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Studying the Effects of Motivated Reasoning on Appraisals of Message Strength

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by

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Abstract

This study was designed to investigate decision-making as it relates to message appraisal, and determine what effect, if any, identification with the message source has on those appraisals. For the purpose of study, message appraisal was operationalized as message strength ratings. Furthermore, the study investigated how the political ideology of message receivers and the perceived partisanship of message senders might influence identification, and message appraisal by extension. The study used the theory of motivated reasoning to explain the role of identification in the process of message appraisal. The results indicate that there is a relationship between identification and message strength ratings, which suggests identification can produce motivated reasoning. However, the study did not show support for an interaction effect between the political ideology of participants, the perceived partisanship of message senders, and identification when considering message strength ratings.

Keywords: motivated reasoning, climate change, message strength, identification

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Chapter 1: Introduction

In recent years, the quantity of news sources and media platforms has increased dramatically. Arguably, these changes have influenced the ways in which viewers receive news information. In the past, news was distributed through a smaller number of official sources, giving viewers fewer options when seeking information (Mancini, 2013; Prior, 2013). However, emerging research suggests that the diversification of news sources and media platforms has enabled the viewing public to select information relative to their needs or interests (Mancini, 2013; Prior, 2013; Tewksbury, 2005; Westen, 2008). As a result, there are detectable differences in public knowledge related to source selection behaviors. As noted by Tewksbury (2005), "[f]ragmented audiences are unlikely to consume a common diet of news, potentially leaving them underinformed about central issues…" (p. 332).

While the relationship between diversity in news sources and partisanship may not be immediately apparent, some studies have shown that in instances where participants are able to select information based on preference, it is common to make selections that align with prior values and attitudes (Capella & Jamieson, 1997; Knobloch-Westerwick, 2015; Nickerson, 1998; Westen, 2008). As articulated by researchers Messing and Westwood (2014), "[n]ot only does the fragmentation of the media environment limit the diversity of information available to citizens, it also polarizes individual-level attitudes…" (p. 2). This may explain how political bias can impact individual knowledge, as viewers that favor partisan news sources are simply not receiving counter-attitudinal information (Knobloch-Westerwick, 2015; Westin, 2008).

Because there is now a greater amount of decision-making involved in information selection, it is worth investigating what factors motivate message receivers to assimilate or reject information from a source. This is especially crucial for topics like climate change, where some portions of the viewing public may be underinformed because of the political underpinnings of the issue. As noted by Knobloch-Westerwick (2014), "only messages that media users select for consumption can affect them and…users exhibit specific biases in their message selections" (p. 959). As such, some of the resistance to climate science may have a relationship with where viewers get their information, and what kinds of messages those viewers have been exposed to. This raises some questions about whether or not the bias inherent in the selection and assimilation of information can be reduced.

The purpose of this study was to test how message receivers make determinations about message strength using an experimental design. To do so participants were given information about a fake message source, and a message about climate change attributed to that source. The experiment focused specifically on feelings of identification with a message source and its relationship with message strength ratings. The political ideology of participants was also measured to determine if there was an interaction between the perceived partisanship of a message source and the declared political ideology of participants on message strength ratings. The study was guided by the theory of motivated reasoning, which looks at how the personal goals of message receivers may influence information processing strategies.

Chapter 2: Theory

Motivated Reasoning

The theory of motivated reasoning seeks to explain how prior beliefs can influence the cognitive process. A key premise of the theory is that when an individual is confronted with information that aligns with held beliefs, they may be less critical of the quality of that information (Kunda, 1990; Lord, Ross, & Lepper, 1979). Contrarily, when an individual is confronted with information that challenges held beliefs, they may be more critical of that information (Burdien, Lodge, & Taber, 2006; Kunda, 1990; Taber & Lodge, 2006). It is also noteworthy that the theory of motivated reasoning explicitly acknowledges that critical thinking does not necessarily produce optimal outcomes, differentiating it from frameworks that assume poor decision-making outcomes are the product of inattention. In fact, depending on the desires of the message receiver, critically interpreting information can lead to the activation of personal values, as opposed to deterring their onset (Burdien et al., 2006; Lodge & Taber, 2005, 2013).

The theory of motivated reasoning contends that there are two sub-processes that govern reasoning strategies, both of which have a unique way of characterizing information processing behavior (Kunda, 1990). The first sub-process is goal-oriented reasoning, which proposes that individuals may be influenced by prior beliefs when selecting and interpreting information (Kunda, 1990). So, if the purpose of information gathering or interpretation is to furnish a pre-existing position with supporting evidence, then the message receiver is more likely to filter information by relevance according to that goal. For instance, news viewers in search of information that comports with partisan

beliefs will likely gravitate towards partisan news sources that align with their values, as it fulfills informational goals (Burdien et al., 2006; Lodge & Taber, 2005, 2013). Additionally, goal-oriented reasoning proposes that information received from sources that do not support held beliefs will likely be approached with skepticism (Burdien et al., 2006; Lodge & Taber, 2005, 2013).

The second sub-process is accuracy-oriented reasoning, which proposes that when an individual is capable of high-level reasoning, and clarity in reasoning strategies is paramount, that individual will weigh information fairly (Kunda, 1990). In other words, if the purpose of information gathering is to make an informed decision, then the message receiver is more likely to weigh information fairly, because doing so will produce better decision-making outcomes. For example, some research has demonstrated that when participants are informed they will be tested on information received within the context of an experiment, or that they will need to accurately relay information to others, participants tend to employ accuracy-oriented reasoning strategies to accomplish those tasks (Chaiken & Maheswaran, 1994).

The motivated reasoning framework also takes into account that there is a relationship between emotions and decision-making. The term hot cognition is often used to describe decision-making that is influenced by strong emotions and offers counter-point to the predictions made by the Bayesian model (Redlawsk, 2002). The Bayesian model, like the deficit model, contends that poor decision-making has a relationship with information quality, and predicts that an increase in information quality will produce better decision-making outcomes (Redlawsk, 2002). However, the hot cognition

hypothesis, which is often associated with the theory of motivated reasoning, suggests

that this may not be the case if the decision-making process becomes emotional, or if

personal values are activated.

      This raises questions about what triggers goal-oriented reasoning responses, and

whether or not detecting those triggers and addressing them could produce better

decision-making outcomes.

Chapter 3: Literature Review

Research on Motivated Reasoning

Some studies guided by the motivated reasoning framework have tried to explain why exactly counter-attitudinal messages can trigger a goal-oriented response, thereby motivating message receivers to reinforce their prior position instead of assimilating new information (Lodge & Taber 2005, 2013; Mullainathan & Washington, 2009; Redlawsk, 2002). One such study found that even when participants were told they would be relaying information to others, which was expected to provoke an accuracy-oriented response, they still handled new information with discernable bias (Redlawsk, 2002). In the author's words:

> [s]ubjects… were instructed that they would be required to list everything they could remember from the campaign once the election was over... subjects were also instructed that they would have to justify their vote choice to the experimenter… This should have had the effect of creating a memory-based accuracy motivation for this group of subjects. (Redlawsk, 2002, p. 1027).

Redlawsk's study implemented an experimental design to see how pre-existing values might influence information assimilation. Specifically, participants were asked to rate fake political candidates based on information provided during the experiment. Redlawsk found that participants would assimilate information more quickly that aligned with prior values, indicating that participants simply relied on the partisanship of the message source, and the political characteristics of the message to assess its value (Redlawsk, 2002). This was tested by ascertaining each participant's political leanings,

and then observing how long it took participants to read each message. In instances where the message was coded as counter-attitudinal, it was found that on average participants would spend more time reading that message than if the message content aligned with their political leanings (Redlawsk, 2002).

In Redlawsk's opinion, because information about political candidates is "emotionally charged," it can be difficult for message receivers to remain impartial when presented with counter-attitudinal information. As such, it follows that when message receivers engage with information on a personal level, it is less likely that giving them instructions to remain unbiased will be effective. It can be concluded that for participants involved in the study, preference for a candidate was influenced by characteristics peripheral to facts about those candidates. This suggests that message source characteristics may trigger a goal-oriented response.

In a similar study, Lodge and Taber (2005) also looked to see if there would be a relationship between the source of a message, and the assimilation of information. Their experiment featured a comparable design in which the amount of time participants spent reading messages was recorded. They also found that participants would spend more time reading counter-attitudinal messages, and less time reading messages that aligned with prior attitudes (Lodge & Taber, 2005, 2013). It was their assessment that participants in the study acted with discernable bias, even though the researchers had made an effort to provoke accuracy-oriented responses. They felt this was due to the automaticity of participant responses, as per the hot cognition hypothesis, which negated accuracy-oriented priming effects. In their words, "[while] most [participants] quickly (and

relatively thoughtlessly) assimilate supporting arguments, they more actively processed

contrary arguments, generating thoughts that denigrate or counter these arguments and

bolster their prior convictions" (Lodge & Taber, 2005, p.762).

These findings not only support the premise that information that aligns with prior

beliefs will be absorbed more passively, but it also shows that even when participants are

primed to make accuracy-oriented judgements, message interpretation can still be

influenced by political bias when messages have political characteristics (Lodge & Taber,

2005, p.762). However, even though these studies make a strong case that partisanship is

often used as a mental shortcut when processing new information, they do not fully

explain how the characteristics of a message source can influence decision-making, and

instead focus on how messages are appraised for their political characteristics. As such, it

is worth expanding on their work by looking at how the characteristics of a message

source can also guide interpretation of new information from that source.

Source Characteristics

While there are many variables that can influence source selection and the

subsequent assimilation or rejection of information, the perceived credibility of a

messages source is a commonly measured variable (Chaiken & Maheswaran, 1994; Hart,

Nisbet, & Shanahan, 2011; Kahneman, 2011). Source credibility is particularly relevant

in instances where message receivers are unable to make cogent assessments as to the

validity of information on their own, leaving them to use peripheral reasoning strategies

to draw conclusions about the quality of the information; peripheral reasoning being any

interpretive strategy that incorporates information peripheral to a messages content, like

evaluations of the message source, when appraising a message (Chaiken & Maheswaran, 1994; Hart et al., 2011; Kahneman, 2011).

Some research has shown that message receivers using peripheral reasoning strategies may rely on factors related to source credibility, like perceived expertise or trustworthiness to make judgments about information quality (Hovland & Weiss, 1951; Ohanian, 1990). This is because perceived credibility is often the aggregate of related character traits, like expertise or trustworthiness. As noted by Tormala, Brinol and Petty (2007), "…whether the emphasis is on expertise or trustworthiness, high credibility sources have typically been found to be more persuasive than low credibility sources" (p. 684). As such, research on credibility supports the premise that there is a measurable relationship between perceived expertise and/or trustworthiness, and the likelihood message receivers will be persuaded by a message source.

For example, when receiving information about emerging science related to climate change, message receivers may defer to the perceived expertise or trustworthiness of the source of that information as a proxy for legitimate understanding of the message (Chaiken & Maheswaran, 1994; Kahneman, 2011; Ohanian, 1990). In fact, the frequency of this type of behavior may increase in instances where high levels of scientific knowledge are required to interpret the information, as is the case for climate change (Chaiken & Maheswaran, 1994; Kahneman, 2011). This may explain why credentialing information, like "top scientists suggest" or "leading scientific experts believe" makes it easier for viewers to trust that the presented information is valid (Hart et al., 2011; Kahneman, 2011).

Some research, however, suggests that when participants are prompted to place a high-level of importance on accurate interpretation of a message, that factors like source credibility may have less impact on message appraisal than in situations where participants are engaging with a message passively (Chaiken & Maheswaran, 1994). In a study conducted by Chaiken and Maheswaran (1994), a linkage was found between low levels of engagement and goal-oriented processing, and high levels of engagement and accuracy-oriented processing; or what they termed heuristic and systematic processing respectively. In the context of the study, interpretive strategies that incorporate peripheral information, like source or message characteristics, were categorized as goal-oriented, whereas interpretive strategies that focused solely on message content were categorized as accuracy-oriented (Chaiken & Maheswaran, 1994).

The authors concluded that participants found message sources more persuasive when processing information passively, but that heuristic processing could be attenuated if participants were primed towards critical engagement (Chaiken & Maheswaran, 1994). In other words, goal-oriented reasoning was more common when message receivers were passively engaged with the study materials, but when participants were prompted to make more accurate decisions, they did. This conclusion seems to run contrary to studies guided by the motivated reasoning framework that found participants could not be primed towards accuracy-oriented reasoning.

However, it is noteworthy that the information provided to participants in the Chaiken and Maheswaran study was largely value-free, making it somewhat dissimilar to studies that focus on value-based decision-making, like those focusing on the effects of

political bias. As such, there may be other ways to explain why the effects seen in their

study diverge from the results of the studies conducted by Redlawsk (2002), and Tabor

and Lodge (2006).

For instance, identification with a message source or message characteristics has

been shown to influence how message receivers evaluate information (Verplanken &

Holland, 2002). So, it is possible that if the provided information was personally relevant

to participants, as is the case with studies focusing on partisanship, then it may have been

more difficult to attenuate the effects of the message source on message appraisals. As

such, it is worth exploring how identification with a source or message characteristics

might influence interpretive strategies, as credibility does not appear to address the role

of self-concept in decision-making. However, the variable identification does offer some

insight into how self-concept may influence information processing. As such,

identification may be more effective at triggering goal-oriented reasoning strategies when

compared with specific traits, like credibility.

Identification

According to Hornsey (2008), measurements of identification were developed as

a means of understanding how individual behavior can be influenced by group

characteristics. He furthers that this is because a sense of membership to a group can have

an impact on self-concept, and subsequently effect decision-making outcomes. In his

words, "the motivating principle underlying competitive intergroup behavior… [is] a

desire for a positive and secure self-concept" (Hornsey, 2008, p. 207). This suggests that

identification with a group or organization, unlike perceived credibility, may be more

persuasive because it creates a relationship between perceptions of the group and self-concept.

       While identification can be measured in a variety of ways, it is common in organizational research to study the relationship between participants and organizational representatives. For instance, in a study by Sluss, Ployhart, Cobb and Ashforth (2012), identification with a supervisor was used as a proxy for identification with the organization they belonged to. The authors contend that because supervisory staff are often thought to embody organizational values, there is a relationship between how supervisors are perceived and how the organization they represent are perceived. When taken together with the assertions made by Honrsey, it can be assumed that once a participant identifies with an organizational representative, they will also identify with the values of the organization itself, and subsequently make decisions that adhere to the values of that organization.

       In accordance with this prediction Sluss et al. (2012) used measures in their study to establish whether or not participants identified with supervisors as a means of understanding how they identified with the organizations they belonged to. Examples include "If someone criticized my relationship with my immediate supervisor, it would feel like a personal insult" and, "My work relationship with my Drill Sergeants reflects the kind of person I am" (Sluss et al., 2012, p. 962). The authors note that extensive pilot testing was done to test the reliability of the measures used to capture relational identification.

Although, the Sluss et al. (2012) study was primarily concerned with the prototypicality of supervisory staff and its impact on identification, it could be contended that there is a relationship between identification and appraisals of information from a message source. In other words, if identification with a message source has taken place, based on the assumptions of their study, it can be predicted that messages from that source will receive positive appraisals because of identifications effect on self-concept.

Identification and goal-oriented reasoning. In a study conducted by Verplanken and Holland (2002) on value-based decision-making when purchasing products, results shown that participants were willing to make environmentally sensitive purchasing decisions, provided that the information they received was relevant to their self-concept. In the author's words, "We found that information acquisition mediated the relationship between value centrality and making value-congruent choices, under the condition that value activation had taken place" (Verplanken & Holland, 2002, p. 441). To reiterate, when participants were personally engaged with the study materials, it was more likely that the assimilation of information would produce positive message appraisals.

From their research, it can be extrapolated that in instances where message receivers can identify with a message source or message characteristics, there is a stronger likelihood that information will be assimilated, and a stronger likelihood that message appraisals will reflect the values imparted by the message and its source. This indicates that once an individual establishes a relationship between themselves and a message or message source, it is more likely they will employ goal-oriented reasoning strategies.

Similarly, Hart and Nisbet (2012) found that information was processed differently when the message receiver was able to personally relate to, and identify with, message characteristics. Specifically, their study revealed that when participants could relate personally to a victim of climate change via a natural disaster, that they would be more likely to consider climate change a serious issue (Hart & Nisbet, 2012). Like the Verplanken and Holland (2002) study, these results indicate that identity cues can trigger different information processing strategies. In their words:

> …embedded social identity cues interacted with political orientations to amplify public polarization on the controversial science issue, climate change. Furthermore, neither factual knowledge about global warming nor general scientific knowledge was associated for support for climate mitigation policies. These findings demonstrate the important role motivated reasoning plays in the interpretation and application of messages discussing scientific issues. (Hart & Nisbet, 2012, p. 15)

So, it follows that, like the Verplanken and Holland (2002) study, there is a relationship between the personal values of the message receiver and how a message is interpreted, especially when the message receiver identifies with the message source or message characteristics. Again, it is reasonable to assume that when a message receiver identifies with the message source, they may be more likely to employ goal-oriented reasoning strategies (Hart & Nisbet, 2012).

As per the literature, the current study sought to test the premise that identification with a message source would influence message appraisal, irrespective of the content of

that message. To do so, participants in this study were asked how strongly they identified

with a message source, and those ratings were compared with ratings of message strength

across message conditions.

Items used to measure message strength were taken from a study by Zhao et al.

(2011), which sought to create a reliable scale for measuring perceived argument

strength. It is the author's contention that message strength can be measured in terms of

its explicit message characteristics, but also by looking at its effect on the message

receiver. In their words, "the cognitive response approach represents an indirect approach

to argument strength. It focuses on indicators of argument strength in receivers' reactions

to the persuasive message" (Zhao et al., 2011, p.2). The author's further that this

approach is often used in combination with dual process models, like elaboration

likelihood model. Examples of items used in that study include, "The statement is a

reason for _ that is believable," and "The statement is a reason for _ that is convincing"

(Zhao et al., 2011, p.20).

The goal in the current study was to determine if identification with a message

source would produce higher message strength ratings when compared with those who

did not identify with the message source. Stated formally,

H1: There will be a relationship between identification with a message source and

positive message strength ratings.

Partisanship and identification. In accordance with the prediction that

identification with a message source will produce higher message strength ratings, the

current study also sought to test if the partisanship of the message source, and the

political ideology of the participant would interact to produce a sense of identification. This prediction is supported by research that suggests participants rely on prior political attitudes when navigating the information landscape (Lodge & Taber, 2005; Redlawsk, 2002). This is because partisanship can often be more than an indicator of how an individual typically votes, it can also be a part of a person's identity (Greene, 1999, p. 393). Furthermore, when individuals identify with a political group it can influence both attitudes and values relative to the interests of that political group. Greene (1999), notes that "…for most people, a clear preference for one party goes hand-in-hand with a negative attitude toward the opposition party" (p. 395). Consequently, it can be reasoned that perceived membership to a party influences existing attitudes and values, as well as the extent to which information is processed (Manata, Boster, Wittenbaum, & Bergan, in press).

Moreover, when issues like climate change become politicized, individual judgements about those issues tend to align with partisan values. This is reflected in studies that have found that conservatives typically support anti-climate change messages, whereas liberals typically support pro-climate change messages (Cruz, 2016; Westin, 2008). Similarly, in a study conducted by Braman et al. (2012) it was found that even when including measures to test for numeracy and scientific literacy among participants, views about climate change still adhered to partisan values. Thus, in the context of the issue of climate change, it is also expected that liberals will support pro-climate change messages, and that conservatives will support anti-climate change messages (Cruz, 2016; Westin, 2008).

In the current study, it is predicted that there will be a relationship between the political ideology of participants, the partisanship of a message source, and the subsequent ratings of message strength regarding the issue of climate change. To reiterate, both the Redlawsk (2002) study and the Taber and Lodge (2006) study found that the political ideology of participants interacted with the partisanship of both the messages they received, and the partisanship of the political candidate they evaluated. So, it can be expected that message strength ratings, like candidate evaluations, will be influenced by the prior political values of participants, and how those values align with source and message characteristics (Hart & Nisbet, 2012).

To illustrate the logic of this prediction, table 1 shows that in instances where participants identified with the message source and the message matched the partisan values of that source, the expectation was a high rating of the message's strength. Conversely, in instances where the participant did not identify with the message source and the message ran contrary to the partisan values of the participant, the expectation was a low rating of the message's strength. However, in instances where the participant identified with the message source, but the message's content ran contrary to the partisan values of the source, the participant was still predicted to give the message a higher rating than if there had been no identification whatsoever. Stated formally,

H2: When the political ideology of participants is similar to the perceived partisanship of a message source, they will be more likely to identify with that source and thus give higher message strength ratings when compared to participants whose political ideology is dissimilar to the perceived partisanship of a message source.

Table 1

Predicted message strength values

	Liberal participants		Conservative participants	
	Pro-climate change message	Anti-climate change message	Pro-climate change message	Anti-climate change message
Liberal message source	Strong Rating	Medium Rating	Weak Rating	Medium Rating
Conservative message source	Medium Rating	Weak Rating	Medium Rating	Strong Rating

The dependent variable represented in each of the cells is message strength. Note that these are predicted mean patterns, and that they are for illustrative purposes. Messages can be found in Appendix A, and source profiles in Appendix B.

Chapter 4: Methods

Sample

A total of 416 subjects participated in the study. Survey participants were recruited online through Mechanical Turk, a service offered by Amazon.com. Participants were offered $0.50 in exchange for completing the survey. All participants were located in the United States, and were at least 18 years of age. The survey used in the experiment was created using Qualtrics.

The average age of participants was between 26-34 ($N = 166$). When asked about their race, 54.1% participants reported being White/Caucasian ($N = 229$), 9% reported being African American ($N = 38$), 5.3% reported being Hispanic ($N = 22$), 26.2% reported being Asian ($N = 111$), 1.9% reported being Native American ($N = 8$), and 1.9% reported being other ($N = 8$). 52.4% participants identified as male ($N = 218$), 47.1% as female ($N = 196$), and .5% as other ($N = 2$). Participants were also asked about their political ideology. 40.4% identified as Conservative ($N = 171$), 40.4% as Liberal ($N = 171$), and 19.1% selected either moderate or no preference ($N = 74$). Participants were also asked about their highest level of education completed. 15.8% reported High School or GED ($N = 67$), 18.3% reported a 2-year college degree ($N = 76$), 43.3% reported a 4-year college degree ($N = 183$), 18.7% reported a master's degree ($N = 79$), .7% reported a doctoral degree ($N = 3$), and 1.9% reported a professional degree ($N = 8$).

Procedure

The experiment employed a 2x2x2 design. Participants were organized into 8 different conditions over the course of the experiment, as shown below by figure 1. Once

participants started the survey they were randomly sorted into different conditions using

the Qualtrics randomization feature and given one of two source profiles to review, which

were taken from a prior study on political values (Cruz, 2016). Notably, each profile

contained information that indicated the partisanship of the message source. For instance,

the Republican profile indicated that the message source was part of the political group

Young Republicans of Oregon.

After participants finished reviewing the source profiles, they were asked to rate

how they felt about the message source using a 4-item scale. This was done to measure

the independent variable of identification. Specifically, the purpose of this step was to

determine whether or not the participant identified with the intended message source.

Once participants completed questions related to source identification, they were

instructed to read a message, which was attributed to either the Democrat or Republican

source profile. Moreover, the two messages in the experiment were either pro or anti-

climate change. From here participants were again assigned randomly into different

conditions using the Qualtrics randomization feature.

Following exposure to the message participants were instructed to list what they

could recall from the message in order to prime them towards an accuracy-oriented

response. After which, participants were asked to rate the strength of the message using a

9-item scale in order to determine what, if any effect, source identification had on the

dependent variable, message strength. Demographics and political ideology were then

measured to determine which source profile aligned with the participant's own political

views so that political ideology could be used as an independent variable in testing.

Questions related to political ideology were located at the end to avoid priming effects.

Figure 1
Randomization pathway
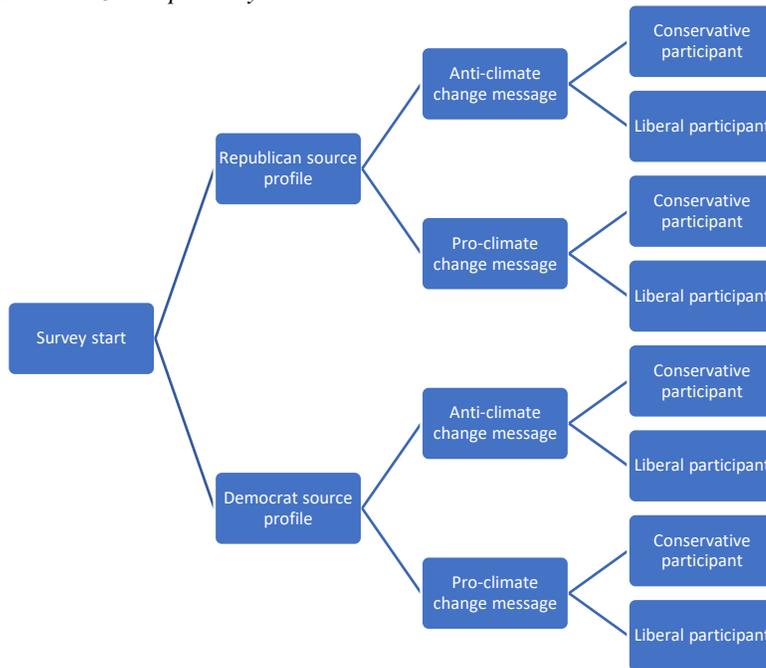
Measures

     Source identification. Measures for source identification were taken from a study

conducted by Sluss, Ployhart, Cobb and Ashforth (2012). Although their study was

primarily concerned with newcomers within professional organizations, there are

sufficient similarities between membership to a work organization and affiliation with a

political organization. Consequently, participants' identification with the message source

was measured using a 4-item scale taken and adapted from Sluss et al. (2012). Of note, a

substitution was made to the original items, e.g., adding the name of the message source.

These items were positioned on 7-point Likert-type scales, which ranged from 1 (*strongly

disagree*) to 7 (*strongly agree*).

Table 2
Items used to establish identification

Identification
My similarities with Thomas Gibson reflect the kind of person I am.
If someone criticized Thomas Gibson, it would feel like a personal insult.
The things I have in common with Thomas Gibson are an important part of who I am.
The things I have in common with Thomas Gibson are important to how I see myself.

Perceived argument strength. The measures used to rate message strength were taken from a study conducted by Zhao, Strasser, Cappella, Lerman, and Fishbein (2011), which focused primarily on creating a scale to measure the strength of persuasive arguments. It is noted by Zhao et al. (2011) that thought listing has traditionally been used to test argument strength for persuasive messages. However, the authors also noted that thought listing questions may only give researchers a sense of whether an argument has a positive or negative effect on message appraisals, as opposed to how much of an effect a message had, thereby limiting the depth of what can be measured. In their words, the measures used in the study "extend the measurement of perceived argument strength beyond just thought favorability" (Zhao et al., 2011, p. 18)**.** Perceptions of message strength were measured using a 9-item scale (Zhao et al., 2011). The term climate change was added to the blank space in the original measures. Some additional changes were made for grammatical reasons. As previously noted, examples of items used in the original study include, "The statement is a reason for _ that is believable," and "The statement is a reason for _ that is convincing" (Zhao et al., 2011, p.20). So, grammatical changes refers to adjustments like turning "statement" into "message", or "reason for" into "facts about". These items employed a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Table 3
Items used to establish message strength

Perceived argument strength
The message I read gives facts about climate change that are believable
The message I read gives facts about climate change that are convincing.
The message gives reasons for climate change that are important to me.
The message helped me feel confident about what I know about climate change.
The statement would help my friends understand climate change.
The message put thoughts in my mind about wanting to learn more about climate change.
The message put thoughts in my mind about not wanting to learn more about climate change.
Overall, how much do you agree or disagree with the contents of the message?
Are the facts the message gave about climate change strong?

Political Ideology. In order to measure the effects of political bias, participants were asked to provide information about their political ideology. Specifically, a one-item 7-point Likert scale was used to measure political ideology, which ranged from 1 (*strongly liberal*) to 7 (*strongly conservative*). For the purpose of testing questions related to partisanship, a new variable was created, wherein participants were listed as either liberal or conservative based on their responses to the previous question. Because H2 required participants have a political leaning, participants reporting a moderate political stance were omitted from this variable. As noted in a previous section, 74 participants either did not answer or listed moderate.

Demographic. Some general questions were also asked at the end of the experiment about age, gender, ethnicity and levels of education. The question about gender allowed participants to choose male, female, or other. The question about race allowed participants to select Caucasian, African American, Hispanic, Asian, Native American, or other. The question about level of education allowed participants to select

High School diploma or GED, 2- year college degree, 4-year college degree, a master's

degree, a doctoral degree, or a professional degree.

Table 4
Items used to capture demographic information

Demographics
How old are you?
What is your gender?
What is your race?
Here is a 7-point scale on which the political ideologies that people might hold are arranged from strongly liberal (left) to strongly conservative (right). Where would you place yourself on this scale?
What is the highest level of education you have completed?

Chapter 5: Results

Variables

In the current study, measures of identification were obtained using a 4-item scale. Responses were averaged across all items ($M = 3.76$, $SD = 1.60$, $N = 416$). A Cronbach's alpha was calculated to test for reliability, which produced a satisfactory score ($\alpha = .92$).

Measures of message strength were obtained using a 9-item scale. Responses were averaged across all items ($M = 4.75$, $SD = 1.30$, $N = 416$). A Cronbach's alpha was calculated to test for reliability, which also produced a satisfactory score ($\alpha = .89$).

Hypothesis 1: Identification on Message Strength Ratings

H1 predicted that there would be a positive relationship between identification with a message source and ratings of message strength across message conditions. To test this prediction a bivariate correlation was computed. Results indicated that identification with a message source was correlated positively with ratings of message strength, ($N = 416$, $r = .25$, $p = .001$). Stated differently, when participants felt like they could identify with a message source, they were more likely to rate message strength higher when compared with participants who did not identify with a message source.

Hypothesis 2: Political Ideology on Identification

H2 predicted that the political ideology of participants, the partisanship of a message, and the partisanship of a message's source would influence message strength ratings. A three-way ANOVA was conducted to test this prediction (see tables 5 & 6). Some effects were significant. The main effect for the political ideology of participants

yielded an F ratio of $F(1, 334) = 4.15$, $p = .04$, showing no significant difference between participants who reported a liberal ideology ($M = 4.68$, $SD = 1.38$, $N = 171$) and those who reported a conservative ideology ($M = 4.85$, $SD = 1.24$, $N = 171$) on message strength ratings. This indicates that the political ideology of participants did not impact appraisals of message strength.

The main effect for the partisanship of the message yielded an F ratio of $F(1, 334) = 92.75$, $p = .001$, showing a significant difference between those who received a pro-climate change message ($M = 5.35$, $SD = 1.13$, $N = 168$), and those who received an anti-climate change message ($M = 4.20$, $SD = 1.32$, $N = 174$) on message strength ratings. This indicates that participants were more likely to rate pro-climate change messages as strong across conditions.

The main effect for the partisanship of a message source yielded an F ratio of $F(1,334) = 1.88$, $p = .17$, showing no significant difference between those who saw a Republican profile ($M = 5.09$, $SD = 1.15$, $N = 169$) and those who saw a Democrat profile ($M= 4.48$, $SD = 1.45$, $N = 173$) on message strength ratings. This indicates that the partisanship of the message source did not have a discernable impact on message strength ratings as anticipated.

When assessing the influence of all three variables on message strength ratings, analysis indicated that the results were not significant, $F(1,344) = 1.56$, $p = .21$. Consequently, H2 failed to receive support. Tables 5 and 6 below show the raw data for the three-way ANOVA.

Table 5
Hypothesis 2 ANOVA results

|	SS	Df	MS	F	Sig.
Corrected Model	228.282	7	32.612	27.110	.001**
Intercept	7517.254	1	7517.254	6249.162	.001**
Political Ideology	5.002	1	5.002	4.158	.42
Message Ideology	111.579	1	111.579	92.756	.001**
Source Partisanship	2.265	1	2.265	1.883	.171
Political Ideo. X Message Ideo.	103.490	1	103.490	86.032	.001**
Political Ideo. X Source Part.	.123	1	.123	.102	.750
Message Ideo. X Source Part.	.100	1	.100	.083	.773
Political Ideo. X Message Ideo. X Source Part.	1.880	1	1.880	1.563	.212
Error	401.776	334	1.203		
Total	8413.209	342			
Corrected Total	630.058	341			

*p = 0.01**p = 0.001

Table 6
Hypothesis 2 ANOVA results continued

Political Ideology	Climate Change Message	Source Partisanship	Mean	Standard Deviation	N
LIBERAL	Pro-climate change	Liberal	5.67	.88	49
		Conservative	5.89	.85	42
		Total	5.75	.88	91
	Anti-climate change	Liberal	3.20	1.17	34
		Conservative	4.00	1.31	46
		Total	3.47	1.27	80
	Total	Liberal	4.48	1.60	83
		Conservative	5.06	1.43	88
		Total	4.68	1.56	171
CONSERVATIVE	Pro-climate change	Liberal	4.41	1.38	43
		Conservative	5.20	.98	34
		Total	4.87	1.22	77
	Anti-climate change	Liberal	4.53	1.05	47
		Conservative	5.05	.92	47
		Total	4.83	1.01	94
	Total	Liberal	4.48	1.20	90
		Conservative	5.12	.95	81
		Total	4.85	1.10	171
Total	Pro-climate change	Liberal	5.21	1.24	92
		Conservative	5.50	.98	76
		Total	5.35	1.13	168
	Anti-climate change	Liberal	3.77	1.29	81
		Conservative	4.70	1.17	93
		Total	4.20	1.32	174
	Total	Liberal	4.48	1.45	173
		Conservative	5.09	1.15	169
		Total	4.77	1.35	342

H2 predicted that conservative participants would identify more with the Republican message source on average, and that liberal participants would identify more with the Democrat message source on average. However, testing suggests that this initial prediction was not supported by the data, $F(1, 338) = 2.80$, $p = .10$. Specifically, it was shown that liberal participants were more likely to identify with Democrat message source ($M = 3.71$, $SD = 1.41$) compared to the Republican message source ($M = 2.97$, $SD = 1.53$) message sources, but the same could not be said about the conservative participants. Alternatively, conservative participants identified equally with both Democratic ($M = 4.33$, $SD = 1.74$) and Republican ($M = 4.16$, $SD = 1.55$) message sources. When taken together with the results of H1, it appears that even though identification with a message source did have a relationship with higher message strength ratings, shared political values between message source and receiver did not lead to identification with the message source, as shown by the figure below.

Figure 2
Identification with climate change messages
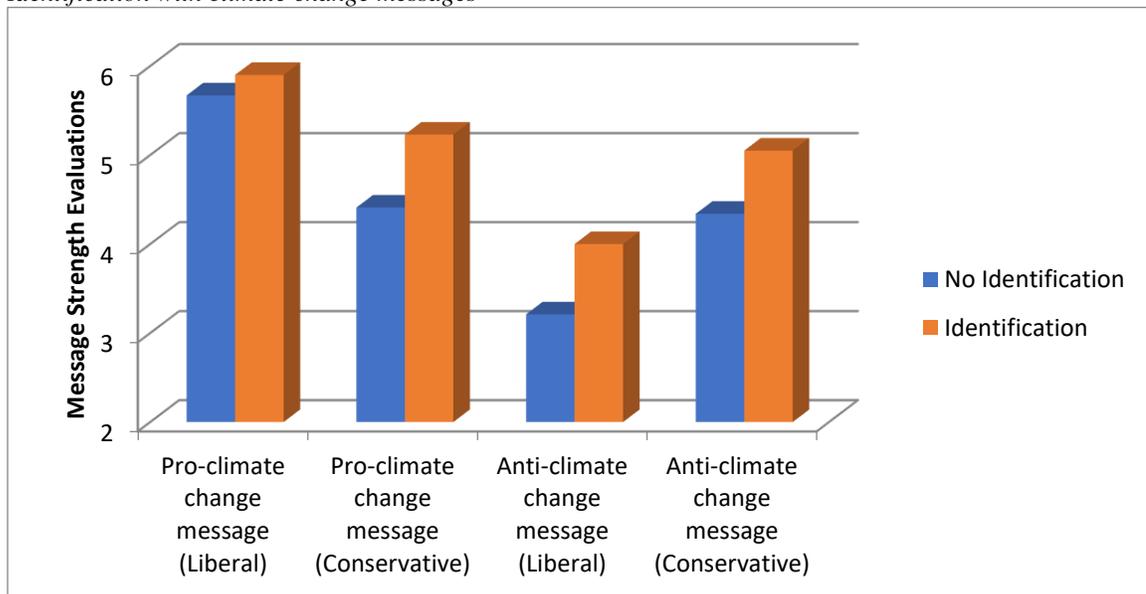
Post-Hoc

Additional post-hoc testing was done using identification in place of the partisanship of a message source as an independent variable in the three-way ANOVA. This entailed creating a new variable, in which participants were separated into one of two conditions based on whether or not they identified with the message source (see figure 1).

The main effect for identification with a message source yielded an $F(1,334) = 24.18$, $p = .001$, showing a significant difference between those who identified with the message source ($M = 5.09$, $SD = 1.15$, $N = 160$), and those who did not identify with the message source ($M = 4.48$, $SD = 1.45$, $N = 182$) on message strength ratings. These results are consistent with H1, which predicted that identification would have an association with positive ratings of message strength.

However, the results of the three-way interaction were not significant, $F(1,344) = 3.18$, $p = .08$. Consequently, post-hoc testing also failed to receive support.

Chapter 6: Discussion

The current study was primarily interested in how participants would appraise messages about climate change when also given information about the source of the message. This was done to see if goal-oriented reasoning could be triggered when participants felt a personal connection with the source of the message. In other words, it was presumed that participants would engage with the material in a goal-oriented way when provided with information about the message source that interacted with their self-concept.

To test this prediction levels of identification with a message source were compared with message strength ratings to determine whether or not identification had produced goal-oriented reasoning. Specifically, H1 predicted that there would be a positive relationship between identification with a message source and message strength ratings, across message conditions. This prediction was supported by testing which found that participants who had identified with the source of a message rated the message they received positively across message conditions. This suggests that personal identification with a message's source can influence how that message is appraised in spite of prior beliefs.

However, it was also predicted that there would be a relationship between the political ideology of participants and the partisanship of the message source, such that participants who shared a political affiliation with the message source would be more likely to identify with that source when compared to those who did not. This prediction was not supported. This may be because the source profiles presented information that

led to identification for some, but those who did identify with the message source did so

for reasons not related to the partisanship of that source. In sum, it could be reasoned that

while identification with a message source can influence message appraisals, political

ideology may not be sufficient grounds for identification in all cases.

In an attempt to explore the predictions made by H2 further, post-hoc testing was

done, which replaced the partisanship of the message source with identification with a

message source. The rationale was that because the partisanship of the message source

was intended to produce a sense of identification, that it might be more effective to

simply organize participants by whether or not they identified with the source. While

identification with a message source continued to have an association with message

strength ratings, the predicted 3-way interaction failed to reach statistical significance.

Prior political research has indicated that partisanship may guide the selection and

assimilation of information, which could lead to a divided and underinformed public.

But, this study did not find partisanship to be an indicator of how participants evaluate

information. This was especially the case for conservatives, who shown no clear

preference for either message source or message type. It did, however, find that

identification with a message source has a relationship with positive message strength

ratings. In other words, once participants felt a personal connection with the source of the

message they received, they were more likely to agree with what they were saying,

irrespective of content. So, political researchers would do well to consider the effects of

identification on partisanship in order to better understand the relationship between

partisanship and information processing.

Limitations

In order to get an even distribution of liberal and conservative participants, as well as a demographically representative sample of the United States, the study used Mechanical Turk, an online survey service. However, according to Buhrmester, Kwang and Gosling (2011), because Mechanical Turk often attracts users who complete surveys professionally, it may be the case that the amount participants were compensated for taking the survey influenced the results. This is evidenced in research that has shown significant differences between compensation rates, and complexity of design (Buhrmester et al., 2011). As such, the results may be the product of speedy, inattentive responses in instances where participants felt the survey was too long or too complex.

It is also noteworthy that this study used professional resumes to characterize the two message sources. The two resumes were made to be nearly identical, except for the partisanship of their volunteering and work experience. However, conservatives and liberals differ in many ways, and it is difficult to say whether or not Thomas Gibson, the fictitious message source, felt like a Democrat or Conservative based on the information provided in the resume. For instance, the educational background of Thomas Gibson may have embodied the values of one political ideology, but not the other. As such, it may have been beneficial to ask participants in closing if they felt Thomas Gibson was representative of liberal/conservative values to ensure that the resume was capable of activating political values.

Finally, attitudes about climate change were assumed from evaluations of the message provided to participants during the experiment. However, it could be argued that

message characteristics, like the specific details included in the message, influenced

message appraisals. If so, the results may speak more to how participants felt about the

message they received, not climate change as a whole. Future research could benefit from

pilot testing messages to see if the details found therein have a biasing effect in and of

themselves.

Conclusion

Climate change is becoming an increasingly salient issue, as climate scientists

continue to find evidence that human activity is damaging the environment. Yet,

educating the public about climate change has posed several challenges, like resistance to

climate change messages because of their perceived partisan values. To this end, critics

of the Bayesian model hold that enriching public's understanding of climate change may

require more than the straightforward dissemination of knowledge, it may also require

that the personal values of the message receiver be considered. As per the theory of

motivated reasoning, this may entail detecting possible triggers for goal-oriented

reasoning and addressing them in a way that produces accuracy-oriented reasoning when

crafting messages for public consumption.

The current study found that a sense of identification with a message source can

influence how information from that source is appraised. While the majority of prior

research has investigated whether there were particular source characteristics, like

credibility that facilitate this process, there is some research to suggest that it is the

relationship between perceived source characteristics and self-concept that influences

how we process information from a source. If so, researchers interested in understanding

the influence of source characteristics will need to go beyond specific traits, and instead focus on how those traits interact with each participant's self-concept.

The current study also tested whether a shared political ideology between message senders and receivers had an association with message appraisal. Surprisingly, this prediction was not supported. However, this may be a good example of how specific traits are not guaranteed to influence the processing of information. As such, future research may benefit from determining what in particular about political ideology creates a sense of identification in order to better predict how partisanship will influence participant reasoning.

In closing, there is evidence to support the claim that identification plays a role in the reasoning process, but it is not clear from the study results what in particular creates a sense of identification. While it was expected that shared political views might facilitate a sense of identification this did not appear to be the case. However, there is a large sum of research that has demonstrated a connection between partisanship and information process. As such, additional research is required to determine the relationship between identification and partisanship.

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APPENDIX A: PRO/ANTI-CLIMATE CHANGE MESSAGES

To My Fellow Students:

People from all walks of life are becoming increasingly vocal about the need for the United States to take steps to reduce climate change, and for good reason. There is overwhelming evidence that climate change is already having negative effects on humans and on the environment, and we need to take action now in order to stop things from getting worse.

One major reason to be concerned about climate change is its effects on plant and animal species. According to the 2014 Intergovernmental Panel on Climate Change (IPCC), for example, changes are already being seen in the geographical ranges, behavior, and population size of many species. Climate change has also been linked to more dramatic examples of harm as well. For example, the mass die-off of almost 3,000 dolphins off the coast of Peru in 2012 has been linked to high levels of stress in response to climate change.

There are also several reasons to be concerned about the effects of climate change on human populations. For one, evidence suggests that climate change has already led to lower crop yields and to shortages of high-quality drinking water. If climate change continues to worsen, people in many parts of the world will be faced with difficulties in finding enough food and water to survive. According to the IPCC, climate change is also expected to lead to higher rates of human and plant disease, further threatening human health, wellbeing, and our ability to grow an adequate food supply.

Beyond health, there are also concerns that climate change will have other harmful impacts on human society. For example, a recent study conducted by authors at top universities in China showed that changes in climate during the 1600-1700s were related to social disturbances, migration, and even war. Moreover, climate change is expected to lead to more extreme weather, which often results in costly damage to the U. S. infrastructure. For example, Superstorm Sandy, the hurricane that hit the East Coast in 2013, caused an estimated $65 billion in damages.

Finally, taking steps to reduce climate change could also provide economic benefits. For one, the number of "green" jobs that are available is growing rapidly. According to the McClatchy news bureau, the growth of jobs in areas such as solar power and wind power reached record highs in 2015. Continuing to support environmentally-friendly energy companies will thus help provide employment for many Americans. Beyond jobs, people can also save themselves money by adopting behaviors that help reduce climate change. For example, setting the thermostat just a few degrees lower in the winter helps reduce the emissions that lead to climate change, and it also saves people money on home heating bills.

In sum, working to reduce climate change just makes sense. If climate change continues at its current rate, there will be negative effects on the environment, human health, and our society and infrastructure; and we will also miss out on opportunities for economic growth. Support efforts to reduce climate change!

Sincerely,

Thomas Gibson

To My Fellow Students:

People from all walks of life are becoming increasingly vocal about the need for the United States to take steps to reduce climate change, but there are many reasons not to accept these arguments. There is still scientific uncertainty about the possible effects of climate change, and taking steps to reduce climate change may have serious negative consequences. At least at the present time, we need to oppose proposed efforts to reduce climate change.

For one, there are many issues that are more pressing than climate change. Lead poisoning, for example, remains a serious health issue in the United States. According to the Centers for Disease Control and Prevention, thousands of children are diagnosed with blood poisoning each year, leaving them vulnerable to a number of health and developmental problems. In Michigan, for example, Governor Rick Snyder has even declared a state of emergency due to the growing rates of lead poisoning in Flint. Rather than devoting time and money to reduce climate change—an issue for which the health effects are uncertain and would occur years into the future (if at all)—the country would be better served by focusing on issues that are already affecting people's lives.

Devoting resources to reducing climate change would also mean that fewer resources could be devoted to other environmental issues. Overharvesting of food sources and poaching, for example, are urgent environmental problems that are unrelated to climate change. For some species, delaying or reducing efforts to combat poaching would also mean certain extinction. For example, there are currently fewer than five Northern

white rhinos left on earth. Are the uncertain benefits of addressing climate change really more worthwhile than the certain benefits of protecting endangered species like these?

Even if taking steps to reduce climate change had certain benefits, the risks are also far too great to justify action. For one, most of the policies that would reduce climate change would cause direct harm to the U. S. economy. Requiring companies to meet certain emission standards, for example, would be extremely costly, and would likely lead to lower profits and higher rates of unemployment. Furthermore, there is no guarantee that other major economies would adopt the same policies. If China and India refuse to take steps to reduce climate change, then any action that the U. S. takes will matter very little. Moreover, U. S. companies will be placed at a competitive disadvantage.

In sum, taking steps to reduce climate change just doesn't make sense at this time. There are more pressing health an environmental issues, and the risk to the U. S. economy is just too high. Oppose efforts to reduce climate change!

Sincerely,

Thomas Gibson

APPENDIX B: LIBERAL/CONSERVATIVE SOURCE PROFILES

Democratic Profile

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Portland, OR 97201
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EDUCATION

Bachelor of Arts, Political Science   May 2017
Portland State University, OR
Minor: Science, Technology, and Society

Clubs & Memberships
   Vikings for Informed Action   2015 – 2017
      • Elected Vice President for 2016-2017 year
   Honors College   2014 – 2017
   Young Democrats of Oregon   2014 – 2017
   College Democrats   2014 – 2017

EXPERIENCE

Emissary, Portland Democratic Association   2015 – present
Portland, OR
   • Promote and share information about events and new initiatives
   • Recruit new members in support of association's mission
Intern, Portland United Conservation Clubs   2014
Portland, OR
   • Assisted policy and legislative team
   • Facilitated outreach and information gathering related to new policy initiatives
Research Assistant, Department of Political Science   2014 – 2015
Portland State University, Portland, OR
   • Member of the Undergraduate Research Opportunity Program
   • Presented final independent research project at the 2015 Portland Research
     Community Spring Research Symposium
Intern, Democratic Voter Project   2014
Portland, OR
   • Helped with efforts to engage democratic voters to improve voter turnout
   • Assisted with voter education initiatives

Republican Profile

Thomas Gibson

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EDUCATION

Bachelor of Arts, Political Science   May 2017
Portland State University, OR
Minor: Science, Technology, and Society

Clubs & Memberships
   Vikings for Informed Action   2015 – 2017
      • Elected Vice President for 2016-2017 year
   Honors College   2014 – 2017
   Young Republicans of Oregon   2014 – 2017
   College Republicans   2014 – 2017

EXPERIENCE

Emissary, Portland Republican Association   2015 – present
Portland, OR
   • Promote and share information about events and new initiatives
   • Recruit new members in support of association's mission
Intern, Portland United Conservation Clubs   2014
Portland, OR
   • Assisted policy and legislative team
   • Facilitated outreach and information gathering related to new policy initiatives
Research Assistant, Department of Political Science   2014 – 2015
Portland State University, WA
   • Member of the Undergraduate Research Opportunity Program
   • Presented final independent research project at the 2015 Portland Research
     Community Spring Research Symposium
Intern, Republican Voter Project   2014
Portland, OR
   • Helped with efforts to engage republican voters to improve voter turnout
   • Assisted with voter education initiatives