**WEB APPENDICES**

**Web Appendix A1: Pilot Study - Political Ideology and Government Regulation of different Consumption Domains**

One hundred Amazon Mechanical Turk workers (43% female; Mage = 37, SDage = 11.0) participated in the pilot study. We removed four non-native English speakers from the dataset because they may not fully understand the political ideologies in the United States (all results remain significant if we keep these participants in the dataset). This left us with a sample of 96 observations. Participants were asked to indicate to what extent they think government regulation of the following consumer behaviors would be supported by the political left (i.e., liberals) versus political right (i.e., conservatives): Regulation of mobile phone usage while driving, regulation of smoking tobacco products, regulation of drinking sugary sodas, regulation of smoking marijuana, regulation of texting and driving, regulation of eating unhealthy food, regulation of drinking alcohol, regulation of gun ownership, regulation of Hunting, regulation of smoking e-cigarettes, and regulation of smoking cigars (1 = Definitely political left (liberal), 4 = not a political issue, 7 = Definitely political right (conservative)). They then responded to demographics questions.

We conducted separate t tests for each item to investigate whether these regulations are perceived to be supported by liberal or conservative political ideology (i.e., whether the mean for each item is different from the mid-point of the scale). The results showed that regulations of mobile phone usage while driving (*M* = 4.26, *SD* = 1.22, *t*(95) = 2.10, *p* = .039), texting and driving (*M* = 4.33, *SD* = 1.23, *t*(95) = 2.66, *p* = .0092), drinking alcohol (*M* = 4.36, *SD* = 1.31, *t*(95) = 2.72, *p* = .0078), and smoking marijuana (*M* = 4.73, *SD* = 1.87, *t*(95) = 3.83, *p* = .0002) are perceived to be supported by the political right (conservatives), while regulation of drinking sugary sodas (*M* = 3.37, *SD* = 1.74, *t*(95) = -3.33, *p* = .0012), gun ownership (*M* = 3.36, *SD* = 2.31, *t*(95) = -2.70, *p* = .0083), and hunting (*M* = 3.40, *SD* = 2.16, *t*(95) = -2.74, *p* <= .0073) are perceived to be supported by the political left (liberals). Further, regulation of eating unhealthy food (*M* = 3.70, *SD* = 1.64, *t*(95) = -1.81, *p* = .074) is marginally perceived to be supported by the political left (liberals). Finally, regulations of smoking cigars (*M* = 4.16, *SD* = 1.35, *t*(95) = 1.14, *p* = .26), smoking tobacco (*M* = 4.17, *SD* = 1.60, *t*(95) = 1.02, *p* = .31), and smoking e-cigarettes (*M* = 4.11, *SD* = 1.45, *t*(95) = .77, *p* = .44) are not perceived as political issues.

Results from the pretest indicate that government regulations of various consumption domains may be aligned with political leanings, which could affect the way that liberals or conservatives react to restrictions or warning labels in those domains. Of the consumption regulations we used in our studies reported in the paper, one is perceived to be supported by conservatives (mobile phone usage / texting while driving, studies 1 and 2), one is perceived to be marginally supported by liberals (unhealthy food consumption, study 3), and one is not perceived to be a political issue (smoking e-cigarettes, study 4).

**Web Appendix A2: Pilot Study - Political Ideology and Domains of Consumption**

One hundred and one Amazon Mechanical Turk workers (37% female; *M*age = 35, *SD*age = 9.0) participated in the pilot study. They were asked to indicate to what extent they think the following behaviors relate to the political left (i.e., liberals) versus political right (i.e., conservatives): eating unhealthy food, smoking tobacco products, smoking marijuana, drinking sugary sodas, texting and driving, mobile phone usage while driving, drinking alcohol, gun ownership, hunting, smoking e-cigarettes, smoking cigars (1 = Definitely political left (liberal), 4 = not a political issue, 7 = Definitely political right (conservative)). They then responded to demographics questions. We conducted separate t tests for each item to investigate whether these behaviors are associated with liberal or conservative political ideology (i.e., whether the mean for each item is different from the mid-point of the scale). The results showed that gun ownership (*M* = 5.65, *SD* = 1.60, *t*(100) = 10.37, *p* < .0001), hunting (*M* = 5.22, *SD* = 1.63, *t*(100) = 7.49, *p* < .0001), and smoking cigars (*M* = 4.27, *SD* = 1.26, *t*(100) = 2.13, *p* = .036) are significantly associated with the political right, while smoking marijuana (*M* = 2.84, *SD* = 1.54, *t*(100) = -7.55, *p* < .0001) is significantly associated with the political left. Further, eating unhealthy food (*M* = 3.90, *SD* = 1.29, *t*(100) = -.77, *p* = .44), smoking tobacco (*M* = 4.08, *SD* = 1.31, *t*(100) = .61, *p* = .54), drinking sugary sodas (*M* = 4.03, *SD* = 1.40, *t*(100) = .21, *p* = .83), texting and driving (*M* = 3.86, *SD* = 1.14, *t*(100) = -1.22, *p* = .22), mobile phone usage while driving (*M* = 3.88, *SD* = 1.13, *t*(100) = -1.06, *p* = .29), drinking alcohol (*M* = 4.09, *SD* = 1.21, *t*(100) = .74, *p* = .46), and smoking e-cigarettes (*M* = 3.80, *SD* = 1.34, *t*(100) = -1.48, *p* = .14) are not perceived as political issues.

**Pilot study (with college students):**

One hundred and ninety-four undergraduates (62% female; *M*age = 21, *SD*age = 1.5) from a large American university participated in the pilot study. They were asked to indicate to what extent they think the following behaviors relate to the political left (i.e., liberals) versus political right (i.e., conservatives): eating unhealthy food, smoking tobacco products, smoking marijuana, drinking sugary sodas, texting and driving, mobile phone usage while driving, drinking alcohol, gun ownership, hunting, smoking e-cigarettes, smoking cigars (1 = Definitely political left (liberal), 4 = not a political issue, 7 = Definitely political right (conservative)). They then responded to demographics questions. We conducted separate t tests for each item to investigate whether these behaviors are associated with liberal or conservative political ideology (i.e., whether the mean for each item is different from the mid-point of the scale). The results showed that smoking tobacco (*M* = 4.25, *SD* = 1.22, *t*(193) = 2.89, *p* < .01), drinking alcohol (*M* = 4.14, *SD* = .89, *t*(193) = 2.25, *p* = .026), gun ownership (*M* = 5.87, *SD* = 1.56, *t*(193) = 16.67, *p* < .0001), hunting (*M* = 5.69, *SD* = 1.44, *t*(193) = 16.31, *p* < .0001), and smoking cigars (*M* = 4.51, *SD* = 1.16, *t*(193) = 6.06, *p* < .0001) are significantly associated with the political right, while smoking marijuana (*M* = 2.60, *SD* = 1.39, *t*(193) = -14.05, *p* < .0001) and smoking e-cigarettes (*M* = 3.81, *SD* = 1.18, *t*(193) = -2.20, *p* < .029) are significantly associated with the political left. Further, eating unhealthy food (*M* = 4.07, *SD* = .93, *t*(193) = 1.08, *p* = .28), drinking sugary sodas (*M* = 4.07, *SD* = .84, *t*(193) = 1.20, *p* = .23), texting and driving (*M* = 4.00, *SD* = .87, *t*(193) = .00, *p* = 1.00), and mobile phone usage while driving (*M* = 3.93, *SD* = .87, *t*(193) = -1.07, *p* = .28) are not perceived as political issues.

**Web Appendix B1: Variable Operationalization and Data Sources**

|  |  |  |
| --- | --- | --- |
| Variable | Operationalization | Data Source |
| UHV | Unique Hourly Visits to the telecom operator's website that are originating from a mobile device | Telecom Partner |
| Conservatism | The difference between votes obtained by Mr. Donald Trump and Mrs. Hillary Clinton within each county in the 2016 presidential election | Politico |
| Cars | The number of cars in a given county in California | U.S Census |
| Trucks | The number of trucks in a given county in California | U.S Census |
| Commute Time | The average commute time for an individual living in a given county in California | U.S Census |
| Rush Hour | A binary variable capturing whether (=1) or not (=0) a given hour in a day is a rush hour. For the purpose of this study, we define 7 am - 9 am, 11 am - 1 pm and 4 pm - 6 pm as rush hours. | Self-Coded |
| Mobile | A binary variable capturing whether the unique hourly visits are from a mobile device (=1) or from a desktop (=0) | Telecom Partner |

**Web Appendix B2: Correlations and Descriptive Statistics**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | UHV | 1.000 |  |  |  |  |  |
| 2 | Conservatism | -0.723 | 1.000 |  |  |  |  |
| 3 | Rush Hour | 0.032 | 0.000 | 1.000 |  |  |  |
| 4 | Cars | 0.734 | -0.900 | 0.000 | 1.000 |  |  |
| 5 | Trucks | 0.699 | -0.825 | 0.000 | 0.980 | 1.000 |  |
| 6 | Commute Time | 0.201 | -0.250 | 0.000 | 0.263 | 0.273 | 1.000 |
|  | Mean | 251.959 | -59434.050 | 0.375 | 420654.500 | 96768.470 | 24.516 |
|  | SD | 793.187 | 181686.400 | 0.484 | 918570.100 | 164296.900 | 4.719 |
|  | Min | 0.000 | -1273485.000 | 0.000 | 2525.000 | 1121.000 | 14.200 |
|  | Max | 13294.000 | 32683.000 | 1.000 | 6293639.000 | 1075340.000 | 35.500 |

Note: All correlations in the table are significant at the 95% level. Data includes mobile as well as desktop visits.

**Web Appendix B3: A Note on Experimental Design and Subject Matching in Treatment and Control Conditions**

It is worthwhile to note that we use the prior year’s data from the same county as the control to set the baseline and help account for any month specific unobservable effects in the treatment condition. Typically, in quasi-experimental analysis, it is recommended that subjects within the control condition be distinct from, yet identical to, corresponding subjects in the treatment condition (Goldfarb and Tucker 2014; Shadish, Cook and Campbell, 2002). While it is easy to achieve this criterion in controlled experimental conditions where researchers have complete control over subject identification, we are unable to obtain unique hourly visits from other states within the U.S. where the county composition matched precisely with those in California. Specifically, our collaborating firm started tracking website analytics only in some states in the U.S. since 2015. Consequently, we do not have December 2015 and January 2016 data pertaining to unique hourly visits for other states that are similar in size to California (e.g., Texas). Moreover, while we have December 2016 and January 2017 data for states similar in size to California (e.g., New York, Texas), we were unable to obtain satisfactory match between counties in treatment (i.e., California) and control (i.e., New York, Texas) groups, even after using a multitude of publicly available socio-economic and political indicators. Estimating the model with poorly matched subjects within control and treatment conditions will result in biased treatment effects due to incorrect baseline effects (Shadish, Cook and Campbell 2002, p. 120).

Consequently, to alleviate this issue, prior literature prescribes using the same subject’s information from one of the prior periods as a reasonable control, provided the researchers are able to rule out any confounding events that may have influenced the treatment effects (Shadish, Cook and Campbell 2002, p. 151). Because we use data from 58 counties, there is sufficient cross-sectional variation to subdue any unknown exogenous event affecting mobile usage in any one county within California. Additionally, we made reasonable effort to rule out *history* as a potential internal validity threat. Specifically, events that occur concomitantly with the treatment can influence the treatment’s effect. For instance, an increased adoption of promotion and marketing campaigns in January of 2017 within small counties could potentially explain the increase in mobile usage within those counties. However, in-depth conversations with marketing executives and follow-up conversations with data analysts revealed that the number of marketing campaigns administered within each county in January of 2017 is largely identical to those administered in January of 2016. This reasonably eliminates any observable correlates of the treatment emanating from the firm. However, because there could be a multitude of other unobservable events that may have concurrently occurred with the treatment, our follow-up experiments, which were performed in a controlled lab setting, will help alleviate any remaining concerns and add to the robustness of our findings.

Lastly, as Republicans won the election in 2016, there could be concerns about increased mobile usage by the Republicans in California driving the effects. However, because both time periods within the treatment condition (i.e., December 2016 and January 2017) were after the election results were known to the consumers, the effect of election results on mobile phone usage post treatment in January of 2017 is diminished.

**Web Appendix B4: Results with Shorter Rush Hour Definitions**

Table 1a: The Effect of the Enactment of Mobile Phone Usage Law on Unique Hourly Mobile Visit during the Rush Hour and Weekdays (***Rush Hours = 7am, 8am, 11am, 12pm, 4pm, 5pm***)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Model 1 | Model 2 | Model 3 | Model 4 |
|  | Poisson | Poisson | Negative Binomial | Negative Binomial |
|  | Estimate | Pr > |t| | Estimate | Pr > |t| | Estimate | Pr > |t| | Estimate | Pr > |t| |
| Intercept ($α\_{0}$) | 1.131 | 0.000 | 1.446 | 0.000 | 2.516 | 0.000 | 2.473 | 0.000 |
| Conservatism ($α\_{1}$) | -0.002 | 0.000 | -1.195 | 0.000 | -0.703 | 0.000 | -0.969 | 0.000 |
| After ($α\_{2}$) | 0.236 | 0.000 | 0.225 | 0.000 | 0.099 | 0.000 | 0.184 | 0.000 |
| Treatment ($α\_{3}$) | 0.496 | 0.000 | 0.498 | 0.000 | 0.178 | 0.000 | 0.318 | 0.000 |
| Conservatism \* After ($α\_{4}$) | -0.010 | 0.000 | -0.012 | 0.000 | -0.018 | 0.000 | -0.015 | 0.000 |
| Conservatism \* Treatment ($α\_{5}$) | 0.002 | 0.000 | 0.003 | 0.000 | -0.019 | 0.000 | -0.012 | 0.000 |
| After \* Treatment ($α\_{6}$) | -0.201 | 0.000 | -0.177 | 0.000 | -0.101 | 0.000 | -0.120 | 0.000 |
| Conservatism \* After \* Treatment ($α\_{7}$) | 0.021 | 0.000 | 0.026 | 0.000 | 0.028 | 0.000 | 0.030 | 0.000 |
| Cars ($α\_{8}$) | 0.000 | 0.000 | - | 0.000 | 0.000 | - |
| Trucks ($α\_{9}$) | 0.000 | 0.000 | - | 0.000 | 0.000 | - |
| Commute Time ($α\_{10}$) | 0.096 | 0.000 | - | 0.050 | 0.000 | - |
| Fixed Effects |  |  |  |  |  |  |  |  |
| Hour Dummies (9 Rush Hours) | ✓ | ✓ | ✓ | ✓ |
| Day Dummies (5 Weekdays) | ✓ | ✓ | ✓ | ✓ |
| County Dummies (58 Counties) |  | ✓ |  | ✓ |
| N | 30,624 | 30,624 | 30,624 | 30,624 |

Note: For ease of interpretation of results, we rescaled the Conservatism variable by dividing it by hundred thousand

Table 1b: Post Treatment Effects between Mobile and Desktop Visits during the Rush Hour and Weekdays (***Rush Hours = 7am, 8am, 11am, 12pm, 4pm, 5pm***)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Model 1 | Model 2 | Model 3 | Model 4 |
|  | Poisson | Poisson | Negative Binomial | Negative Binomial |
|  | Estimate | Pr > |t| | Estimate | Pr > |t| | Estimate | Pr > |t| | Estimate | Pr > |t| |
| Intercept ($γ\_{0}$) | 1.347 | 0.000 | 1.067 | 0.000 | 2.569 | 0.000 | 2.368 | 0.000 |
| Conservatism ($γ\_{1}$) | 0.104 | 0.000 | -1.152 | 0.000 | -0.414 | 0.000 | -0.841 | 0.000 |
| Mobile ($γ\_{2}$) | 0.698 | 0.000 | 0.660 | 0.000 | 0.398 | 0.000 | 0.526 | 0.000 |
| After ($γ\_{3}$) | -0.025 | 0.000 | -0.028 | 0.000 | -0.018 | 0.291 | -0.025 | 0.036 |
| Conservatism \* After ($γ\_{4}$) | -0.003 | 0.000 | -0.003 | 0.000 | -0.001 | 0.883 | -0.003 | 0.225 |
| Conservatism \* Mobile ($γ\_{5}$) | -0.028 | 0.000 | -0.036 | 0.000 | -0.057 | 0.000 | -0.053 | 0.000 |
| After\*Mobile ($γ\_{6}$) | 0.059 | 0.000 | 0.077 | 0.000 | 0.014 | 0.523 | 0.057 | 0.000 |
| Conservatism \* After \* Mobile ($γ\_{7}$) | 0.014 | 0.000 | 0.018 | 0.000 | 0.010 | 0.028 | 0.017 | 0.000 |
| Cars ($γ\_{8}$) | 0.000 | 0.000 | - | 0.000 | 0.000 | - |
| Trucks ($γ\_{9}$) | 0.000 | 0.000 | - | 0.000 | 0.000 | - |
| Commute Time ($γ\_{10}$) | 0.080 | 0.000 | - | 0.044 | 0.000 | - |
| Fixed Effects |  |  |  |  |  |  |  |  |
| Hour Dummies (9 Rush Hours) | ✓ | ✓ | ✓ | ✓ |
| Day Dummies (5 Weekdays) | ✓ | ✓ | ✓ | ✓ |
| County Dummies (58 Counties) |  | ✓ |  | ✓ |
| N | 30,624 | 30,624 | 30,624 | 30,624 |

Note: For ease of interpretation of results, we rescaled the Conservatism variable by dividing it by hundred thousand

**Web Appendix C: Further Analyses related to the role of party leadership (Study 2)**

To further investigate the validity of an explanation based on reactance to party leadership, we created a new variable: match between political ideology and perceived state government (1 = for those who support the party that is running the state government, -1 = for those who support a party that is not running the state government). In order to create this variable, we used the political affiliation measure (which party the participant is most closely identify with, Republican or Democrat) as our political ideology measure (as described earlier). Since some participants did not identify themselves with either party (n = 22), and some participants did not select one of these two parties as governing the state (n = 20), we excluded 40 participants from this analysis (two participants did not identify themselves with either party and did not select one of these parties as governing the state they currently reside in).

According to an explanation based on animosity toward a rival political party, conservatives’ reactance to the government regulations might stem from the fact that a liberal state government (i.e., Democratic Party) sponsors the regulation. If this explanation is valid, the effects previously documented should not hold when the state is governed by conservatives (i.e., the Republican Party). However, an ANOVA with government and match on mobile phone usage intentions revealed no significant main effects or interaction (all *p* > .75). These results do not change when we use only the state government condition (i.e., excluding the federal government condition) in the analysis. Specifically, there is no effect of match on mobile phone usage intentions in the state government condition (*p* = .91).

Finally, we used the 2016 presidential election results as a proxy for the conservativeness of the state participants reside in (i.e., blue states as liberal, red states as conservative, purple states [n = 5] removed from the dataset; this variable was highly correlated with the state government variable, *r* = .57). Conducting the same ANOVA (i.e., source and match on phone usage intentions) using this variable as the match between the political affiliation of the participant and the state government showed no significant effects (all *p* > .10). These results suggest that party leadership is unlikely to drive the effects observed in our studies.

**Web Appendix D: Additional Study (see the discussion to Study 3)**

***Method***

One-hundred and sixty-one regular soda drinkers (i.e., only individuals that drink at least one soda per day were allowed to participate in the study) in the United States were paid to participate in an online study conducted on Amazon’s Mechanical Turk (40% female). All participants were native English speakers from the United States.

In order to investigate the effect of the source of the warning on actual behavior, this study consists of two distinct phases: 1) exposure to the stimulus and stimulus evaluation, 2) a follow-up study approximately two days after the initial study for measuring soda consumption after participation in the first phase of the study. In the first session, participants were presented with a shopping scenario in which they imagined that they are at a grocery store. This study varied the source of the warning label (government source vs. business source). In the government condition participants were informed that, “the Food and Drug Administration (FDA), which is a government-run organization, is considering new warning labels that highlight the health consequences associated with drinking sugary beverages”; whereas in the business condition the introduction paragraph stated, “the American Beverage Association (ABA), a trade association for America's non-alcoholic beverage industry is considering new warning labels that highlight the health consequences associated with drinking sugary beverages.” Participants in both conditions were shown a generic soda can with a warning on the side that stated, “SAFETY WARNING: Drinking beverages with added sugar(s) contributes to obesity, diabetes, and tooth decay”. In addition, the FDA logo (government condition), or ABA logo (business condition) was also on the warning. After viewing the soda can, participants were asked, “How likely are you to purchase this soda?” (1 = very unlikely, 7 = very likely) and “How much do you like this soda?” (1 = not at all, 7 = very much).

In order to understand if participants view the warning label on the food package as threatening we included a three-item seven-point scale ranging from strongly disagree to strongly agree that asks for the participants’ opinion of the warning labels (e.g., “Warning labels on beverages threaten my freedom to choose”; α = .76).

Next, participants completed a 4-item political ideology scale by reporting their attitudes concerning Republicans, Democrats (reverse-coded), increased military spending, socialized medicine (reverse-coded) (-5: very unfavorable, 5: very favorable; α = .76). They also reported the extent to which they currently feel happy, sad, angry, bored, hungry, and thirsty (1 = not at all, 7 = very much). Finally, they provided relevant demographic information and indicated willingness to participate in a follow-up study.

Approximately two days after the first phase of the study, those who were willing to participate in a follow-up survey (n = 152) were contacted to participate in a follow-up study (they were provided the name of the study and a code to be entered in the mTurk website). 77% of those contacted took part in this phase of the study (n = 117). They were asked how many sodas (cans, bottles, or glasses) they consumed yesterday (i.e., the day after they participated in the study).

***Results and Discussion***

We contrast-coded the source condition (FDA = 1, ABA = -1) and mean-centered political ideology (*M* = 5.38, *SD* = 2.38). Preliminary analyses showed that the interactive effect of source and political ideology on hunger feelings was significant (β = .15, *t*(157) = 2.67, *p* < .01; none of the other feelings showed any significant effects). Therefore, we used feelings of hunger as a covariate in the analyses for the first phase of the study (i.e., for the attitude and purchase intention dependent variables, not for soda consumption and mediation analyses) to control for it (it was significant as a covariate in the model). We also report the results without hunger as a covariate below.

A regression of purchase intentions on source and political ideology revealed a non-significant two-way interaction (β = .054, *t*(156) = .96, *p* = .34). A regression of attitude toward the soda on source and political ideology showed a marginally significant two-way interaction (β = .094, *t*(156) = 1.74, *p* = .084). Follow-up analyses revealed that, consistent with study 3, when the FDA was the source of the warning label, as participants’ conservatism increased, their attitude toward the soda became significantly more positive (β = .23, *t*(82) = 2.86, *p* < .01), and their intention to purchase the soda marginally increased (β = .13, *t*(82) = 1.66, *p* = .10); whereas, political ideology did not show any significant effects on attitude toward the soda and purchase intentions when ABA was the source of the warning label (β = .036, *t*(77) = .48, *p* = .64; β = .027, *t*(77) = .34, *p* = .73, respectively).

*Soda consumption*. Next, we analyzed the data from the follow-up study. A regression of reported soda consumption (M = 2.80, SD = 1.51, minimum =1, maximum = 7) on political ideology and source revealed a significant interaction effect (β = .12, *t*(116) = 2.21, *p* = .029). To account for the count nature of our dependent variable, we also used Poisson regression technique, using robust standard errors to account for heteroskedastic error terms. The results showed a significant interaction of political ideology and source (β = .044, *z* = 2.58, *p* = .01). Follow-up analyses revealed that when the FDA was the source of the warning label, as participants’ conservatism increased so did their soda consumption (β = .17, *t*(57) = 2.24, *p* = .029); whereas, political ideology did not show any significant effects on soda consumption when ABA was the source of the warning label (β = -.075, *t*(58) = -.94, *p* = .35).

Further, floodlight analysis showed only one significance region. For those who are relatively more conservative, (i.e., those who were 2.19 SD above the mean or higher on the political ideology scale; 4.27% of respondents), there was a positive effect of condition such that soda consumption was greater in the FDA condition versus the control condition (β*JN* = .62, *p =* .05).

*The mediating role of threat perceptions.* In order to investigate the role of perceived threat on reactance behavior among conservatives and liberals we employed a bootstrapping approach to derive confidence intervals using the SAS-macro syntax developed by Preacher and Hayes (2004) with 1,000 resamples and used model 7 Hayes (2013). The model provided the following output. First, a regression of threat perceptions on political ideology and source showed a significant main effect of political ideology (β = .14, *t*(116) = 2.65, *p* < .01) and a marginally significant interaction (β = .098, *t*(116) = 1.81, *p* = .073). Second, a regression of soda consumption on threat perceptions and source showed a marginally significant main effect of threat perceptions (β = .17, *t*(116) = 1.75, *p* = .083). Finally, while the direct effect of source on reported soda consumption was not significant (β = -.025, *t*(116) = -.18, *p* = .86), source had a significant conditional indirect effect on reported soda consumption via threat perceptions only among conservatives (only when political ideology takes values greater than 7.88; estimated coefficient = .069, 95% confidence interval [CI] exclusive of zero [.0006, .2201]).

**Results without the hunger covariate in the model:**

Regression of purchase intentions on source and political ideology:

Main effect of source: β = .084, *t*(157) = .64, *p* = .52

Main effect of political ideology: β = .065, *t*(157) = 1.17, *p* = .24

Interaction of source and political ideology: β = .030, *t*(157) = .55, *p* = .059

Regression of attitude toward the soda on source and political ideology:

Main effect of source: β = .13, *t*(157) = 1.01, *p* = .32

Main effect of political ideology: β = .14, *t*(157) = 2.53, *p* = .012

Interaction of source and political ideology: β = .076, *t*(157) = 1.41, *p* = .16

**Web Appendix E: Pretest for Study 4**

We conducted a pretest to ensure that the message type manipulation has worked as intended. To that end, 151 individuals (56% female; *M*age = 35.6, *SD*age = 11.0) in the United States were paid to participate in an online survey conducted on Amazon Mechanical Turk. Similar to the main study, we removed two non-native English speakers from the dataset. Participants were randomly assigned to either warning or notification condition and exposed to the same stimuli (i.e., e-cigarette advertisement with an FDA message) as in the main study. After viewing the advertisement, they were asked “How much do you think that your freedom is restricted after seeing this warning/notification?”, and “How much do you feel your freedom has been threatened after seeing this notification?” (1 = not at all, 7 = very much; *r* = .84). We averaged responses to these two measures to create our dependent variable, threat perceptions. Then, participants were asked “Have you ever tried e-cigarettes?” (Yes/No/Not sure). Finally, we measured political ideology with the same measure used in the main study and collected demographic measures.

We contrast-coded the message type condition (warning = 1, notification = -1) and mean-centered political ideology (*M* = 5.06, *SD* = 2.23). A regression analysis with message type and political ideology as the independent variables and threat perceptions as the dependent variable showed a main effect of message type (β = .41, *t*(148) = 2.63, *p* = .0094), indicating that warning message increased threat perceptions, a main effect of political ideology (β = .22, *t*(148) = 3.14, *p* = .0020), indicating that conservative participants were more likely to perceive threat from the advertisement, and a marginally significant two-way interaction between message type and political ideology (β = .13, *t*(148) = 1.80, *p* = .075).

 To explore the nature of the interaction, we first investigated whether political ideology has a significant effect in the warning condition. Regression analyses showed that, in the warning condition, political ideology had a significant positive effect on threat perceptions (β = .34, *t*(148) = 3.56, *p* = .0006), such that as participants’ conservatism increased, they viewed the message more threatening. In the notification condition, however, there was no effect of political ideology on threat perceptions (β = .094, *t*(148) = .94, *p* = .35).

To further explore the significant interaction, we used the Johnson-Neyman (JN) floodlight analysis technique (Johnson and Neyman 1936; Spiller et al. 2013) to investigate how conservatives versus liberals react to the message. One significance region emerged. For those who are relatively more conservative, (i.e., those who were .31 SD below the mean or higher on the political ideology scale; 63.09% of respondents), there was a positive effect of condition such that threat perceptions were greater in the warning condition versus the notification condition (β*JN* = .32, *p =* .05).

We then used only those participants who indicated that they have tried e-cigarettes (n = 79). A regression analysis with message type and political ideology as the independent variables and threat perceptions as the dependent variable showed a main effect of political ideology (β = .25, *t*(78) = 2.29, *p* = .025), indicating that conservative participants were more likely to perceive threat from the advertisement, and a significant two-way interaction between message type and political ideology (β = .24, *t*(78) = 2.20, *p* = .031).

To explore the nature of the interaction, we first investigated whether political ideology has a significant effect in the warning condition. Regression analyses showed that, in the warning condition, political ideology had a significant positive effect on threat perceptions (β = .48, *t*(78) = 3.52, *p* = .0011), such that as participants’ conservatism increased, they viewed the message more threatening. In the notification condition, however, there was no effect of political ideology on threat perceptions (β = .01, *t*(78) = .06, *p* = .96).

To further explore the significant interaction, we used the Johnson-Neyman (JN) floodlight analysis technique (Johnson and Neyman 1936; Spiller et al. 2013) to investigate how conservatives versus liberals react to the message. One significance region emerged. For those who are relatively more conservative, (i.e., those who were .16 SD above the mean or higher on the political ideology scale; 62.03% of respondents), there was a positive effect of condition such that threat perceptions were greater in the warning condition versus the notification condition (β*JN* = .32, *p =* .05).

**Web Appendix F: Additional Analyses on the Role of the Frequency of E-cigarette Usage in Study 4**

In order to investigate whether the effect of message type varies with the frequency of e-cigarette usage, first, we mean-centered the measure of frequency of usage (M = 3.34, SD = 2.13). Then, we regressed quitting intentions on message type, political ideology, and frequency of usage, all two-way interactions, and the three-way interaction. The results revealed a significant main effect of political ideology (β = .33, *t*(99) = 2.86, *p* < .01), a significant two-way interaction between frequency of usage and message type (β = -.32, *t*(99) = -2.47, *p* = .015), and a marginally significant three-way interaction (β = -.087, *t*(99) = -1.76, *p* = .081).

To explore the significant two-way interaction, we used the Johnson-Neyman (JN) floodlight analysis technique (Johnson and Neyman 1936; Spiller et al. 2013) to investigate how frequent and infrequent users of e-cigarettes react to the message. Two significance regions emerged. For infrequent users, (i.e., those who were .96 SD below the mean or lower on the frequency of usage scale; 36% of respondents), there was a positive effect of condition such that quitting intentions were greater in the warning condition versus the notification condition (β*JN* = .69, *p =* .05). On the other hand, for frequent users, (i.e., those who were .53 SD above the mean or higher on the frequency of usage scale; 38% of respondents), there was a negative effect of condition such that quitting intentions were lower in the warning condition versus the notification condition (β*JN* = -.56, *p =* .05). As quitting intentions is a more meaningful variable for frequent users of e-cigarettes, these results point to the importance of using the right message type: while warning messages may backfire, notification messages appear to be more effective in nudging users of e-cigarettes toward quitting (see Figure 1 below).

Figure 1: Intentions to Quit as a Function of Frequency of Usage in the Notification and Warning Conditions

More important to our investigation of the role of political ideology in this context, we also explored the nature of the three-way interaction by using the Johnson-Neyman (JN) floodlight analysis technique in each message type condition. There were no significant effects of frequency of usage or political ideology on quitting intentions in the warning condition (all p > .21). In the notification condition, on the other hand, there was a positive effect of political ideology on quitting intentions for those who are frequent users of e-cigarettes, (i.e., those who were .59 SD below the mean or higher on frequency of usage scale; 58.7% of respondents; (βJN = .27, p = .05), indicating that as participants’ conservatism increased, a notification message from the FDA is likely to enhance quitting intentions of those who relatively frequently use e-cigarettes (see Figure 2 below).

Figure 2: Intentions to Quit as a Function of Political Ideology and Frequency of Usage in the Notification Condition



**Web Appendix G: Additional Study on Regulations of Smoking Marijuana (vs. Tobacco)**

This study investigates the role of political ideology in consumers’ reactions to warning labels that are designed by a governmental agency (i.e., the FDA) in a domain of regulation that is perceived to be supported by conservatives (i.e., smoking marijuana) as compared to a domain of regulation that is politically neutral (i.e., smoking tobacco) based on the pilot study described in Web Appendix A1. We used graphic health warnings on cigarette packages as the stimuli for this study as such warnings are currently in use in Europe, Canada, and Australia and have been proposed to be used in the U.S., and created a similar warning sign for the marijuana condition. We expect an FDA warning about smoking marijuana (tobacco) will lead to an effect opposite to the one intended by the warning label as conservatism decreases (increases).

***Method***

Six hundred and eighty-one undergraduates (33% female, *M*age = 20, *SD*age = 1.44) received partial course credit to participate in the study. We removed 187 non-native English speakers from the dataset because they may not fully understand the political ideologies in the United States (all effects remain significant when these participants are included in the dataset). This left us with a sample of 484 observations. This study varied the warning sign (tobacco vs. marijuana smoking) between subjects. In the tobacco (marijuana) condition, participants read the following information: “Imagine that you are at a bar and notice some flyers on the counter. The flyer informs you that the Food and Drug Administration (FDA), which is a government-run organization, has issued new warning labels that highlight the health risks of smoking tobacco (marijuana). You see one of these warnings on the flyer (see below)”. After viewing each health warning (see appendix for warning labels in each condition), participants were asked: “How much does the warning sign make you negatively think about smoking cigarettes (marijuana)?” (1 = not at all negatively, 7 = very negatively), “How unhealthy do you think smoking cigarettes (marijuana) is?” (1 = not at all unhealthy, 7 = very unhealthy), and “Given this warning, if an occasion to smoke cigarettes (marijuana) arises, how easy would it be for you to resist smoking?” (1 = not at all easy, 7 = very easy). We averaged participants’ responses to these questions to create a composite of negative perceptions of smoking (Cronbach’s α = .78). Next, we measured participants’ political ideology with the same political ideology scale that we used in our previous studies (Cronbach’s α = .88). Participants were then asked questions regarding general smoking behavior, including “Have you smoked 100 or more cigarettes in your lifetime?” (Yes, No), “Do you consider yourself a smoker?” (Yes, No). We used these measures to do further analyses on smokers.

***Results and Discussion***

We contrast-coded the warning label condition (marijuana = 1, tobacco = -1) and mean-centered political ideology (*M* = 5.39, *SD* = 2.33). A regression model with label and political ideology as the independent variables and negative perceptions of smoking as the dependent variable revealed a main effect of label (β = -1.18, *t*(483) = -20.34, *p* < .0001), and a significant two-way interaction between label and political ideology (β = .10, *t*(483) = 4.03, *p* < .0001). Further regression analyses showed that, in the tobacco condition, as conservatism increased, negative perceptions decreased (β = -.085, *t*(256) = -3.58, *p* < .001); whereas, in the marijuana condition, this effect was reversed such that as conservatism increased negative perceptions increased (β = .12, *t*(226) = 2.55, *p* = .012; see figure 5). The results regarding the tobacco condition were consistent with our previous findings (i.e., the FDA condition, in which a government agency warns smokers about the dangers of smoking, corresponds to the natural experiment in which the state government enacts a new law to deter mobile phone usage while driving). The results regarding the marijuana condition, on the other hand, demonstrate that conservatives are more likely to abide by a warning label from the FDA and reduce their consumption of a product when consuming the product is associated with liberal ideology.

We conducted further analyses using only those participants who consider themselves smokers (n = 32). The results of a similar regression mimicked the results above. Specifically, there was a main effect of label (β = -.70, *t*(31) = -2.61, *p* = .014), and a significant two-way interaction between label and political ideology (β = .33, *t*(31) = 2.60, *p* = .015). In the marijuana condition, as conservatism increased, negative perceptions marginally increased (β = .34, *t*(16) = 1.87, *p* = .081); whereas, in the tobacco condition, this effect was reversed such that as conservatism increased negative perceptions marginally decreased (β = -.32, *t*(14) = -1.80, *p* < .094). We attribute the marginal effects to the small sample size as the percentage of smokers in the full sample was low. Nevertheless, it is important to note that warning labels tend to have different, sometimes unintended, effects on smokers with different political ideologies.

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