The decision of African American students to complete high school: An application of the theory of planned behavior. *Journal of Educational Psychology, 94*(4), 810–819. doi:10.1037/0022-0663.94.4.810
- Davis, J.L., Le, B., Coy, A.E., Rickert, J., Regan, B., & Ridgeway, K. (2015). Commitment to the environment: The role of subjective norms in college and community samples. *Journal of Applied Social Psychology, 45*, 568–583. doi: 10.1111/jasp.12320
- Feldman, L., Maibach, E. W., Roser-Renouf, C., & Leiserowitz, A. (2012). Climate on cable: The nature and impact of global warming coverage on Fox News, CNN, and MSNBC. *The International Journal of Press/Politics, 17*(1), 3–31. doi:10.1177/1940161211425410
- Feldman, L., Myers, T. A., Hmielowski, J. D., & Leiserowitz, A. (2014). The mutual reinforcement of media selectivity and effects: Testing the reinforcing spirals framework in the context of global warming. *Journal of Communication, 64*(4), 590–611.
- Food and Agriculture Organization of the United Nations. (2019). *FAO in Nigeria: Nigeria at a glance*. Retrieved from <http://www.fao.org/nigeria/fao-in-nigeria/nigeria-at-a-glance/en/>
- Fuchs, G. (2018). Costa Rica: Is the far right poised for victory? *Latin America Bureau*. Retrieved from <https://lab.org.uk/costa-rica-is-the-far-right-poised-for-victory/>
- Gifford, R. (2011). The dragons of inaction: Psychological barriers that limit climate change mitigation and adaptation. *American Psychologist, 66*(4), 290–302. doi:10.1037/a0023566
- Hancock, E. (2017). The 25 most conservative, intolerant, and polluted countries in the world. *Business Insider*. Retrieved from <https://www.businessinsider.com/the-most-conservative-countries-in-the-world-2017-1>
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. New York, NY: Guilford Press.
- Heath, Y., & Gifford, R. (2006). Free-market ideology and environmental degradation: The case of belief in global climate change. *Environment and Behavior, 38*, 48–71. doi:10.1177/0013916505277998

- Hispanic influence reaches new heights in the U.S. (2016, August). *Nielsen*. <http://www.nielsen.com/us/en/insights/news/2016/hispanic-influence-reaches-new-heights-in-the-us.html>
- Hmielowski, J. D., Feldman, L., Myers, T. A., Leiserowitz, A., & Maibach, E. (2014). An attack on science? Media use, trust in scientists, and perceptions of global warming. *Public Understanding of Science, 23*(7), 866-883. doi:10.1177/0963662513480091
- Hornik, R. C. (1989). The knowledge-behavior gap in public information campaigns: A development communication view. In C. T. Salmon (Ed.), *Information campaigns: Balancing social values and value change* (pp. 113-138). Newbury Park, CA: SAGE Publications.
- Huang, H. (2016). Media use, environmental beliefs, self-efficacy, and pro-environmental behavior. *Journal of Business Research, 69*(6), 2206-2212. doi:10.1016/j.jbusres.2015.12.031
- Kempton, W. (1991). Lay perspectives on global climate change. *Global Environmental Change, 1*(3), 183-208. doi:10.1016/0959-3780(91)90042-R
- Kerr, N. L. (1992). Efficacy as a causal and moderating variable in social dilemmas. In W. B. G. Liebrand, D. M. Messick, & A. M. Henk (Eds.), *Social dilemmas: Theoretical issues and research findings* (pp. 59-80). Elmsford, NY: Pergamon.
- Krosnick, J. A., & MacInnis, B. (2010). *Frequent viewers of Fox News are less likely to accept scientists' views of global warming*. Report for The Woods Institute for the Environment. Retrieved from <https://woods.institute.stanford.edu/system/files/publications/Global-Warming-Fox-News.pdf>
- Leiserowitz, A., & Akerlof, K. (2010). *Race, ethnicity and public responses to climate change*. New Haven, CT: Yale Project on Climate Change.
- Liao, Y., Ho, S. S., & Yang, X. (2016). Motivators of pro-environmental behavior: Examining the underlying processes in the influence of presumed media influence model. *Science Communication, 38*(1) 51-73. doi:10.1177/1075547015616256
- Lück, J., Wessler, H., Wozniak, A., & Lycarião, D. (2018). Counterbalancing global media frames with nationally colored narratives: A comparative study of news narratives and news framing in the climate change coverage of five countries. *Journalism, 19*(12), 1635-1656. doi:10.1177/1464884916680372
- Masud, M. M., Al-Amin, A. Q., Junsheng, H., Ahmed, F., Yahaya, S. R., Akhtar, R., & Banna, H. (2016). Climate change issue and theory of planned behaviour: Relationship by empirical evidence. *Journal of Cleaner Production, 113*, 613-623. doi:10.1016/j.jclepro.2015.11.080
- McQuail, D. (1983). *Mass communication theory*. London, UK: SAGE Publications.

- Media in Brazil—Statistics & Facts. (n.d.). *Statista*. Retrieved from <https://www.statista.com/topics/3962/media-in-brazil/>
- Moser, S. C. (2010). Communicating climate change: History, challenges, process and future directions. *WIREs Climate Change*, 1, 31–53. doi:10.1002/wcc.11
- Murillo, A. (2018). Retrieved from Costa Rica's election result: Two rounds and two realities. *The Tico Times*. Retrieved from <http://www.ticotimes.net/2018/02/10/costa-ricas-election-result-two-rounds-two-realities>
- Nawrotzki, R. J. (2012). The politics of environmental concern a cross-national analysis. *Organization & Environment*, 25(3), 286–307. doi:10.1177/1086026612456535
- Neuman, W. R., & Guggenheim L. (2011). The evolution of media effects theory: A six-stage model of cumulative research. *Communication Theory*, 21(2), 169–196. doi:10.1111/j.1468-2885.2011.01381.x
- Nugent, C. (2018). The stakes couldn't be higher in Brazil's presidential election. Here's what to know. *TIME*. Retrieved from <http://time.com/5412415/brazil-elections-bolsonaro-haddad/>
- Ojo, E. (2003). The mass media and the challenges of sustainable democratic values in Nigeria: Possibilities and limitations. *Media Culture & Society*, 25(6), 821–840. doi:10.1177/0163443703256006
- Oskamp, S. (2000). Psychological contributions to achieving an ecologically sustainable future for humanity. *Journal of Social Issues*, 56(3), 373–390. doi:10.1111/0022-4537.00173
- Painter, J. (2014). *Disaster averted? Television coverage of the 2013/2014 IPCC's Climate Change Reports*. Reuters Institute for the Study of Journalism. Retrieved from https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2017-11/Disaster%20Averted%20Television%20Coverage%20of%20the%202013-14%20IPCC%E2%80%99s%20Climate%20Change%20Reports_0.pdf
- Pew Research Center. (2019). Internet & Technology. Internet/broadband sheet facts. Retrieved from <https://www.pewinternet.org/fact-sheet/internet-broadband/>
- Pisano, I., & Lubell, M. (2015). Environmental behavior in cross-national perspective: A multilevel analysis of 30 countries. *Environment and Behavior*, 49(1) 31–58. doi:10.1177/0013916515600494
- Rhodes, R. E., Beauchamp, M. R., Conner, M., de Bruijn, G. J., Kaushal, N., & Latimer-Cheung, A. (2015). Prediction of depot-based specialty recycling behavior using an extended theory of planned behavior. *Environment and Behavior*, 47(9), 1001–1023. doi:10.1177/0013916514534066

- Salzman, C. C., & Salzman, R. (2009). The media in Central America: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama. In A. B. Albarran (Ed.), *The handbook of Spanish language media* (pp. 47–62). New York, NY: Routledge.
- Schmidt, A., Ivanova, A., & Schäfer, M. S. (2013). Media attention for climate change around the world: A comparative analysis of newspaper coverage in 27 countries. *Global Environmental Change*, 23(5), 1233–1248. doi:10.1016/j.gloenvcha.2013.07.020
- Searcey, D., & Akinwotu, E. (2018). Nigerian army uses Trump's words to justify fatal shooting of rock-throwing protesters. *The New York Times*. Retrieved from <https://www.nytimes.com/2018/11/02/world/africa/nigeria-trump-rocks.html>
- Semujju, B. (2013). Climate change in Ugandan media: A "global warming" of journalism ethics. *Journal of African Media Studies*, 5(3), 337–352. doi:10.1386/jams.5.3.337_1
- Shehata, A., & Hopmann, N. D. (2012). Framing climate change: A study of U.S. and Swedish press coverage of global warming. *Journalism Studies*, 13(2), 175–192. doi:10.1080/1461670X.2011.646396
- Spartz, J. T., Yi-Fan Su, L., Griffin, R., Brossard, D., & Dunwoody S. (2017). YouTube, social norms and perceived salience of climate change in the American mind. *Environmental Communication*, 11(1), 1–16. doi:10.1080/17524032.2015.1047887
- Tagbo, E. (2010). *Media coverage of climate change in Africa: A case study of Nigeria and South Africa*. Reuters Institute for the Study of Journalism. Retrieved from <https://reutersinstitute.politics.ox.ac.uk/sites/default/files/research/files/Media%2520Coverage%2520of%2520Climate%2520Change%2520in%2520Africa%2520A%2520Case%2520Study%2520of%2520Nigeria%2520and%2520South%2520Africa.pdf>
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *Psychology of Intergroup Relations* (pp. 7–24). Chicago, IL: Nelson-Hall.
- Uche, L. U. (1989). *Mass media, people and politics in Nigeria*. New Delhi, India: Concept Publishing.
- United Nations Educational, Scientific, and Cultural Organization. (2013). World radio day: Statistics on radio. Retrieved from: <http://www.unesco.org/new/en/unesco/events/prizes-and-celebrations/celebrations/international-days/world-radio-day-2013/statistics-on-radio/>
- United Nations Framework Convention on Climate Change. (2005). *Submission from Papua New Guinea and Costa Rica: Reducing emissions from deforestation in developing countries: Approaches to stimulate action* (No. FCCC/CP/2005/MISC.1). Retrieved from <https://unfccc.int/resource/docs/2005/cop11/eng/misc01.pdf>

- United States country profile. (2017, April 25). *BBC News*. Retrieved from <https://www.bbc.com/news/world-us-canada-16757497>
- van Dijk, T. A. (2017). How Globo media manipulated the impeachment of Brazilian president Dilma Rousseff. *Discourse & Communication, 11*(2), 199–229. doi:10.1177/1750481317691838
- Vignola, R., Klinsky, S., Tam, J., & Mcdaniels, T. (2013). Public perception, knowledge and policy support for mitigation and adaption to climate change in Costa Rica: Comparisons with North American and European studies. *Mitigation and Adaptation Strategies for Global Change, 18*(3), 303–323. doi:10.1007/s11027-012-9364-8
- Von Bülow, M. (2018). *The empowerment of conservative civil society in Brazil*. Carnegie Europe. Retrieved from <https://carnegieeurope.eu/2018/10/04/empowerment-of-conservative-civil-society-in-brazil-pub-77371>
- World Economic Forum. (2017). *The global competitiveness report 2017–2018*. Retrieved from <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>
- Yadav, R., & Pathak, G. S. (2016). Young consumers' intention towards buying green products in a developing nation: Extending the theory of planned behavior. *Journal of Cleaner Production, 135*, 732–739. doi:10.1016/j.jclepro.2016.06.120
- Yanovitzky, I., & Stryker, J. (2001). Mass media, social norms, and health promotion efforts: A longitudinal study of media effects on youth binge drinking. *Communication Research, 28*(2), pp. 208–239. doi:10.1177/009365001028002004