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The Importance of Being Green: The Influence of Green Behaviors on Americans' Political
Attitudes toward Climate Change

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Abstract

Two studies investigated whether performing green behaviors may influence people's political attitudes regarding climate change. A survey study revealed that self-reported green behaviors indirectly predicted American participants' political attitudes regarding climate change, and that this relationship was mediated by their green self-perceptions. This relationship was relatively stronger for conservatives than for liberals. An experimental study included two conditions: One which led people to perceive that they often performed green behaviors and another that led them to perceive that they failed to perform green behaviors. Political-orientation was found to moderate the effect of green behavior perceptions on ratings of the importance of climate-related issues and on support for emissions-reducing policies. Liberals reported greater importance and greater policy support when perceiving that they failed to act green, while conservatives did not. Implications for green behavior campaigns and their political spillover effects are discussed.

Influence of Green Behaviors on Political Attitudes

Keywords: pro-environmental behavior, self-perception, political attitudes, policy support, climate change

The Importance of Being Green: The Influence of Green Behaviors on Americans' Political Attitudes toward Climate Change

Around America, both public and private enterprises are “going green”. While universities and cities are creating Climate Action Plans to help reduce their greenhouse gas emissions over the next 40 years (Abbott & Kasprzyk, 2012), they are also campaigning for their students and citizens to make small changes to green their lives today (e.g., Chicago Climate Action Plan, 2009; Sustainability at Georgetown, n.d.). Grocery stores often reward customers for bringing their own shopping bags, and professional basketball teams encourage fans to recycle and bicycle to games during “NBA green week” (NBA Green, 2013; Stern & Ander, 2008). These organizations promote environmental sustainability through efforts to increase individuals' performance of green behaviors, but it is still rather unclear what impact these programs have on the public's concern and engagement in environmental issues.

Trends in American Political Attitudes toward Climate Change

Individual Americans do not tend to find climate change as important as other current political issues. Although the majority of Americans believe that climate change is happening and will have serious global consequences (Leiserowitz, Maibach, Roser-Renouf, Feinberg, & Howe, 2013), it ranks 21st out of 21 political issues the government needs to tackle (Pew Research Center, 2013). Other polls have found similar results (see Brechin, 2003; Leiserowitz, 2006; Pew Research Center, 2012).

The importance people place on climate change is likely to have crucial political effects. Judgments about the seriousness of climate change are positively related to support for government efforts and specific policies to reduce emissions (Krosnick, Holbrook, Lowe, & Visser, 2006). Climate change importance ratings also predict the likelihood of people writing to

their politicians or joining a protest regarding environmental issues (Whitmarsh & O'Neill, 2010). Although only 3% of Americans reported that global warming is the single most important issue in deciding their 2012 presidential vote, 52% agreed that it was one of several important issues that would help determine their vote (Leiserowitz, Maibach, Roser-Renouf, & Hmielowski, 2012).

Climate change has become a more contentious issue among American elites and politicians in the last decade, leading to a politically-divided American public (McCright & Dunlap, 2011). In a recent poll, 78% of Democrats compared to 53% of Republicans believe that climate change is occurring, and 72% of Democrats worry about climate change compared to only 38% of Republicans (Leiserowitz, Maibach, Roser-Renouf, & Smith, 2011). Other surveys have found similar party divisions (Krosnick, Holbrook, & Visser, 2000; McCright & Dunlap, 2011; Pew Research Center, 2013). In comparison to independents and Republicans, Democrats are more likely to report that climate change is important to them and are more certain in their opinions regarding climate change (Leiserowitz et al., 2011; McCright & Dunlap, 2011). Additionally, Democrats are less impacted by the question wording when asked about climate change, indicating that their attitudes are more resistant to change (Schuldt, Konrath, & Schwarz, 2011). Although some Tea Party conservatives strongly declare that climate change is not occurring and should not be addressed by the government at all, this is a small percentage of conservatives (Leiserowitz et al., 2011).

The lower levels of certainty among conservatives may be partially explained by the conflicting information Americans receive about climate change. People often choose partisan leaders whom they trust as the best sources of information on this issue, making conservatives less certain than liberals about the causes and consequences of climate change (Krosnick et al.

2000; McCright & Dunlap, 2011). Additionally, conservatives may be more skeptical because they tend to support the concept of free-market capitalism as the way to achieve progress, and the negative consequences of human-caused climate change threaten this belief (Heath & Gifford, 2006; McCright & Dunlap, 2011).

Political-orientation also affects people's opinions regarding emissions-reducing policies. Democrats are more likely than Republicans to support policies that address climate change, such as setting stricter emissions limits on power plants, requiring power companies to invest in renewable energy, changing county zoning rules to decrease suburban sprawl, or increasing the fuel efficiency of new cars (Leiserowitz, 2006; Leiserowitz et al., 2011; Pew Research Center, 2013). Alternately, Republicans are more likely than Democrats to support the use of traditional fuel sources, such as offshore drilling of oil or natural gas, and the Keystone XL pipeline which would transport oil from the Canadian tar sands to Texas (Leiserowitz et al., 2012).

Debate over “Going Green”

As was mentioned earlier, many organizations are attempting to change people's individual behaviors as one way of addressing climate change (e.g., Chicago Climate Action Plan, 2009; Environmental Defense Fund, 2012; Sustainability at Georgetown, n.d.). Often the assumption behind such campaigns is that these small green behaviors will serve as a first step, and will lead people to take further actions that are even more ecologically significant (e.g., Gifford, Kormos, & McIntyre, 2011; Hounsham, 2006). However, there is still some debate about whether or not encouraging people to perform green behaviors will accomplish any long-term environmental goals (Reynolds, 2010).

Some argue that simple green behaviors will not spill over into other more significant changes because people will be satisfied with the small behaviors they have performed

(Diekmann & Preisendörfer, 1998; Thøgersen & Crompton, 2009; Weber, 2006). There is some evidence that performing green behaviors (such as conserving energy or water) may actually lead people to increase their resource consumption in other domains (Greening, Green, & Difiglio, 2000; Jacobsen, Kotchen, & Vandenberg, 2011; Tiefenbeck, Staake, Roth, & Sachs, 2013). Similarly, this side contends that focusing on individual behavior changes may distract people from considering larger-scale institutional problems and from taking collective political action (Maniates, 2001; Tidwell, 2009; Wagner, 2011). They argue that there is simply lack of evidence that performing small green behaviors will lead people to pressure their leaders and bring the issue of climate change to the political table so significant policy and regulatory changes can be made.

Those on the other side of the debate argue that small green behaviors can be an important first step to addressing the climate crisis. Focusing on an array of small and manageable household behaviors will begin to reduce America's carbon emissions, and may in turn affect social attitudes as well as national and community political priorities (Dietz, Gardner, Gilligan, Stern, & Vandenberg, 2009; Vandenberg, Barkenbus, & Gilligan, 2008). There is evidence that different green behaviors generally show some small positive correlations with each other, indicating that performing one green behavior is related to performing others (e.g., Lee, deYoung, & Marans, 1995; Thøgersen, 2004; Thøgersen, & Ölander, 2003; Whitmarsh & O'Neill, 2010). This side also claims that green behaviors do not serve as a distraction or undermine political actions, but instead that personal behaviors can increase along with people's political concerns about climate change (Roberts, 2007; Willis & Schor, 2012). This argument fits well with psychological theories that suggest that performance of one behavior can lead to attitude changes in related domains.

Self-Perception Theory and Applications to Environmental Attitudes

One of the theories that would suggest there is a relationship between an individual's green behaviors and political attitudes regarding climate change is self-perception theory. The theory posits that people often come to know their own attitudes by looking at the implications of their past behaviors (Bem, 1972). In this way, our attitudes do not always cause of our behaviors, but may instead serve to justify our behaviors after the fact. Several studies have shown that engaging in a behavior can influence people's attitude towards related issues through this self-perception process (Dolinski, 2000; Garnefeld, Helm, & Eggert, 2011; Wood, 1982). Making particular past behaviors salient can also influence people's current attitudes (e.g., Chaiken & Baldwin, 1981; Cornelissen, Pandelaere, Warlop, & Dewitte, 2008; Salancik & Conway, 1975). Additionally, changing behaviors can impact people's attitudes and future behaviors through altering the way they perceive themselves, and therefore changing their self-concept (Burger & Caldwell, 2003; Evans et al., 2012). Similarly, highlighting identities or values reflected by a particular behavior that has been performed makes people more likely to perform future behaviors that remain consistent with those values or identities (Cornelissen, Dewitte, Warlop, & Yzerbyt, 2007).

Bem (1972) originally theorized that the self-perception process is most likely to occur when people have weak or uncertain "internal cues", and therefore are more likely to use their external actions as a cue toward their attitude. Others explain that the influence of behaviors on attitudes occurs most often during the early stages attitude development, when a person is not set on their attitude (Fazio, Zanna, & Cooper, 1977) or when people hold weak attitudes about a topic (Holland, Verplanken, & Van Knippenberg, 2002). This has been empirically supported, with findings showing that people are more influenced by perceptions of their own behaviors

when their attitudes are unformed and weak rather than when they have strong attitudes (Chaiken & Baldwin, 1981; Garnefeld, Helm, & Eggert, 2011; Holland et al., 2002; Wood, 1982).

In terms of environmental attitudes and decision-making, when people perceive their past behavior as environmentally-friendly, they are more likely to perceive themselves as an environmentalist or a green consumer and they report stronger positive attitudes towards environmental policies and green consumer products (Chaiken & Baldwin, 1981; Cornelissen et al., 2008). Similarly, after donating to an environmental organization (Greenpeace), those without initially strong opinions about the organization rated it more positively (Holland et al., 2002). Additionally, assigning the label of “environmentally-friendly” to people after they purchase a green product motivates them to reinterpret their past behaviors as having environmental motivations, and leads them to make further green purchasing choices (Cornelissen et al., 2007).

Others have demonstrated the link between green self-perceptions and support for climate-related policies. People with strong environmental identities and members of environmental groups are more likely to support emissions-reducing initiatives such as taxing greenhouse gas emissions or supporting local wind power (Bannon, DeBell, Krosnick, Kopp, & Aldhous, 2007; Leiserowitz, 2006; Thøgersen & Noblet, 2012). Additionally, an environmental identity or environmental organization membership are good predictors of someone’s environmental activism (Dono, Webb, & Richardson, 2010; McFarlane & Boxall, 2003). Therefore, when people take actions to reduce their carbon footprint, they may come to see themselves as more “green” and form attitudes that climate change and related issues are of greater political concern.

Study 1

Study 1 was a survey that investigated predictions based upon self-perception theory. The goals of Study 1 were to investigate if there was a relationship between performing green behaviors and political attitudes regarding climate change, and if green self-perceptions could help explain this relationship. Additionally, this study examined if these relationships differed depending upon an individual's political-orientation. It was hypothesized that:

H1: Performance of green behaviors will predict the importance of climate-related issues and will also predict support for emissions-reducing policies.

Additionally, I examined if the relationship between green behaviors and political attitudes could be explained through green self-perceptions. It was hypothesized that:

H2: The relationship between green behaviors and political attitudes will be mediated by green self-perceptions.

Finally, since conservatives tend to have less certain attitudes about climate change than liberals (e.g., Leiserowitz et al., 2011), and the self-perception process is more likely to occur among people with weaker attitudes (e.g., Holland et al., 2002) it was hypothesized that:

H3: The mediated relationship between green behaviors and political attitudes through green self-perceptions will be moderated by political-orientation, such that the relationship will be stronger for conservative-leaning participants than for liberal-leaning participants.

Participants

Participants were 94 people (65% female) recruited for an online survey titled "Political Attitudes and Behaviors" from links posted on a variety of political interest Facebook pages (e.g., American Values Network, Young Moderates, Common Dreams) and on Social

Psychology Network. The sample was 84% White, 3% Asian, 4% Latino, 2% Black, and 5% were multi-ethnic. Participants' ages ranged from 18 - 66 ($M = 30.90$, $SD = 14.97$). Political-orientation was rated on a scale of 1 (very liberal) to 7 (very conservative) and also included an option "Not interested in politics". Forty-six percent of the sample identified as liberal-leaning (rated 1-3), 28% were conservative-leaning (rated 5-7), 23% were moderate (rated 4), and 3% were uninterested in politics. The three uninterested participants were removed from further analysis.

Measures

The survey asked participants about how often they perform green behaviors, their self-perceptions of being a "green" person, the importance they attached to a variety of political issues, their support for emissions-reducing policies, as well as basic demographic information.

Green behaviors scale. This questionnaire was used to measure how many emissions-reducing behaviors and emissions-increasing behaviors people perform in their daily lives. The questionnaire listed eight behaviors that are "green" and reduce emissions and eight behaviors that are "anti-green" and are environmentally-harmful (see Appendix for the list of behaviors). Participants were given a prompt that explained that these behaviors are related to greenhouse gas emissions and climate change. Participants marked how often they perform each behavior on a scale from 1 (never) to 5 (always). When creating the scale, the anti-green behaviors were reverse-scored. Four of the items did not reliably add to the scale, generally because they did not have wide range of responses, and were removed. The remaining 12 items were averaged to make a green behaviors scale ($\alpha = .73$, $M = 3.28$, $SD = 0.56$).

Green self-perceptions. Three items assessed how participants viewed themselves in terms of their green self-perceptions, using the following items: "To what extent do you consider

yourself a climate-concerned person?”, “...consider yourself an environmentalist?”, and “...consider yourself ‘green?’” Participants responded on a scale of 1(not at all) to 5(completely). The items were averaged for a total score of green self-perceptions ($\alpha = .88$, $M = 2.63$, $SD = 0.91$).

Importance of climate-related issues. This questionnaire asked participants to compare the importance of different national political issues. Participants were given a list of 14 issues taken from national polls (Pew Research Center, 2011) and were prompted to indicate how important each issue is for the current presidential administration to be working on. Participants rated each issue on a scale from 1(opposed to the issue) to 7(extremely important). They were specifically asked to vary the scores given to different items and to rate only a few political issues as extremely important. Of the fourteen issues, this study was concerned with three: “Dealing with climate change/ global warming”, “Protecting the environment”, and “Dealing with the nation’s energy problem”. All three of these issues were positively correlated, and were averaged to create a scale of the importance of climate-related issues ($\alpha = .72$, $M = 4.97$, $SD = 1.23$).

Emissions-reducing policies. This questionnaire measured attitudes regarding national-level policies related to climate change. Brief explanations of four different emissions-reducing national policies were presented (adapted from Leiserowitz, 2006), and participants were asked rate how much they support or oppose each policy on a scale from 1(strongly oppose) to 5(strongly support). The four policy items concerned the regulation of carbon dioxide, subsidizing renewable energy, a business carbon offset tax, and increasing the fuel efficiency of new cars. The items were averaged to create a scale of policy support ($\alpha = .85$, $M = 3.51$, $SD = 1.05$).

Results

Simple correlations. To begin, a series of Pearson correlations indicated that green behaviors were unrelated to political-orientation ($r = -.04, p = .72$); however, political orientation was negatively correlated with green self-perceptions ($r = -.38, p < .001$), importance of climate-related issues ($r = -.57, p < .001$), and policy support ($r = -.71, p < .001$). Green behaviors, on the other hand, were positively correlated with green self-perceptions ($r = .51, p < .001$) and importance of climate-related issues ($r = .22, p < .001$), and had a small non-significant positive correlation with policy support ($r = .08, p = .47$). Since green behaviors and political-orientation had different relationships with green self-perceptions and the political attitude measures, models were designed to test these predictors simultaneously as well as the green behavior x political-orientation interaction.

Predicting the importance of climate-related issues through green self-perceptions.

All three hypotheses were tested simultaneously through a regression analysis of conditional indirect effects. The model, which can be seen in Figure 1, included green behaviors as the independent variable, political-orientation as a moderator, green self-perceptions as a mediator, and the importance of climate-related issues as the dependent variable. Analysis was performed with the PROCESS macro (Hayes, 2012), using bootstrapping with 5000 iterations. To avoid possible issues with multi-collinearity, all predictor variables were centered prior to analysis (see Aiken & West, 1991). The full results are presented in Table 1. The analysis indicated that green behaviors directly predicted green self-perceptions ($\beta = .51, p < .001$), as did political-orientation ($\beta = -.33, p < .001$), and these main effects were qualified by a significant green behavior x political-orientation interaction ($\beta = .18, p = .035$), which is shown in Figure 2. Using a rating of 2 (liberal), 4 (moderate), and 6 (conservative) to define political-orientation

categories, each of the simple slope tests revealed a significant positive association between green behaviors and green self-perceptions. As hypothesized, there was a relatively higher slope for conservative-leaning participants ($B = 1.38, SE = 0.30, p < .001$) than for moderate participants ($B = 1.03, SE = .17, p < .001$), and the slope was mildest for liberal-leaning participants ($B = 0.68, SE = .14, p < .001$).

Additionally, green self-perceptions significantly predicted the importance of climate related issues ($\beta = .62, p < .001$), while green behaviors was not a significant direct predictor ($\beta = -.10, p = .34$). Finally, the conditional indirect effects were examined. The conditional indirect path from green behaviors to the importance of climate-related issues through green self-perceptions was significant at all three levels of political-orientation. The indirect effect path was strongest for conservative-leaning participants (95% confidence interval (CI) between 0.60 and 2.19), a bit weaker for moderate participants (95% CI between 0.47 and 1.43), and less strong for liberal-leaning participants (95% CI between 0.29 and 0.96). This indicates green self-perceptions serve a mediating role between green behaviors and the importance of climate related issues, and that the indirect effect is stronger for conservative-leaning participants.

Predicting support for emissions-reducing policies through green self-perceptions.

The same model of conditional indirect effects was tested with policy support as the dependent variable, and this model can be seen in Figure 3. The full results for this analysis are presented in Table 1. The relationships between green behaviors, political-orientation, and green self-perceptions were identical to the previous analysis. Additionally, green self-perceptions significantly predicted policy support ($\beta = .55, p < .001$), while green behaviors became a marginally significant negative direct predictor ($\beta = -.20, p = .063$). The indirect path from green behaviors to policy support through green self-perceptions was significant at all three

levels of political-orientation. The indirect effect path was strongest for conservative-leaning participants (95% CI between 0.42 and 1.72), was less strong for moderate participants (95% CI between 0.32 and 1.11), and weakest for liberal-leaning participants (95% CI between 0.20 and 0.76).

Study 2

Study 1 found that the performance of green behaviors was a good predictor of people's green self-perceptions, and that it indirectly predicted people's political attitudes regarding the importance of climate-related issues and their support for emissions-reducing policies. Additionally, green behavior was a stronger indirect predictor of political attitudes for conservative-leaning participants than for liberal-leaning participants. Yet, Study 1 was correlational, so no interpretation can be made regarding the causal nature of these relationships. Therefore, Study 2 experimentally manipulated participants' perceptions of their past green behaviors to test the causal effect of green behavior perceptions on political attitudes. Political-orientation was also examined to see if it served as a moderator in a similar way to Study 1. Therefore, it was hypothesized that:

H4: Those who perceive that they often perform green behaviors (pro-green condition) will report higher importance of climate-related issues and greater support for emissions-reducing policies than those who perceive that they often fail to act green (anti-green condition). This effect will be stronger for conservative-leaning participants than for liberal-leaning participants.

Participants

Participants were 112 people (69% female) recruited for an online experiment (also titled "Political Attitudes and Behaviors") using the same political interest Facebook pages as in Study

1. Participants were 87% White, 3% Latino, 3% Asian, 1% Black, and 6 % multi-ethnic. Their ages ranged from 18 - 66 years ($M = 26.46$, $SD = 8.78$). Fifty-six percent of participants were liberal-leaning, 25% were conservative-leaning, 11% were “middle of the road”, and 6% uninterested in politics. The seven participants who indicated they were uninterested in politics were removed from further analysis.

Green Behavior Perceptions Manipulation and Measures

The intent of the green behavior perceptions manipulation was for some people to perceive that they generally acted in green ways and reduced their emissions of greenhouse gases (pro-green condition), and others to feel that they generally behaved in environmentally harmful ways and increased their greenhouse gas emissions (anti-green condition). The manipulation was embedded in the first questionnaire participants completed, and was based on the finding by Salancik and Conway (1975) that people are more likely to agree that they “occasionally” (or “sometimes”) perform a behavior than that they “frequently” perform a behavior. In the pro-green condition, the word “sometimes” was paired with environmentally-friendly behaviors making them easy to report doing, and the word “frequently” was paired with environmentally-harmful behaviors to make them more difficult to report. This was reversed in the anti-green condition by pairing “sometimes” with environmentally-harmful behaviors and pairing “frequently” with environmentally-friendly behaviors. Sample “pro-green” items were: “*I sometimes purchase local or organic produce*” and “*I frequently leave the lights on in rooms I’m not using.*” Matching sample “anti-green” items were: “*I frequently purchase local or organic produce*” and “*I sometimes leave the lights on in rooms I’m not using*” (see Appendix for full list of behaviors).

The manipulation contained eight statements about performing an environmentally-friendly behavior and eight statements about performing an environmentally-harmful behavior. It began with a prompt explaining that all of the following behaviors were related to greenhouse gas emissions and climate change. Participants were asked to report if each behavior was “true” or “not true” for them personally. The manipulation contained one additional question to make their pro-green or anti-green behaviors more salient. In the pro-green condition, participants were asked to list one or two other behaviors they perform that have a positive impact on the environment and climate, and in the anti-green condition participants were asked to list one or two other behaviors they perform that have a negative impact on the environment and climate. These questions were added to ensure that people in the pro-green condition listed at least a few pro-green behaviors, and that people in the anti-green condition listed at least a few anti-green behaviors.

An index of green behaviors was created to examine how much participants reported performing the pro-green and anti-green behaviors. Green behaviors were scored 0 for a “no” response and 1 for a “yes” response. Anti-green behaviors scored 1 for a “no” response and 0 for a “yes” response. A participant’s score on the index was calculated by adding the scores for all 16 items. Therefore, each person received a score between 0 and 16, with higher scores indicating greater performance green behaviors (and avoidance of anti-green behaviors). Reliability was tested using Kuder-Richardson 20, a special case of Cronbach’s alpha for binary data ($\alpha = .70$, $M = 9.59$, $SD = 3.23$).

The same two political attitude questionnaires from Study 1 were used in Study 2. The importance of climate-related issues measure ($\alpha = .83$, $M = 5.65$, $SD = 1.05$) and the support for emissions-reducing policies measure ($\alpha = .74$, $M = 3.83$, $SD = 0.81$) were both reliable.

Results

Manipulation check. As expected, participants in the pro-green condition ($M = 11.07$, $SD = 2.97$) scored higher on the index of green behaviors than participants in the anti-green condition ($M = 7.78$, $SD = 2.56$), $t(100) = -5.91$, $p < .001$, $d = 1.17$. This indicates that the manipulation was successful in inducing people in the pro-green condition to perceive that they performed more green behaviors, and those in the anti-green condition to perceive that they performed fewer green behaviors.

Simple effects on political attitudes. Participants in the pro-green condition and anti-green conditions did not significantly differ on their ratings of the importance of climate-related issues, $t(107) = -0.49$, $p = .62$, $d = -.094$, or on their support for emissions-reducing policies, $t(106) = 0.20$, $p = .84$, $d = .069$. The lack of relationships between the green behavior perceptions manipulation and the political attitude measures may be due to the moderator: political-orientation. A series of Pearson correlations indicated that political-orientation was negatively correlated with importance of climate-related issues ($r = -.43$, $p < .001$), and policy support ($r = -.49$, $p < .001$). Therefore, models were designed to test the green behavior perceptions x political-orientation interaction.

Effect on the importance of climate-related issues. The effects of the green behavior perception manipulation and of political-orientation on the importance of climate-related issues were tested with a regression analysis of moderation effects. The manipulation (anti-green vs. pro-green) was the independent variable, political-orientation was the moderator, and the importance of climate-related issues was the dependent variable (see Figure 4). It was tested by using the PROCESS macro (Hayes, 2012), using bootstrapping with 5000 iterations, and with centered predictor variables. The green behavior perceptions manipulation was dummy coded,

with the anti-green condition = 0 and the pro-green condition = 1. The overall regression analysis was significant, $R^2 = .22$, $F(3, 105) = 9.82$, $p < .001$, and the full results are presented in Table 2. The analysis indicated that green behavior perceptions did not have a direct effect on the importance of climate-related issues ($\beta = -.21$, $p = .24$), while political-orientation did have a direct effect ($\beta = -.62$, $p < .001$), and this main effect was qualified by a marginally significant green behavior perceptions x political-orientation interaction ($\beta = .34$, $p = .053$), which is shown in Figure 5. This interaction was further investigated by conducting a simple slopes analysis with political-orientation at ratings of 2 (liberal), 4 (moderate), and 6 (conservative). Contrary to the hypothesis, green behavior perceptions had a significant effect on the importance of climate-related issues for liberal-leaning participants ($B = -0.55$, $SE = 0.25$, $p = .033$), such that participants in the anti-green condition reported higher importance of climate-related issues than participants in the pro-green condition. However, there was not a significant effect for moderate ($B = -0.09$, $SE = 0.20$, $p = .66$) or conservative-leaning participants ($B = 0.37$, $SE = .36$, $p = .30$).

Effect on support for emissions-reducing policies. The effects of the green behavior perceptions manipulation and political-orientation were also tested with policy support as the dependent variable (see Figure 6). The overall regression analysis was significant, $R^2 = .28$, $F(3, 104) = 13.73$, $p < .001$, and the full results of are presented in Table 2. Green behavior perceptions did not have a direct effect on policy support ($\beta = -.10$, $p = .56$), while political-orientation did have a direct effect ($\beta = -.72$, $p < .001$), and this main effect was qualified by a significant green behavior perceptions x political-orientation interaction ($\beta = .43$, $p = .012$), which is shown in Figure 7. As in the first analysis, green behavior perceptions had a significant effect on policy support for liberal-leaning participants ($B = -0.39$, $SE = 0.18$, $p = .039$), with participants in the anti-green condition reporting greater policy support than those in the pro-

green condition. There was not a significant effect for moderate participants ($B = 0.05$, $SE = 0.15$, $p = .76$). However, there was a marginally significant effect for conservative-leaning participants in the direction hypothesized ($B = 0.48$, $SE = .26$, $p = .066$), such that participants in the pro-green condition reported higher policy support than those in the anti-green condition.

Discussion

Both studies provide support for the relationship between the perceptions of one's green behaviors and political attitudes regarding climate change. Study 1 indicated that the performance of green behaviors predicted people's green self-perceptions, and that these perceptions were related to both the ratings of the importance of climate-related issues and to support for large-scale policies to address climate change. These findings support the hypotheses derived from self-perception theory, specifically that self-perceptions can explain the link between the performance of behaviors and our attitudes toward related issues. It also compliments other work that has found that environmental identity may link people's personal green behaviors and their political attitudes or actions regarding environmental issues (Dono et al., 2010; Whitmarsh & O'Neill, 2010). Study 2 provided some causal evidence that perceptions of one's past green behaviors can influence political attitudes regarding climate change among more liberal-leaning participants, and offers a tentative indication that it also influences emissions-reducing policy support among conservative-leaning participants.

Both studies also indicate that political-orientation moderates this relationship, albeit in different ways for each study. Study 1 found that the indirect effect of green behaviors predicting political attitudes through green self-perceptions was a relatively stronger relationship for conservative-leaning participants than for moderate or liberal-leaning participants. In Study 2, the green behavior perceptions manipulation did not influence conservative-leaning

participants' ratings of climate-related issue importance, but it did have a marginally significant effect on their policy support. In both studies, conservative-leaning participants showed a self-perception response, and reported stronger policy support when they performed more green behaviors or when they perceived that they often performed green behaviors. Conservatives are often more ambivalent in their attitudes about climate change (Leiserowitz et al., 2011; McCright & Dunlap, 2011), and therefore it may be that the conservative-leaning participants are inferring their political attitudes from their past behaviors. The results for conservatives were less strong in Study 2 and this may be partially due to the political-orientation of the sample as a whole, as the Study 2 sample had fewer conservative and moderate participants than Study 1. However, future research with a more conservative sample would be needed to examine if the weak findings from this study were due to sampling issues, or if conservatives truly respond less to manipulations of their perceived green behaviors.

The most surprising finding was in Study 2, that liberal-leaning participants actually reported greater importance of climate-related issues and stronger policy support when they perceived that they failed to perform green behaviors. While this was unexpected, there are a few possible explanations for this finding. One explanation is that when reminded of their past green behaviors, participants felt content with these personal actions and did not feel the need to support larger political changes. This would align with the argument of those who discourage small green behaviors, pointing out that they can detract from political action (Maniates, 2001; Tidwell, 2009; Wagner, 2011). However, it is not clear why this effect would only be found among liberal-leaning participants who are generally more concerned about climate change (Leiserowitz et al., 2011), and not for moderate or conservative-leaning participants. Another possible explanation is that the manipulation may have led to feelings of guilt among liberals in

the anti-green condition. Since liberals tend to be more worried about climate change and more certain about their climate change opinions (Leiserowitz et al., 2011; McCright & Dunlap, 2011), these participants may have been emotionally impacted by the realization that they often perform behaviors harmful to the environment. Guilt is an emotion that leads people to try and take reparative action (Tangney, Stuewig, & Mashek, 2007), and while the study did not provide a way for participants to actively perform a green behavior, liberal-leaning participants may have relieved their guilt through indicating stronger political support for climate-related issues and policies. This supports other research that indicates guilt can influence people's decisions to perform green behaviors (for a recent meta-analysis, see Bamberg & Möser, 2007), and that specifically reminding people of their past environmentally-harmful behavior can lead to subsequent increases in green behaviors (e.g., Dickerson, Thibodeau, Aronson, & Miller, 1992; Kantola, Syme & Campbell, 1984; Osbaldiston & Schott, 2012).

An interesting statistical finding in Study 1 was that there was a marginally significant negative direct path between green behaviors and policy support, although there was a non-significant but positive correlation between the two variables. Similarly, green behaviors had a non-significant negative direct relationship with the importance of climate-related issues, but the two variables had an overall significant positive correlation. One explanation is that perhaps the relationship between green behaviors and political attitudes has two mediating variables. Performing green behaviors is related to stronger green self-perceptions which in turn is related to increased policy support (as suggested by Roberts, 2007; Willis & Schor, 2012), but green behaviors may simultaneously be related to an increased focus on personal behaviors as the best way to address climate change, distracting people from considering larger-scale political actions and therefore decreased policy support (as is suggested by Maniates, 2001; Tidwell, 2009;

Wagner, 2011). Participants' focus on personal behaviors may be a second mediating variable that has an opposite effect on political attitudes. Focus on personal behaviors was not measured in this survey, but if this is the case, it would explain why a negative path emerged when green self-perceptions were accounted for in the model. Future research should investigate how performance of green behaviors is related to an individuals' focus on personal behaviors as the best way to address climate change, and should simultaneously test both this mediating path and the green self-perceptions mediating path.

In Study 2, green behavior perceptions also had a non-significant negative direct effect on both political attitude measures, but this statistical finding was more likely due to the political-orientations of those included in the sample. There were a greater amount of liberals than conservatives in the sample, and since the anti-green condition led to greater importance of climate-related issues and greater policy support among the liberal participants, it is not surprising that there is a non-significant direct effect indicating that the anti-green condition led to higher scores overall on both political attitude measures.

Limitations and Future Research

While the two studies support the hypothesis that performing green behaviors is related to political attitudes, a limitation is that neither of the studies included an experimental manipulation in which people performed an actual green behavior. Study 1 was a survey study, and therefore directionality of relationships between green behaviors, green self-perceptions, and political attitudes cannot be assessed. The experimental manipulation in Study 2 was successful in leading people to report greater or fewer green behaviors, but it only manipulated perceptions of the participants' past green behaviors. To more fully address the debate about the utility of encouraging small green behaviors, other research is needed in which people actively begin

performing a new green behavior to examine if this impacts their political attitudes regarding climate change. Specifically, field studies in which participants' political attitudes are examined before and after they perform a green behavior advocated by a campaign would offer more ecological validity to this research. Additionally, the experimental manipulation in Study 2 led participants to perceive either that they perform green behaviors frequently (pro-green-condition) or infrequently (anti-green condition), but there was not a true control group in which participants simply reported their green behaviors. Future research that includes a control group would allow researchers to compare these experimental groups to a baseline, and investigate if the effects were larger when participants perceived that they frequently acted green or when they perceived that they failed to act green.

Another limitation is that participants' concern and certainty about the occurrence of climate change was not directly measured in the studies. Although other research has found that liberals are more worried and more certain in their attitudes about climate change, and that conservatives are less concerned and more ambivalent in their attitudes (Leiserowitz et al., 2011; McCright & Dunlap, 2011), this is only one possible explanation of why political-orientation moderated the relationship between green behaviors and political attitudes. Future research should examine climate change concern and certainty as moderators as well, to see if they are underlying mechanisms for the political-orientation effects found in these studies.

Similarly, the experimental manipulation in Study 2 led liberal-leaning participants to be more supportive of political issues regarding climate change when they perceived that they had failed to act green, but the mechanism behind this effect is unclear. Future research can investigate the possibility of a guilt response more specifically. Additionally, there is reason to believe that while increased political support may be found in situations in which liberals are

forced to consider their failure to perform green behaviors, it may not occur when they are naturally deciding not to perform green behaviors. As demonstrated in Study 1, when investigating self-reported green behaviors without a manipulation, liberals who performed fewer behaviors also had lower green self-perceptions, and in turn reported less support for climate-related issues and policies. Therefore, future research should parse apart the situations in which failure to perform green behaviors leads liberals to greater (or lesser) political support for climate issues.

Implications and Conclusions

The usefulness of encouraging small green behaviors is still being debated; however, this research offers a new perspective to consider. Most studies have investigated if the performance of certain green behaviors will spill over into the performance of other green behaviors (e.g., Thøgersen, 1999; Thøgersen & Ölander, 2003; Tiefenbeck et al., 2013), but this research suggests that spillover into political attitudes regarding climate change should also be investigated. Political action is certainly needed to slow the impending climate crisis, and therefore support for emissions-reducing policies may be of greater importance than the performance of more individual green behaviors. Additionally, this research indicates that green self-perceptions are important in connecting people's green behaviors to their political attitudes regarding climate change. Therefore, campaigns that label the actors as "green" may strengthen the political attitudes of those who perform the behaviors.

The findings also highlight the importance of individual differences in political-orientation, and provide some evidence that certain political groups may respond differently to green behavior change campaigns. Initiatives that promote the performance of green behaviors would perhaps be best aimed as conservatives, because the number of green behaviors they

perform tended to have a stronger indirect effect on their political attitudes than it did for liberals. On the other hand, liberals may be more responsive to guilt appeals that frame their past actions as environmentally harmful, and therefore encourage them to take political action as a way of demonstrating their green credentials.

Climate change is currently a low political priority for many American people, but this research highlights that performing green behaviors may have indirect political impacts. In this way, performing green behaviors may have a larger influence the environment beyond the small emissions reductions of each individual behavior. Increasing political support is not what is typically considered when organizations are advocating for people to change their personal green behaviors. However, the link found between green behaviors and political attitudes gives some indication that encouraging green behaviors, and sometimes reminding people of times that they failed to act green, may help make climate change a more important political issue for the American people.

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Table 1

Study 1 - Regression Analyses for Conditional Indirect Effects Models: Green Behaviors

Predicting the Importance of Climate-Related Issues and Policy Support

| Mediator model: Predicting green self-perceptions | | | | | |
|---|--------------------|-----------|------------------|----------|------------------|
| Predictor | <i>B</i> | <i>SE</i> | β | <i>t</i> | <i>p</i> |
| Constant | 0.01 | 0.07 | - | .0861 | .93 |
| Green Behaviors | 0.84 | 0.13 | .51 | 6.28 | <.001 |
| Political-Orientation | -0.18 | 0.04 | -.33 | -4.03 | <.001 |
| Green Behaviors x Political-Orientation | 0.18 | 0.08 | .18 | 2.15 | .035 |
| Conditional effects of green behaviors predicting green self-perceptions depending upon political-orientation | | | | | |
| Political-Orientation | <i>B</i> | <i>SE</i> | <i>t</i> | <i>p</i> | |
| 2 (Liberal) | 0.68 | 0.14 | 4.69 | <.001 | |
| 4 (Moderate) | 1.03 | 0.17 | 6.09 | <.001 | |
| 6 (Conservative) | 1.38 | 0.30 | 4.60 | <.001 | |
| Dependent variable model: Predicting importance of climate-related issues | | | | | |
| Predictor | <i>B</i> | <i>SE</i> | β | <i>t</i> | <i>p</i> |
| Constant | 4.97 | 0.11 | - | 46.90 | <.001 |
| Green Self-Perceptions | 0.85 | 0.14 | .62 | 6.22 | <.001 |
| Green Behaviors | -0.21 | 0.22 | -.10 | -0.97 | .34 |
| Conditional indirect effects of green behaviors predicting the importance of climate-related issues through green self-perceptions and depending upon political-orientation | | | | | |
| Political-Orientation | <i>Est. Effect</i> | <i>SE</i> | <i>LL CI 95%</i> | | <i>UL CI 95%</i> |
| 2 (Liberal) | 0.57 | 0.17 | 0.29 | | 0.96 |
| 4 (Moderate) | 0.87 | 0.26 | 0.47 | | 1.43 |
| 6 (Conservative) | 1.17 | 0.43 | 0.60 | | 2.19 |
| Dependent variable model: Predicting policy support | | | | | |
| Predictor | <i>B</i> | <i>SE</i> | β | <i>t</i> | <i>p</i> |
| Constant | 3.51 | 0.10 | - | 36.05 | <.001 |
| Green Self-Perceptions | 0.64 | 0.13 | 0.55 | 5.10 | <.001 |
| Green Behaviors | -0.38 | 0.20 | -0.20 | -1.88 | .063 |
| Conditional indirect effects of green behaviors predicting policy support through green self-perceptions and depending upon political-orientation | | | | | |
| Political-Orientation | <i>Est. Effect</i> | <i>SE</i> | <i>LL CI 95%</i> | | <i>UL CI 95%</i> |
| 2 (Liberal) | 0.43 | 0.14 | 0.20 | | 0.76 |
| 4 (Moderate) | 0.66 | 0.21 | 0.32 | | 1.11 |
| 6 (Conservative) | 0.88 | 0.34 | 0.42 | | 1.72 |

Study 2: Regression Analysis on the Effects of Green Behavior Perceptions and Political-Orientation on the Importance of Climate-Related Issues and Policy Support

| Predictor | Dependent variable: Importance of climate-related issues | | | | |
|--|--|-----------|---------|----------|----------|
| | <i>B</i> | <i>SE</i> | β | <i>t</i> | <i>p</i> |
| Constant | 5.68 | 0.14 | - | 40.50 | <.001 |
| Green Behavior Perceptions | -0.23 | 0.19 | -.21 | -1.19 | .24 |
| Political-Orientation | -0.42 | 0.09 | -.62 | -4.88 | <.001 |
| Green Behavior Perceptions x Political-Orientation | 0.23 | 0.12 | .34 | 1.96 | .053 |
| Conditional effects of green behavior perceptions on the importance of climate-related issues depending upon political-orientation | | | | | |
| Political-Orientation | <i>Est. Effect</i> | <i>SE</i> | | <i>t</i> | <i>p</i> |
| 2 (Liberal) | -0.55 | 0.25 | | -2.16 | .033 |
| 4 (Moderate) | -0.09 | 0.20 | | -0.44 | .66 |
| 6 (Conservative) | 0.37 | 0.36 | | 1.03 | .30 |
| Predictor | Dependent variable: Policy support | | | | |
| | <i>B</i> | <i>SE</i> | β | <i>t</i> | <i>p</i> |
| Constant | 3.89 | 0.10 | - | 38.26 | <.001 |
| Green Behavior Perceptions | -0.08 | 0.14 | -.10 | -0.59 | .56 |
| Political-Orientation | -0.36 | 0.06 | -.72 | -5.89 | <.001 |
| Green Behavior Perceptions x Political-Orientation | 0.22 | 0.08 | .43 | 2.55 | .012 |
| Conditional effects of green behavior perceptions on policy support depending upon political-orientation | | | | | |
| Political-Orientation | <i>Est. Effect</i> | <i>SE</i> | | <i>t</i> | <i>p</i> |
| 2 (Liberal) | -0.39 | 0.18 | | -2.10 | .039 |
| 4 (Moderate) | 0.05 | 0.15 | | 0.31 | .76 |
| 6 (Conservative) | 0.48 | 0.26 | | 1.86 | .066 |

Note. For green behavior perceptions, the anti-green condition was coded 0 and the pro-green condition was coded 1.

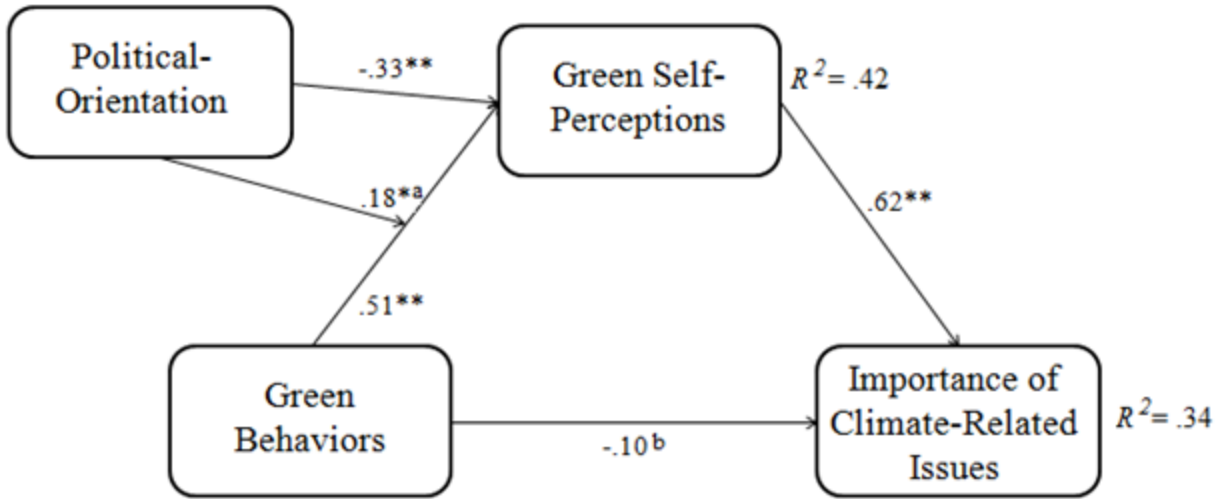


Figure 1. Study 1 - Model of conditional indirect effects: Green behaviors predicting the importance of climate-related issues depending upon participants' political-orientation, with green self-perceptions serving as a mediator.

Note. Standardized coefficients are reported in the model.

^a Coefficient for green behaviors x political-orientation interaction

^b The indirect effect of green behaviors on the importance of climate-related issues is significant for liberal-leaning participant (95% CI between 0.29 and 0.96), for moderate participants (95% CI between 0.47 and 1.43), and for conservative-leaning participants (95% CI between 0.60 and 2.19).

* $p < .05$. ** $p < .001$

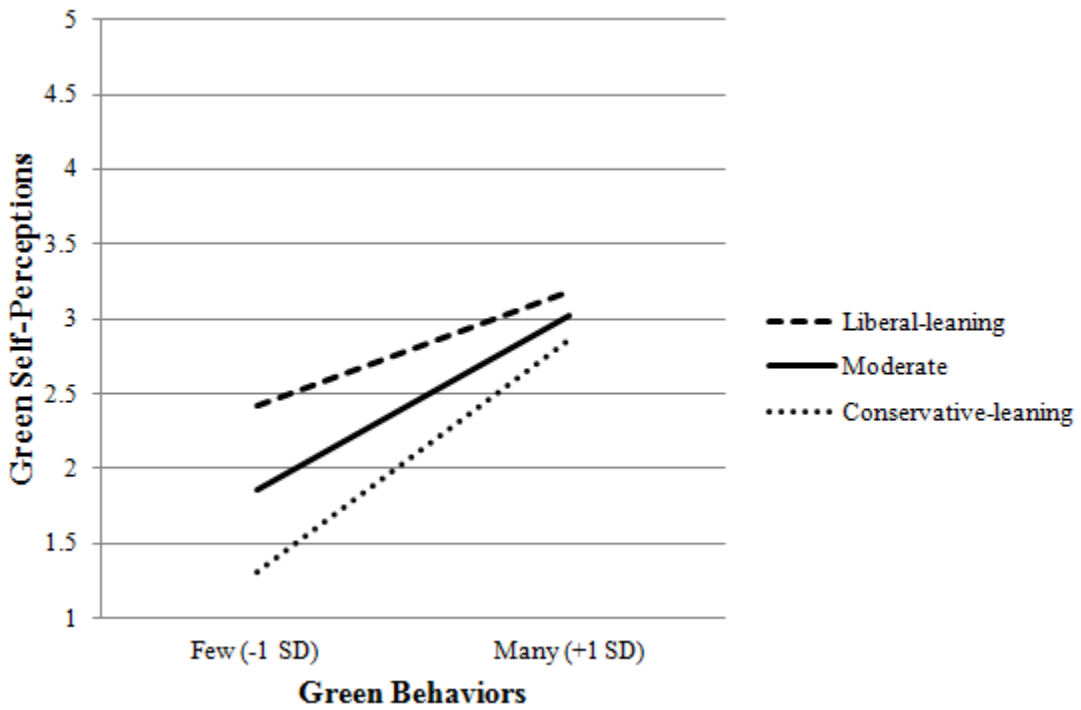


Figure 2: Study 1 - Conditional effects of the performance of green behaviors in predicting green self-perceptions for participants at different levels of political-orientation.

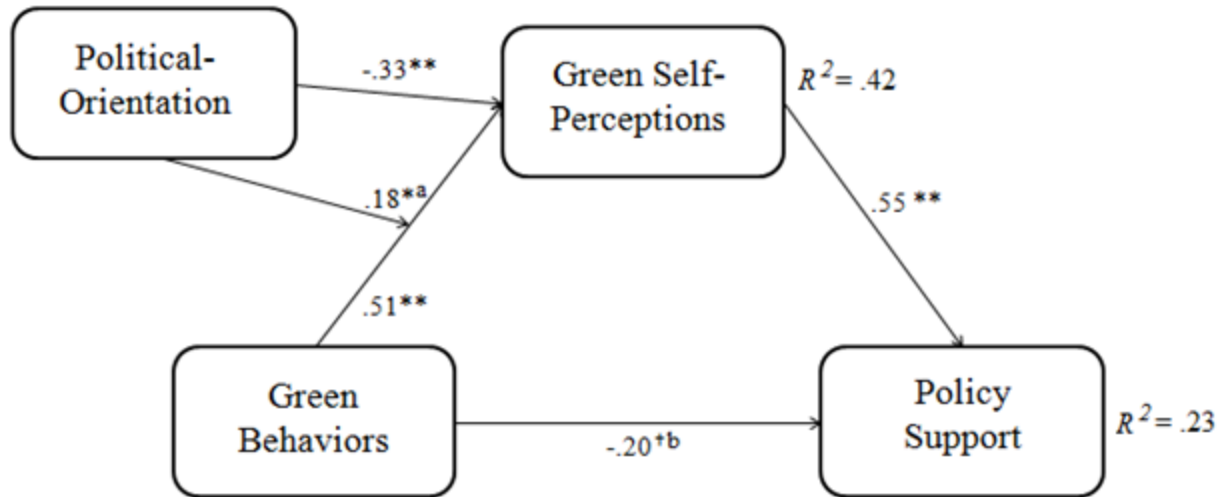


Figure 3. Study 1 - Model of conditional indirect effects: Green behaviors predicting support for emissions-reducing policies depending upon participants' political-orientation, with green self-perceptions serving as a mediator.

Note. Standardized coefficients are reported in the model.

^a Coefficient for green behaviors x political-orientation interaction

^b The indirect effect of green behaviors on support for emissions-reducing policies is significant for liberal-leaning participants (95% CI between 0.20 and 0.76), for moderate participants (95% CI between 0.32 and 1.11), and for conservative-leaning participants (95% CI between 0.42 and 1.72).

[†] $p < .10$. * $p < .05$. ** $p < .001$

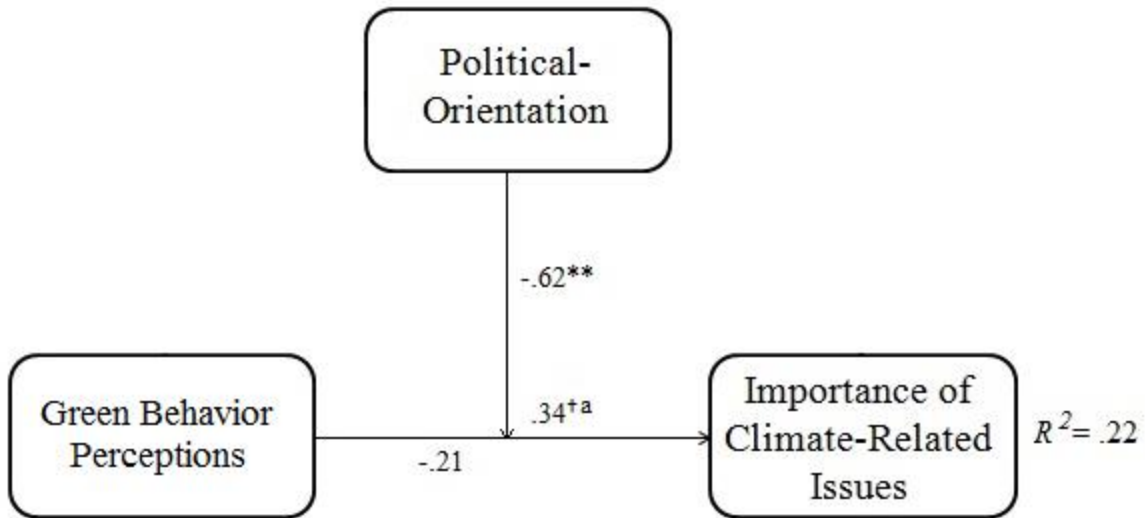


Figure 4. Study 2 - Model of conditional effects: Green behavior perceptions predicting the importance of climate-related issues depending upon participants' political-orientation.

Note. Standardized coefficients are reported in the model.

^a Coefficient for green behavior perceptions x political-orientation interaction

[†] p < .10 ** p < .001

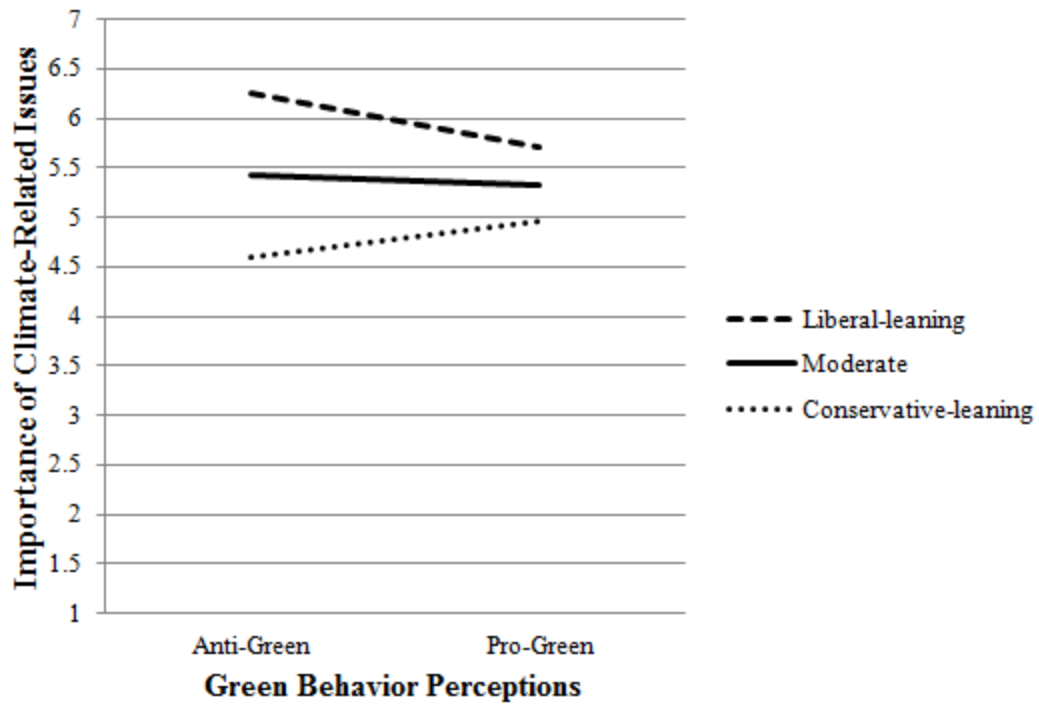


Figure 5. Study 2 - Conditional effects of the green behavior perceptions manipulation on ratings of the importance of climate-related issues for participants at different levels of political-orientation.

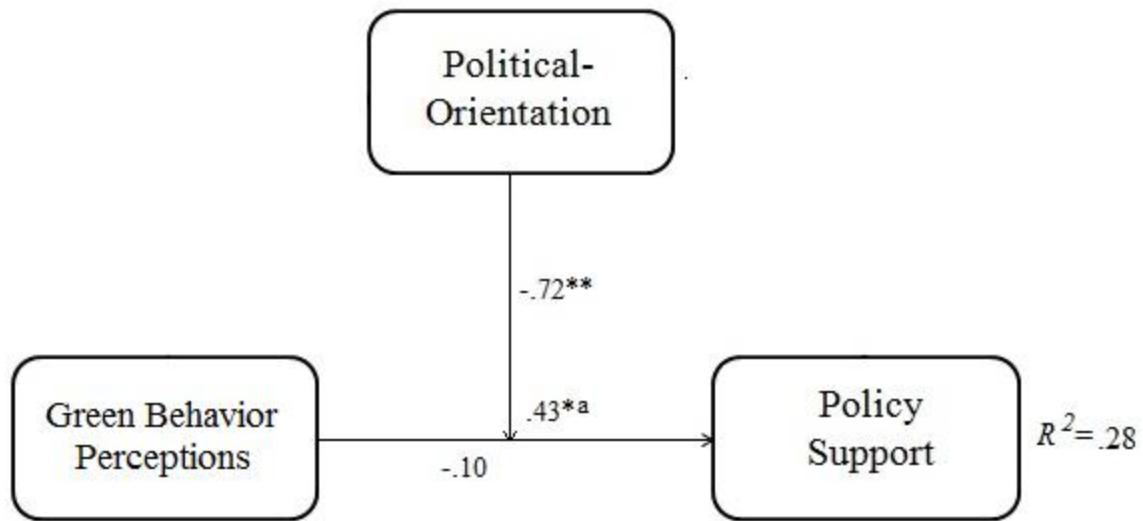


Figure 6. Study 2 - Model of conditional effects: Green behavior perceptions predicting support for emissions-reducing policies depending upon participants' political-orientation.

Note. Standardized coefficients are reported in the model.

^a Coefficient for green behavior perceptions x political-orientation interaction

* $p < .05$ ** $p < .001$

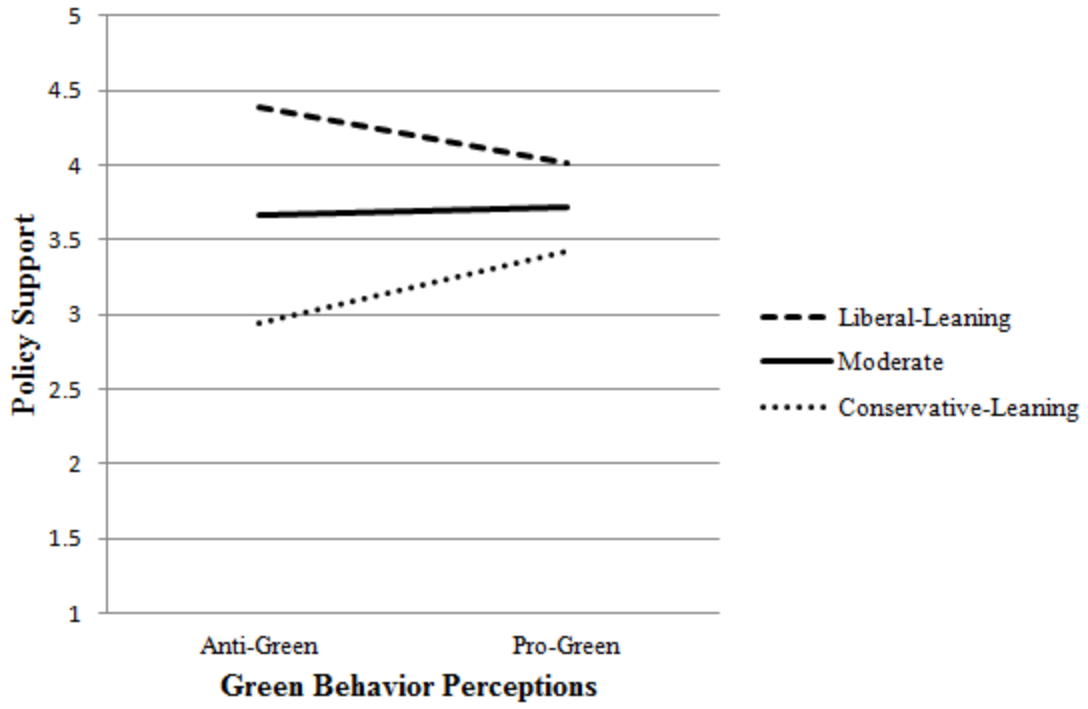


Figure 7. Study 2 - Conditional effects of the green behavior perceptions manipulation on support for emissions-reducing policies for participants at different levels of political-orientation.

Appendix

List of Behaviors Included in the Green Behaviors Scale from Study 1 and the Green Behavior Perceptions Manipulation from Study 2.

Green Behaviors:

Recycle aluminum, glass, plastic, and paper

Unplug appliances from the wall when they are not in use

Bring my own drinking container for coffee, water, or other beverages

Wash my clothing in cold water, instead of warm or hot

Bring my own bags to the grocery or other store

Purchase organic or local produce

Carpool or take public transportation rather than drive separately*

Use energy saving light bulbs in my house*

Anti-Green Behaviors:

Leave the lights on in rooms I'm not using

Take showers that last for longer than 10 minutes

Print using only one side of the paper

Let the water run while brushing my teeth or shaving

Purchase products with excess packaging

Drink bottled water

Leave my computer on when I am not using it*

Drive places I could easily walk or bike*

*Items removed from green behavior scale for Study 1