

Promoting Climate Change Abatement Policies in the Face of Motivated Reasoning: Oneness With the Source and Attitude Generalization

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Building support for fighting climate change via public policy requires overcoming motivated resistance based on political identities. One solution is for sources, congenial to the audience's political orientation, to advocate such policies. This study explores explanations suggested by the self-concept model of cognitive dissonance and the extent to which attitude generalization effects can occur in this context, such that attitude change toward one policy produces attitude change toward similar policies. An online pretest/posttest experiment using a Qualtrics sample ($N = 518$) that varied the political affiliation of the source found support for the source-matching effect. Oneness with the source emerged as a predictor of attitude change. Attitude generalization was found among those who showed attitude change and those who showed boomerang for both related and unrelated attitudes. Some evidence is consistent with the role of oneness in attitude generalization.

Keywords: science communication, climate communication, motivated reasoning, persuasion, attitude generalization, lateral attitude change

The scientific consensus on climate change indicates that we need to adopt policies to substantially reduce our greenhouse gas emissions, or the Earth will not continue to support human life (Intergovernmental Panel on Climate Change, 2014). The community of science communication researchers has approached this issue from a variety of directions, such as tailoring messages to the audience's moral frameworks (Feinberg & Willer, 2013), using different language to describe the policy (Hardisty, Johnson, & Weber, 2010), or emphasizing the scientific consensus on the issues (Lewandowsky, Gignac, & Vaughan, 2012). But in our project, we attempted to make progress on two other related issues. The first is the extent to which motivated reasoning explains why people tend to accept information from sources that share their political identity, a source-matching effect. The second is the extent to which people respond to persuasive attempts supporting environmental policy proposals in a motivated reasoning context by changing related environmental policy attitudes either in addition to or instead of the targeted attitude (Glaser et al., 2015).

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This study makes several important contributions to theory. First, this study tests parts of the self-concept approach to motivated reasoning (Carpenter, 2019). Motivated reasoning is implicated in many areas of communication research, including health communication (van 't Riet & Ruiters, 2013), science communication (Kahan, 2010), political communication (Tetlock, 1989), and advertising (Lam, Ahearne, Hu, & Schillewaert, 2010). It is important to determine whether the self-concept approach can be used to explain and predict when motivated reasoning will occur so that efforts can be made to reduce motivated reasoning when it is dysfunctional. Thus, this study tests part of a model that is potentially applicable to many areas.

Furthermore, the extent to which attitude change on the topic of a persuasive message also produces attitude change on a related topic (generalization) or the extent to which a lack of attitude change on the focal topic produces attitude change on a related topic (displacement) is extremely important for understanding persuasive effects (Glaser et al., 2015). Most persuasion research focuses only on attitude change in the targeted attitude. However, if persuasive messages can be crafted that produce change in the desired direction on a variety of attitudes, such messages would be substantially more valuable than messages that produce change on only one attitude. There is some evidence that such change occurs in the climate change context (Cruz, 2019), but the extent to which such changes occur in contexts likely to spur motivated reasoning is unclear. Cruz speculated that although a source competence induction did not affect the attitude generalization effects she found, such effects may not be impervious to political identity source variation that might cause motivated reasoning.

Furthermore, the possibility of displacement is even more rarely explored in persuasion research. Displacement has the potential to explain why some persuasive messages that seem to have failed may have succeeded in other ways. There may be reason to expect that it will occur in a motivated reasoning context, whereas it has not often occurred in previous studies.

To develop hypotheses in these areas, we first review the self-concept approach to motivated reasoning and apply it to this context in order to develop hypotheses concerning the presence of motivated reasoning and potential explanations. We then examine the concepts of generalization and displacement to produce hypotheses for those processes in this context before integrating it all into a single model.

Motivated Reasoning

The approach to motivated reasoning taken in this article reflects Kahan's (2013) definition of motivated reasoning as "the tendency of people to conform assessments of information to some goal or end extrinsic to accuracy" (p. 408). The self-concept approach we take uses the synthesis of the self-concept approach to cognitive dissonance (Aronson, 1968; Rokeach, 1968) and ego-involvement (Sherif & Cantril, 1947) described in Carpenter's (2019) review of the motivated reasoning literature. The self-concept approach to motivated reasoning specifies that people process communication such as a persuasive message with the goal of accurately determining the best course of action or processing information with the goal of protecting important aspects of their self-concept (Carpenter, 2019). The methods of resisting attitude change can be used with any processing goal; motivated reasoning differs from an accuracy goal in the motive, not necessarily the method of cognitive processing. As Petty and Cacioppo (1986) noted in their discussion of the similar construct of biased processing, biased or unbiased processing is orthogonal to

peripheral or central processing. One can engage in biased processing using quick decision rules or complex considerations of the available evidence (see also Kahan, 2013).

For many people, their political affiliation is a key aspect of their self-concept. Tajfel and Turner (1986) noted that the groups to which people belong are particularly important aspects of our identities, a similar construct. Information that is considered political will be processed less critically if it appears to align with one's political party and more critically if it aligns with an opposition party. Ditto and colleagues' (2019) meta-analysis found that both U.S. Democrats and Republicans tend to be more likely to believe information that supports their political identity. In this case of motivated reasoning, people often want to believe claims that support the policies associated with their political alignment, regardless of the strength of the evidence and logic behind those claims, because those claims support their self-concept. Claims that are inconsistent with the policies supported by their political alignment are therefore inconsistent with their self-concept and are actively resisted to maintain a positive self-image. If your party is wrong about something, it implies that you are wrong for supporting it, and vice versa.

In the context of accepting anthropogenic climate change, Hornsey, Harris, Bain, and Fielding's (2016) meta-analysis found that political alignment was a strong predictor of acceptance beliefs. Self-identified Democratic Party supporters were more likely to accept the existence of human-caused climate change, and Republican Party members were less likely. Bolson, Palm, and Kingsland (2019) found that, among Americans, when a message supported climate change policies, Republicans were substantially more likely to support the proposals if the source was identified as a Republican. The self-concept approach to motivated reasoning (Carpenter, 2019) explains that these studies show that policies designed to reduce climate change are consistent with the self-concept of Democratic Party members and inconsistent with the self-concept of Republican Party members. The result is that Democratic Party members will be likely to support climate change abatement policies to support their self-concept, and Republicans will be likely to actively resist them in order to protect their self-concept.

The possibility that consistency with one's political party's policies is often more important than any particular policy suggests methods of changing the direction of motivated reasoning. Wolsko, Ariceaga, and Seiden (2016) found that, in general, when the source matched the audience's political alignment, the audience was more likely to accept the environmental protection that policies proposed. This finding suggests that using conservative sources to promote a climate change policy will cause Republican Party audience members to accept the climate change policy as consistent with their self-concept and therefore acceptable. A policy proposed by liberal sources will be perceived as an attack on their self-concept. Theoretically, the same process works with Democratic Party members, such that liberal sources will be persuasive and conservative sources will not, even if the overall goal of climate change abatement tends to be more associated with Democratic Party policy goals.

The current study sought to replicate this basic source-matching effect and explore an explanation of it. We chose as our target attitude a cap and trade policy proposing that the total amount of carbon dioxide emitted by U.S. industries would be capped at a certain amount. With this policy, businesses who need to emit carbon dioxide would need to apply for a permit to do so. If they are able to reduce their emissions through efficiency or using non-carbon-based energy, they could sell their permits to other companies in a regulated

exchange market. The proposal was likely to be plausible from either a conservative or a liberal source because it included the liberal goal of regulating greenhouse gas emissions, with the conservative mechanism of the free market. Our first hypothesis predicted that the source-matching effect would replicate, such that Democratic Party supporters would be more persuaded by a liberal source than would the Republican Party supporters, whereas the opposite would occur for a conservative source (H1).

Oneness With the Source

The ability of a source with a similar identity to persuade people to adopt policies that in other contexts they might find ego-threatening bears further explanation. Cialdini, Brown, Lewis, Luce, and Neuberg (1997) developed the concept of *oneness* in their efforts to understand altruistic helping behavior. They defined it as “a sense of shared, merged, or interconnected personal identities” (Cialdini et al., 1997, p. 483). Similarity is a broader construct that could include superficial aspects of the self, like apple preferences. Oneness is a narrower kind of similarity focused on core aspects of the self, such as identities and values.

This construct may be useful in understanding political identity source-matching effects. If a message source’s identity seems to be shared and merged with one’s own identity, the source message would have a lower likelihood of threatening one’s self-concept, because that self-concept is perceived to be shared. A source with which the audience feels oneness might successfully propose policies that would otherwise seem ego-threatening. A source that the audience feels shares its identity would also be more persuasive because it shows the audience that the proposal is not an attack on its “side,” but is actually consistent with the audience’s identity. Such a source would then help reduce motivated resistance to persuasion. Tropp and Wright (2001) describe a similar process when they note, “When individuals categorize themselves as group members, the ingroup becomes included in the self and individuals recognize the characteristics of the ingroup as representing part of themselves” (p. 586). Political orientation is a particularly important trait to increase or decrease the sense of oneness the audience feels with the source in the context of a public policy proposal because, as explained earlier, such proposals can easily threaten the political part of people’s self-concepts.

Therefore, we extend the preceding argument about motivated reasoning to oneness as a potential outcome of source matching. Specifically, we hypothesized that Democrats would have a stronger sense of oneness with a liberal source than would Republicans, whereas the opposite would occur for a conservative source (H2).

Lateral Attitude Change

Thus far, we have focused on processes that impact the direct effects of a message on a targeted attitude, but there is also reason to suspect that a message may affect other attitudes as well. Although it has not received substantial attention in the communication field, the possibility that persuasive messages might impact more than one attitude was proposed some time ago by Kaplowitz and Fink (1982), who argued that attitudes and beliefs could be usefully treated as an interconnected system in multidimensional space. They suggested that a message could be conceived of as a force exerted on a targeted attitude in this space and that any movement of that attitude would in turn exert force on other attitudes to which the target concept was connected, precipitating changes in those attitudes as well. Evidence for Kaplowitz and

Fink's (1982) specific claims is mixed, but findings do support the general idea that connected attitudes and beliefs have the potential to influence one another (Bessarabova, Fink, & Turner, 2013; Dinauer & Fink, 2005; Keating, 2018; Lim, 2015; Linne, Glaser, Pum, & Bohner, 2020). If someone changes his or her attitude positively toward a particular policy, that person might also conclude that a similar policy is better than he or she had previously thought. A similar process has also been identified in the inoculation literature, in which studies (Parker, Ivanov, & Compton, 2012; Parker, Rains, & Ivanov, 2016) have demonstrated that inoculation can confer resistance to an attack on both a targeted attitude and related attitudes.

Recently, Glaser and cohorts (2015), in an effort to synthesize the findings on this topic, proposed a theoretical lateral attitude change framework. They distinguish between two types of lateral effects: generalization and displacement. Generalization occurs when persuasion is observed on both a targeted attitude *and* a related attitude, whereas displacement occurs when persuasion is observed on a related attitude, but *not* the targeted attitude. According to the framework, the difference between the two is that direct attitude change is suppressed in the case of displacement, but not in the case of generalization; otherwise, the psychological processes can be the same. Glaser and associates (2015) proposed that these effects occur because of connections among different attitude objects, such that they conceptualize lateral effects as a result of either spreading activation or logical reasoning. Lateral attitude change is thus proposed to occur mainly for attitude objects that are closely linked to a target attitude, and much less so (if at all) for attitude objects that are more psychologically distant. Essentially, a spreading activation account would predict that change is the largest for close attitudes. A propositional logical reasoning account would predict that only logically linked attitudes would change. Regardless of which of the two processes described by Glaser and associates (2015) occurs, the prediction for proximate versus distal attitudes is the same in this context.

Thus far, tests of Glaser and colleagues' (2015) framework have provided clear evidence for generalization and support for the authors' argument that psychological distance between attitudes is a moderator of this effect (Brannon, DeJong, & Gawronski, 2019; Cruz, 2019; Linne et al., 2020), such that logically similar and related attitudes show generalization effects, but dissimilar attitudes show substantially weaker effects. Therefore, we expected that the same pattern would emerge in this study. Specifically, we expected to replicate Cruz's (2019) finding that persuasion on climate change (in our case, cap and trade attitudes) would generalize to closely related attitudes toward solar tax credits (H3a), but much less so to more distantly related attitudes toward gun control policy (H3b).¹

On the other hand, although previous findings suggest that it is possible (e.g., Crano & Chen, 1998), tests of Glaser and colleagues' (2015) framework have been largely unsuccessful in uncovering displacement effects (Bohner, Linne, Glaser, & Boege, 2020; Brannon et al., 2019; Cruz, 2019). However, we examined the possibility that it might occur for this study because our use of partisan sources might spur motivated reasoning. Displacement is proposed to be most likely to occur for those who are highly motivated to resist attitude change (Glaser et al., 2015). Thus, if strong motivated reasoning is produced by the source manipulation, as we predicted, it may produce conditions more conducive to displacement than in previous studies. Because this study sought to create motivated reasoning effects, it was therefore

¹ We chose solar tax credits and gun control as the proximal and distal attitude object, respectively, on the basis of the multidimensional scaling analyses conducted by Cruz (2019; Table 1).

a good place to search for potential displacement effects, even though such effects have rarely been detected. Accordingly, we proposed the following research question:

RQ1: Will participants who are not persuaded by the cap and trade message exhibit displacement on solar tax credit or gun control attitudes?

Model of Generalization

In Cruz’s (2019) attitude generalization research, the source did not affect attitude generalization, but she speculated that a partisan source might result in attitude generalization for some, but not others. To assess the extent to which the oneness explanation can show how that occurs, we connected the hypotheses concerning oneness and attitude generalization into the model shown in Figure 1, for which we hypothesized good fit (H4). Initially, the relationship between political party affiliation and oneness with the source is proposed to be moderated by the source induction, such that people identifying with the Democratic Party will perceive more oneness with the liberal source, and people identifying with the Republican Party will perceive more oneness with the conservative source. Oneness is expected to be positively related to attitude change regarding the cap and trade policy targeted by the message. Changes in cap and trade policy were then expected to be positively related to changes in solar tax credits attitudes.

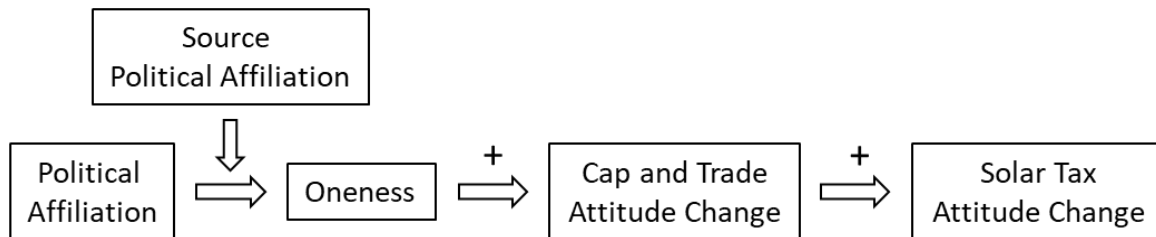


Figure 1. Proposed model.

Method

Design

The study used a quasi-experimental repeated-measures design. At the first time point, participants indicated their pretest attitudes toward the focal topic and other topics, their political affiliation, and their demographics. Approximately two weeks later, they were randomly assigned to either the conservative or liberal source condition and exposed to the message advocating the focal attitude object. After, attitudes were measured again, and perceived oneness with the source was measured.

Sample

Participants were recruited online through Qualtrics Services, using quota sampling to collect pretest data from approximately equal numbers of Republicans and Democrats (total *N* = 935). Of these participants,

518 later completed the posttest survey (a 55.4% retention rate).² The final sample was majority female ($n = 333$; 64.4%), with an average age of 49.30 years ($SD = 16.52$, range = 18–86), and was evenly split between Republicans ($n = 251$) and Democrats ($n = 245$).

A large sample was collected to ensure that the subsamples would be adequately powered. To assess the extent to which the smallest subsample obtained was adequate, a power analysis was conducted using G*Power (Faul, Erdfelder, Buchner, & Lang, 2009). To obtain an 80% chance of detecting a medium effect ($r = .30$) with a two-tailed test, a sample size of 82 is required. The smallest subsample examined had $n = 135$, so we determined that our smallest subsample had adequate power to detect a medium effect.

Procedure

At the pretest, participants were informed that the purpose of the study was to evaluate their opinions about a series of policy proposals. For each topic, they were asked to read a brief description of the proposal, fill out a measure of their attitudes toward the proposed policy, and indicate the extent to which they felt they understood the proposal well enough to evaluate it. The proposals focused on a cap and trade policy (direct attitude object), a federal solar tax credit policy (proximal lateral attitude object), and a policy banning guns with high-capacity magazines (distal lateral attitude object). Participants also filled out the measures of their political party and demographic characteristics at this time.³

At the posttest, approximately two weeks later, participants were randomly assigned to one of two source conditions. In the liberal source condition ($n = 259$), participants were told that the message was provided by the fictional Mother Earth Coalition for Saving the Environment, which was described as an advocacy group promoting liberal values and Democratic leadership on environmental policy. In the conservative source condition ($n = 259$), participants were told that the message was provided by the fictional Conservative Coalition for Free Market Environmental Solutions, which was described as an advocacy group promoting conservative values and Republican leadership on environmental policy. Both groups then read the same message advocating for a cap and trade policy and then completed the attitude measures (cap and trade, solar tax credit, and gun control) and the measure of oneness with the source. At the conclusion of the survey, participants were given the opportunity to leave open-ended comments, then debriefed as to the true nature of the source and study. All materials and measures are available through OSF: https://osf.io/3tsdz/?view_only=bb1e2c06254940ddbd252013abac28ae.

² Logistic regression analyses indicated that attrition was more likely among younger participants ($B = 0.02$, $p < .001$), but was not associated significantly with any other demographic or psychographic variables, nor with initial attitudes toward the cap and trade, gun control, or solar tax credit proposals.

³ They also completed a measure at this time of political value-relevant involvement (Cho & Boster, 2005). This variable did not interact with any of the other variables to affect the outcomes, so it was dropped and will not be discussed further.

Measures

Political party affiliation was evaluated with one item (1 = *strong Republican*, 6 = *strong Democrat*).⁴ There are measures of political ideology that include many questions detailing policy propositions, but our interest was in general political identity rather than policy beliefs, so we used a single-item measure. Of course, other political affiliations exist, but we were interested in the two largest in the United States because that was the source of our sample.

Cap and trade attitudes (pretest: $M = 4.32$, $SD = 1.93$, $\alpha = .97$; posttest: $M = 4.77$, $SD = 1.64$, $\alpha = .96$), solar tax credit attitudes (pretest: $M = 5.41$, $SD = 1.69$, $\alpha = .97$; posttest: $M = 5.18$, $SD = 1.64$, $\alpha = .98$), and gun control attitudes (pretest: $M = 4.98$, $SD = 2.01$, $\alpha = .96$; posttest: $M = 4.79$, $SD = 1.95$, $\alpha = .97$) were measured with four items each, using 7-point semantic differential scales. The items were developed by McCroskey and Richmond (1989) and evaluated the extent to which participants thought each proposal was *wise* (vs. *foolish*), *beneficial* (vs. *harmful*), *good* (vs. *bad*), and *right* (vs. *wrong*). The same items were used at both time points.

Finally, oneness with the source was measured using the two items from Cialdini and associates (1997). The first item asked participants to indicate the extent to which they would use the term “we” to describe themselves and the message source (1 = *definitely would not*, 7 = *definitely would*). The second item presented participants with seven pairs of circles that overlapped to varying degrees (1 = *no overlap*; 7 = *almost complete overlap*) and asked them to indicate which best represented their perception of the source ($M = 3.67$, $SD = 1.65$, $\alpha = .67$).

Factor Analyses

A confirmatory factor analysis was performed to examine the fit of the pretest data on attitudes toward each topic to the proposed three-factor structure, and another to examine the fit of the posttest data on attitudes toward each topic and oneness to a four-factor structure. Analyses were conducted in R 3.6.1 (R Core Team, 2020), primarily with the *lessR* statistical package, to identify weak indicators and factor loadings (Gerbing, 2020), which uses the centroid solution to estimate parameters (see Hunter & Gerbing, 1982). Additional fit statistics were obtained with the *lavaan* statistical package (Rosseel et al., 2019), using maximum likelihood estimation. Item means and factor loadings can be found at OSF: (https://osf.io/3tsdz/?view_only=bb1e2c06254940d0dbd252013abac28ae).

The pretest model of the three sets of attitude items showed excellent fit to the data (CFI = .98, SRMR = .01, RMSE = .08), as did the posttest model of the attitude and oneness items (CFI = .98,

⁴ “Independent” was not included as a response option. Instead, independents were asked to indicate the party closest to their political leaning (3 = *lean Republican*, 4 = *lean Democrat*). Evidence suggests that attitudes and voting behaviors of weak partisans are very similar to those of leaners, for whom identifying as independent may be “nothing more than a reflection of the inclination of Americans to prefer to think of themselves as independent-minded” (Petrocik, 2009, p. 563). Accordingly, leaners were considered partisans for the purposes of this study (see also Magelby & Nelson, 2012; Theodoris, 2017).

SRMR = .02, RMSE = .07), replicating the factor structure identified for the pretest attitude data. The items from each scale were averaged to produce a composite score for each variable, such that higher scores indicated a higher level of the variable. Table 1 shows the means, standard deviations, and the correlation matrix.

Table 1. Means, Standard Deviations, and Correlation Matrix.

| | <i>M (SD)</i> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|--------------------------|---------------|------|-------|------|-------|------|-------|-------|------|-------|-------|------|
| 1. Source Condition | | | | | | | | | | | | |
| 2. Political Affiliation | 3.48 (1.82) | .02 | | | | | | | | | | |
| 3. Oneness | 3.66 (1.65) | -.01 | .17* | | | | | | | | | |
| 4. Pretest C&T Att | 4.32 (1.93) | .04 | .18* | .36* | | | | | | | | |
| 5. Posttest C&T Att | 4.77 (1.64) | -.03 | .22* | .64* | .44* | | | | | | | |
| 6. Change in C&T Att | .45 (1.91) | -.06 | -.001 | .18* | -.63* | .42* | | | | | | |
| 7. Pretest STC Att | 5.41 (1.69) | -.04 | .13* | .18* | .41* | .34 | -.13* | | | | | |
| 8. Posttest STC Att | 5.18 (1.64) | .001 | .13* | .35* | .34* | .51* | .09* | .53* | | | | |
| 9. Change in STC Att | -.23 (1.61) | .05 | -.01 | .17* | -.08 | .17* | .23* | -.51* | .46* | | | |
| 10. Pretest GC Att | 4.98 (2.01) | .02 | .26* | .22* | .40* | .34* | -.12* | .41* | .31* | -.11* | | |
| 11. Posttest GC Att | 4.79 (1.95) | .05 | .29* | .39* | .34* | .52* | .10* | .32* | .52* | .20* | .55* | |
| 12. Change in GC Att | -.20 (1.88) | .03 | .03 | .17* | -.07 | .18* | .23* | -.11* | .21* | .32* | -.50* | .45* |

Note. C&T Att = cap and trade attitudes; STC Att = solar tax credit attitudes; GC Att = gun control attitudes.

* $p < .05$.

Results

Preliminary Analyses

There were no substantial differences between the two source conditions in initial cap and trade attitudes, $F(1, 440) = 0.66, p = .42, r = .04$; gun control attitudes, $F(1, 438) = 0.14, p = .71, r = .02$; or solar tax credit attitudes, $F(1, 440) = 1.21, p = .27, r = .04$.

Attitude change measures were constructed by subtracting pretest scores from posttest scores. For cap and trade, attitude change was positive ($M = 0.45, SD = 1.91$) and was not within sampling error of zero change, $t(509) = 5.34, p < .001$. The positive change in cap and trade attitudes was substantially different from the slight negative change in solar attitudes ($M = -0.19, SD = 1.88$) and gun control attitudes ($M = -0.23, SD = 1.62$). A repeated measures analysis of variance confirmed that this difference was statistically significant, $F(2, 1002) = 30.95, p < .001$. Overall, attitudes changed on the target of the persuasive message, but not on the other two issues.

Main Analyses

Effect of Source Matching on Attitude Change

H1 predicted that Democrats would be more persuaded by a liberal source than Republicans would, whereas the opposite would occur for a conservative source. To assess the source induction, we effect coded the source manipulation ($-1 = conservative, 1 = liberal$) and standardized the political affiliation measure. The product term of these two variables was calculated to represent the interaction, such that when the products are calculated, positive scores indicate that the source matches the participants' political affiliation, and negative scores indicate a mismatch. To test this hypothesis, cap and trade attitude change was regressed on message source, political affiliation, and the interaction term. All continuous variables were standardized before calculating product terms, and the standardized variables were used as predictors in regressions.⁵ The squared multiple correlation was somewhat small, but statistically significant, $R^2 = .03, F(3, 487) = 4.51, p = .004$. Neither the effect of the source ($b = -0.11, \beta = -.06, p = .18$) nor the effect of political affiliation ($b = -0.02, \beta = -.01, p = .79$) was substantial, but the two-way interaction between message source and party affiliation was substantial and statistically significant ($b = 0.30, \beta = .15, p = .001$).

The two-way interaction was probed by examining the correlation between party affiliation and attitude change toward cap and trade under each message source condition. When the source was conservative, the relationship was negative ($r = -.15, p = .02$), consistent with Republicans changing their attitude positively more than Democrats. When the source was liberal, the relationship was positive ($r = .15, p = .01$), consistent with Democrats changing their attitudes positively more than Republicans. The parallelism in the size of the effect is striking. Both Democrats and Republicans showed similar source-matching effects.

⁵ All hypothesis tests were also calculated while statistically controlling for gender and age. The differences in effect sizes were trivial, so the results presented do not include those variables.

Oneness

H2 predicted that Democrats would have a stronger sense of oneness with a liberal source than Republicans would, whereas the opposite would occur with a conservative source. The oneness measure was regressed onto source, political affiliation, and the product term, $R^2 = .04$, $F(3, 493) = 7.40$, $p < .001$. The effect of source was insubstantial ($b = -0.04$, $\beta = -.02$, $p = .61$), but the effects of political affiliation ($b = 0.27$, $\beta = .16$, $p < .001$) and of the product term representing the interaction ($b = 0.19$, $\beta = 0.12$, $p = .009$) were both substantial. When the source was liberal, the correlation between party affiliation and oneness with the source showed the effect in the expected direction ($r = .27$, $p < .001$), such that the more strongly someone identified as a Democrat, the more he or she felt oneness with the liberal source. On the other hand, when the source was conservative, the relationship was trivial in size ($r = .05$, $p = .45$). It appears that there was an asymmetry in the effect of the induction on oneness, such that the liberal source produced the expected effect, but the conservative source did not consistently create a sense of oneness among Republicans. The results were partially consistent with the hypothesis.

Lateral Attitude Change

Next, the generalization hypotheses were tested. To reiterate, these H3a predicted that participants who demonstrated direct attitude change in cap and trade attitudes would also exhibit lateral attitude change in solar tax attitudes, but H3b predicted that would be substantially less in gun control attitudes. This analysis focused, therefore, on the participants who were persuaded by the message (i.e., $\Delta M > 0$; $n = 234$), setting aside those who exhibited either no change (i.e., $\Delta M = 0$; $n = 139$) or a boomerang effect (i.e., $\Delta M < 0$; $n = 137$). In the persuaded group, as in the overall sample, the change in solar attitudes was within error of zero, $t(231) = -0.21$, $p = .84$. However, the correlation between solar attitude change, and cap and trade attitude change was statistically significant and moderate in size ($r = .18$, $p = .006$); consistent with a generalization effect, participants who exhibited more direct attitude change also exhibited more lateral attitude change. This trend was not observable from the change scores because many of these participants ($n = 76$, 32.6%) already had maximally positive solar attitudes on the pretest (i.e., $M = 7.00$), and so could not possibly exhibit a measurable generalization effect. Among the remaining persuaded participants whose solar attitude scores were below the ceiling ($n = 157$), solar attitude change was in the predicted direction ($M = 0.46$, $SD = 1.74$) and was not within error of zero, $t(156) = 3.31$, $p = .001$.

The change in gun control attitudes among those who showed positive cap and trade attitude change ($M = 0.10$, $SD = 1.86$) was also within error of zero, $t(231) = 0.78$, $p = .44$, but the correlation between gun control attitude change, and cap and trade attitude change was again statistically significant and moderate ($r = .23$, $p < .001$). As with solar attitudes, this trend was not observable from the change scores because many of these participants ($n = 68$, 29.3%) already had maximally positive gun control attitudes on the pretest ($M = 7.00$). Among the remaining persuaded participants whose initial gun control attitudes were not at the ceiling ($n = 164$), gun control attitude change was in a direction consistent with generalization (i.e., positive change; $M = 0.54$, $SD = 1.83$) and was not within error of zero, $t(163) = 3.78$, $p < .001$. Altogether, these findings indicate that participants who were persuaded by the cap and trade message exhibited the predicted generalization effect on solar attitudes, but also an unexpectedly strong generalization effect on gun control attitudes. The data were consistent with H3a, but not H3b.

Analyses were next conducted on participants who exhibited no direct attitude change ($n = 139$) to examine RQ1, which asked whether participants who were not persuaded by the cap and trade message would exhibit displacement on solar tax or gun control attitudes. For these participants, a positive change in solar attitudes or gun control attitudes would provide evidence of displacement. In both cases, the amount of change was within error of zero. As in the previous analysis, many of these participants had maximally positive solar tax credit attitudes ($n = 42$; 30.7%) and gun control attitudes ($n = 45$; 32.4%) on the pretest, but the results were similar when these participants were removed. Thus, participants who exhibited no direct attitude change also tended to exhibit no discernable lateral attitude change.

Finally, exploratory analyses were conducted on participants who exhibited some evidence of a boomerang effect ($n = 137$). For these participants, a positive change in solar attitudes or gun control attitudes would also provide evidence of displacement. Unexpectedly, however, these participants exhibited substantial *negative* changes in their solar attitudes ($M = -0.65, SD = 1.59$) that were not within error of zero, $t(133) = -4.70, p < .001$. The correlation between solar attitude change, and cap and trade attitude change for this group was also statistically significant and moderate ($r = .20, p = .02$), consistent with a generalization of the boomerang effect. Furthermore, these participants exhibited substantial negative changes in their gun control attitudes ($M = -0.73, SD = 2.05$) that were not within error of zero, $t(133) = -4.11, p < .001$, though the correlation between gun control attitude change, and cap and trade attitude change did not reach conventional levels of statistical significance ($r = .08, p = .38$).

Model Tests

Finally, H4 predicted good fit for the model shown in Figure 1. As presented earlier, the tests for the effects of the two inductions on oneness showed that the effect of political affiliation was substantial when the source was liberal, but not conservative. Therefore, the model shown in Figure 1 was only tested for the participants exposed to the liberal source. Additionally, the attitude generalization findings suggest that attitude change generalized for both the solar tax and gun control. Therefore, gun control attitude change was added as an additional endogenous variable, predicted by change in cap and trade attitudes. Figure 2 shows that for those participants exposed to the liberal source, all standardized path coefficients were substantial and warranted tests of model fit. The R statistics program lavaan was used to test the fit of the proposed structural model. Model fit was marginal (CFI = .90, SRMR = .05, RMSEA = .09). Examination of the correlation matrix suggests that the relationships between oneness and the changes in both solar tax and gun control attitudes were likely to be direct.

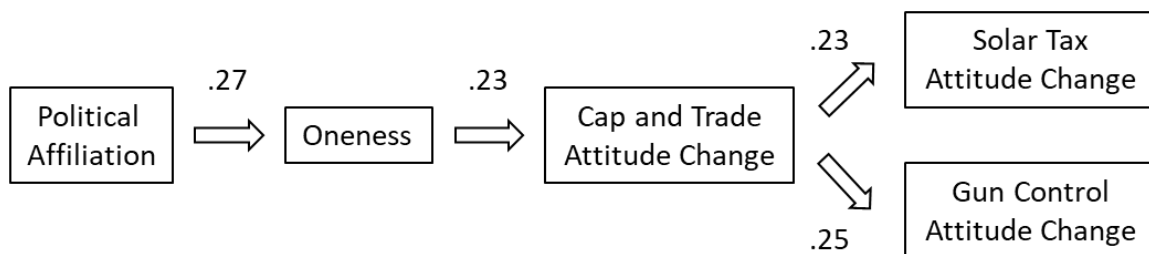


Figure 2. Revised model for liberal source condition with standardized path coefficients.

Figure 3 shows the revised model with standardized path coefficients. Model fit improved (CFI = .98, SRMR = .03, RMSEA = .05), and the improvement in fit was statistically significant, $\chi^2(2) = 9.86$, $p = .007$. Thus, the data were only partially consistent with H4.

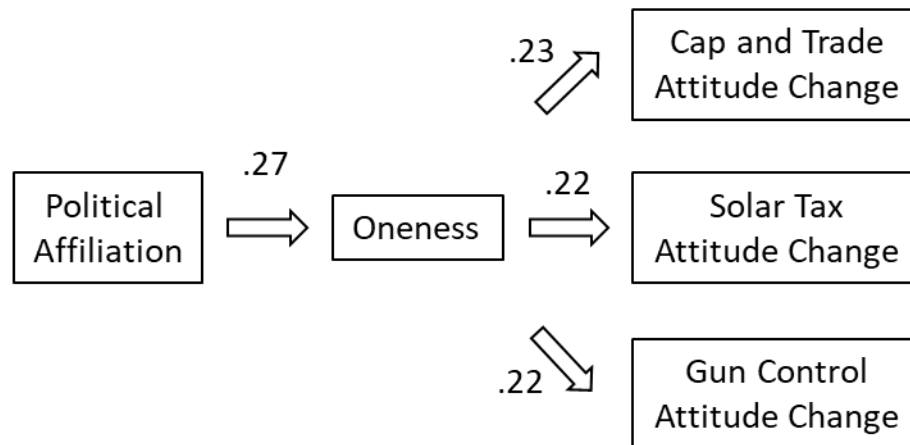


Figure 3. Second revised model for liberal source condition with standardized path coefficients.

Discussion

This study sought to assess oneness with the source as an explanation for source-matching effects in persuasion concerning climate change abatement policy. This study also sought to test a oneness-focused model showing how lateral attitude change occurs for an additional climate change abatement policy not mentioned in the message. The findings have important implications for future theory development and research on these issues, as well as practical implications for applied communication about climate change and other politically divisive topics.

Motivated Reasoning

Beginning with the findings on source matching, the results bolster previous research suggesting that political affiliation is a message source identity that can change the persuasiveness of the message, despite otherwise leaving message argumentation and evidence the same. The basic source-matching effect replicated Wolsko and colleagues' (2016) findings that Democrats were more persuaded by a liberal source than a conservative one, whereas Republicans were more persuaded by a conservative source than a liberal one. The data also showed parallelism, such that neither party showed a stronger bias than the other.

We also expected oneness with the source to play a role in motivated reasoning. Based on the self-concept approach to motivated reasoning (Carpenter, 2019), we expected that people who felt strong oneness with the source of a message would change their attitudes to be more consistent with the source's advocacy. Essentially, low oneness with the source causes message rejection because the message is from a source that opposes one's political identity, whereas high oneness with the source promotes persuasion because the message is from a source that shares one's identity. But the role of oneness was more

complicated in these data. When the source was liberal, Democrats felt more oneness with the source than Republicans, so that half of the matching effect operated as predicted. When the source was conservative, however, oneness was not associated with political affiliation.

This finding does not imply, however, that oneness is unimportant for understanding motivated reasoning. Consistent with the self-concept approach, those who felt greater oneness with the source were somewhat more likely to shift their attitudes in the direction advocated by the source (see Table 1). Indeed, this may be why Republicans still showed a source-matching effect. Although they felt no more oneness with the conservative source than did Democrats, they still felt more oneness with that source than with the liberal source. It may be that the usual sorts of source inductions in this area do not produce oneness for Republicans. Future work would profit from assessing a variety of types of conservative sources to determine which ones may produce higher perceived oneness or assess the extent to which Republicans vary in the kinds of sources with which they identify.

Lateral Attitude Change

Our findings also contribute to the literature on lateral attitude change by showing that these effects occur in a motivated reasoning context and that oneness partially explains how source identity affects the likelihood of lateral attitude change. The results replicated previous findings (Cruz, 2019) that persuasion on climate change results in generalization on closely related attitudes. Like the authors of previous studies (Bohner et al., 2020; Brannon et al., 2019; Cruz, 2019), we also failed to find evidence for displacement effects, despite creating the motivated reasoning context in which Glaser and colleagues (2015) suggested displacement was likely to occur. On the other hand, Glaser and associates (2015) also suggested that displacement was more likely to occur at a moderate degree of attitude similarity between the focal and other attitude. It is not certain if either of the topics studied here fell into that theoretically ideal range of similarity.

The results also revealed two novel findings that contribute to work in this area. First, we found that generalization occurred not only for closely related solar tax attitudes, but also for distantly related gun control attitudes. Previous studies have found psychological distance to be a moderator of generalization effects (Brannon et al., 2019; Cruz, 2019), so it is surprising that the same result did not emerge here. One possible reason for the difference is that previous studies used nonpartisan sources to deliver the persuasive messages, whereas our source induction employed strong partisan cues. Perhaps using partisan sources resulted in activation of the participants' broader political attitude networks, which primed them to think about connections between climate change and even distal political issues like gun control. If so, source characteristics may bear greater attention in future research on lateral attitude change.

Alternatively, motivated reasoning processes may produce different kinds of generalization effects than unmotivated reasoning. This possibility is consistent with the superior fit of the revised model shown in Figure 3, in which oneness affected all three types of attitudes directly instead of indirectly via the changes in cap and trade attitudes. Glaser and cohorts (2015) predicted that striving for internal consistency may increase generalization. The self-concept approach suggests that attitudes related to important social identities can enhance the need for internal consistency. Perhaps increased oneness with the liberal source encouraged the

participants who identified with the Democratic Party to change their attitudes to be more progressive (i.e., more consistent) on any topic associated with that identity.

Second, our findings suggest that generalization may occur for boomerang effects. Glaser et al. (2015) proposed that generalization will occur when a participant is motivated to accept a persuasive message, but did not discuss the possibility that rejection of a persuasive message could also generalize. Additional research is needed to replicate this effect and to examine when and why this sort of negative generalization might occur. This finding also emphasizes the need to consider the possibility of lateral attitude change when developing applied communication campaigns. When persuasion is successful, generalization is just an added bonus, so the risk in ignoring it may be limited; but when persuasion is unsuccessful, generalization or displacement could have a number of harmful side effects that are dangerous to overlook. This study may be among the first to specifically detect a boomerang effect generalizing to other attitudes.

Limitations

This study is not without limitations. For one, the only variable experimentally induced in this study was the source of the message. Political affiliation was a measured variable, so it is unclear what other variables may be confounded with it. Future work may attempt to experimentally induce social identities to assess source effects.

Although the message was held constant, it is possible that the source induction affected how the message advocacy was interpreted. The conservative source may have been perceived by Democrats to be advocating weaker environmental restrictions, and the liberal source may have been perceived by Republicans to be advocating more extreme environmental restrictions. Future work should focus on messages targeting a policy with a more objective degree of extremity.

Another potential limitation of this study is that we relied on previous research (Cruz, 2019; Table 1) to select a proximal lateral attitude (alternative energy) and distal lateral attitude (gun control) rather than measuring psychological distances for our sample directly. Additionally, the target policy (cap and trade) was a specific solution to climate change, whereas Cruz examined attitudes toward action on climate change more generally. Thus, we cannot rule out the possibility that gun control attitudes are more closely related to solar tax credits or cap and trade policy attitudes in our sample than we would conceptually expect or has been found with other samples. However, it is important to note that even though the pretest correlation between cap and trade attitudes and solar tax credit attitudes is similar in magnitude to the pretest correlation between cap and trade attitudes and gun control attitudes, this does not necessarily imply that their psychological distance is similar. As Alvaro and Crano (1997) note, "Attitude objects that are strongly correlated may not be cognitively proximal" (p. 952). (See also the comparison between correlations and multidimensional scaling distances in Cruz, 2019; Table 1.) Thus, although it is reasonable to suspect that the novel patterns of effects we observed were due to the unique context of the study, we cannot rule out the possibility that the idiosyncrasies of our sample's attitude structure were also a contributing factor.

Additionally, with this topic, we had many participants at the extreme end of the scale on the pretest of the focal attitude topic. To conduct some of the analyses, these participants had to be removed from the sample. Future research would do well to use alternative attitude scaling methods or choose topics on which participants are less likely to possess preexisting extreme attitudes.

Finally, motivated reasoning processes were not directly observed in this study. Based on the current state of the literature, it is difficult to directly measure such processes. Most people assume that they are engaging in accuracy-focused reasoning rather than motivated reasoning, so self-report measures are unlikely to be valid. Additionally, one can use the same cognitive resistance mechanisms in accuracy-focused or motivated reasoning. If the message is truly illogical, then someone who wants to form an accurate attitude and someone who wants to defend his or her self-concept from the perceived attack from that message will both reject the message because of its poor reasoning. Both Republicans and Democrats would likely report that their rejection of the opposition message was based on legitimate concerns about the veracity of the opposition group. Additional research and methodological development are needed to assess these different types of message-processing motivations more directly.

Conclusion

This study used a rigorous pre-post design to measure attitude change on both the target of a persuasive message and both related and unrelated attitudes in a motivated reasoning context. Attitude generalization was replicated and extended to a boomerang generalization. The importance of oneness with the source was demonstrated to be an important factor in motivated reasoning processes in the attitude generalization context. It is hoped that this study will lead to further studies on how to use messages to increase acceptance of climate change policies, despite tendencies among some to resist such efforts.

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