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There Goes the Sun: Media Framing and Public Attitudes on Solar Panel Tariffs

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by

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ABSTRACT

The media functions as an intermediary between policymakers and the public. As such, it is vital to understand how the media frames particular policies and how attitudes can be shaped as a result of media framing. This dissertation examines media frames and attitudes surrounding solar panel tariffs. It is important to understand media frames and attitudes about policies concerning renewable energy, because climate change is one of the greatest threats facing humanity today. Increased reliance on renewable energy, as opposed to fossil fuels, has the power to mitigate the potential negative outcomes of climate change. In this dissertation, I present the results of a content analysis that explores the way the *New York Times* and the *Wall Street Journal* framed the effects of the tariffs as well as the role that partisan bias played in reporting on the tariffs. I also show how people respond to positive and negative frames, both alone and in competition, about tariffs on solar panels. Finally, I present the results of a study that shows the role that partisan endorsements and motivational primes affect attitudes surrounding this issue. I find that framed messages and partisan endorsements can significantly move attitudes on solar panel tariffs.

INDEX WORDS: Public opinion, Media frames, Partisan media bias, Motivated reasoning, Solar energy, Tariffs

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DEDICATION

For Reyna and Hazel—

Can’t never could.

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1 INTRODUCTION

1.1 Introduction

On January 22, 2018, TIME magazine ran a story with the headline, "President Trump Slaps Tariffs on Solar Panels in Major Blow to Renewable Energy." The article warned of the damage to solar growth and installation jobs in the United States that would inevitably result from the tariff imposed by President Trump. It also situated the tariff in the context of what it referred to as President Trump's broader efforts to "undermine the economics of renewable energy." The pieces of information presented in this article are only a few aspects of the issue that the magazine could have chosen to highlight. For example, TIME could have chosen to present the fact that the tariff was an extension of tariffs originally put in place by the Obama administration as a result of unfair Chinese trade practices or that the tariff would potentially protect U.S. manufacturers and save U.S. manufacturing jobs. The TIME article is just one example of the choices that news outlets make about what information to present to the public on a political topic.

The basic function of the mass media in a democracy is to inform the public about what the government is doing. While individuals obtain information about political topics and policies through many sources, most information used to form judgements comes from the media (Iyengar and Kinder, 1987; Graber, 2004). Thus, the information that media outlets emphasize has consequences for citizen preferences and opinions about public policy. Understanding how citizens form attitudes and opinions about particular policy issues in a representative democracy is vitally important, as public opinion guides and constrains policymakers (Bolsen et al., 2016; Druckman, 2013). Much scholarship exists on how the media frames different political issues and policies, how individuals respond to media frames, and the role that partisan endorsements

can have on opinions. However, to date no research has been done that examines media frames and attitude formation about solar panel tariffs, specifically.

Tariffs on solar panels have important implications for our ability to combat climate change. There has been a steady rise in the use of solar energy in the U.S. since early the 2000s. As the science has become clearer regarding human-induced climate change, renewable energy has become an attractive option for powering homes and businesses. Replacing fossil fuels with renewables like solar power as the dominant sources of energy in the U.S. and across the globe has the power to prevent many of the damaging effects of climate change (UCS, 2021). Renewable energy currently provides around 20% of the energy in the United States (EIA, 2020). One appealing feature of solar power, in particular, is that the cost has continued to drop over time. In 2010, consumers paid $7.34 per watt for home solar installations. By 2020, the price had dropped to just $2.50 per watt, with prices further offset by federal tax credits (Austin, 2021). Prior research has shown that people's support and adoption of clean energy technology depends primarily on two competing considerations: economic cost and environmental benefits (Ansolobehere and Konisky, 2012). Expectedly, these two dimensions have also been the most utilized by media sources when discussing energy conservation measures (Bolsen et al., 2016). This prior research highlights the effect that policies that alter the price of solar energy can have on its adoption, and in turn, the degree to which we are able to stave off the deleterious effects of climate change.

Over the last decade, tariffs have been an ongoing issue for solar energy in the United States. China began subsidizing its solar panel industry in the 2000s, allowing Chinese manufacturers to dump panels into the U.S. market below market value. This served as a boon for installers, developers, and consumers, who capitalized on cheap foreign-made panels.

However, many U.S. manufacturers could not compete and were on the verge of bankruptcy as a result. A group of U.S. manufacturers filed petitions for anti-subsidy and anti-tariff duties with the Obama administration in 2011. Tariffs were issued by Obama's Department of Commerce in 2012. The tariffs left a loophole which allowed China to avoid the tariffs by manufacturing some components in Taiwan before being returned to China for assembly. This loophole was closed in 2013 by the Obama administration. Chinese companies again shifted production to other countries, prompting U.S. manufacturers to again file a petition for tariffs in 2017. This petition allowed President Trump to directly impose a tariff on imported panels from all foreign countries in 2018. The rate of the tariff was 30% in 2018 and gradually decreased to 15% by 2021.

Understanding communication and communication effects about solar panel tariffs is extremely important, given the urgency of climate change mitigation. This dissertation seeks to add to existing scholarship by examining how the media has framed the topic, the way that highlighting different considerations about the tariffs can move public opinion, and the impact that partisan endorsements have on public opinion about the topic.

1.2 Theoretical Overview

1.2.1 Framing

The media presents information to the public in news stories that highlight certain aspects of an issue while ignoring others (Druckman, 2004; Chong and Druckman 2007a; Chong and Druckman, 2011b). The narratives presented in particular messages are often called *media frames* or *frames in communication*. Gamson and Modigliani (1989) assert that media frames are "a central organizing idea or story line that provides meaning to an unfolding strip of events […] The frame suggests what the controversy is about, the essence of the issue" (p. 143). For instance, Delshad and Raymond (2013) conducted a content analysis of over 600 news articles

over 10 years about smart grid technology. They found that smart grid technology was most often presented through technological and economic frames; far more often than environmental, cultural, political or health and safety frames. Gearhart et al. (2019) examined a different medium, cable news, and found that three different outlets framed hydraulic fracturing, or "fracking," differently depending on the news outlet. They found that Fox News emphasized the economic benefits of fracking (for example, job growth), while largely excluding coverage of environmental costs. Conversely, MSNBC highlighted pollution and human health risks, while ignoring economic benefits of fracking. They found that CNN "appeared to toe the middle path in their fracking-related coverage of job growth, pollution, environmental benefits, and human health risks compared to other networks" (Gearhart et al., 2019).

Various factors can affect the frames that the media chooses to present to the public. The process of selecting which frames will be presented to the public is known as *frame-building* (Scheufele, 1999). Frame-building considers "what kinds of organizational or structural factors of the media system, or which individual characteristics of journalists, can impact the framing of news content" (Scheufele, 1999). This process specifically involves certain internal factors such as journalistic norms and values; journalists' personal backgrounds and ideologies; media routines; and organizational constraints and interests, including profit concerns and ideology of the owners (Shoemaker and Reese, 1996).

Factors outside of journalists and news organizations also affect how media frames are constructed. For example, events can change the considerations that news outlets choose to highlight. Gamson and Modigliani (1989) found that after the Three Mile Island accident, the media began more heavily emphasizing safety concerns associated with nuclear energy. Additionally, outside entities such as advertisers, advocacy/interest groups, and government all

influence which media frames get communicated to the public (Edelman, 1977; Shoemaker and Reese, 1996; Scheufele, 1999; Bolsen, 2011). Allan et al. (2010) demonstrated that scientists can also serve as an external influence on media frames. They found that scientists were the primary source of information in news coverage about nanotechnology in a content analysis of British and American newspapers. They also found that scientists drove frame usage and the tone of coverage of the issue (Allan et al., 2010).

One outcome of the frame-building process is Partisan Media Bias (PMB). PMB "is a political or ideological slanting of the news in a way that favors, criticizes, or ignores certain political actors, policies, events, or topics" (Shultziner and Stukalin, 2019). Researchers have found that PMB can result from journalists' personal ideologies (Patterson and Donsbach, 1996). More recently, scholars have focused on the effect of economic factors on PMB, such as news outlets' attempts to cater to audience preferences (Gentzkow, et al., 2016; Puglisi and Snyder, 2015; Shultziner and Stukalin, 2019). For example, Gentzkow and Shapiro (2010) conducted a study to determine the extent to which economic considerations drove partisan slant of newspapers in the U.S. The authors assessed the partisan slant of 433 U.S. newspapers. They also determined the ideology of potential readers in discrete locations across the U.S. using political donation data by zip code. The authors then determined the "fit" of each newspaper to the ideology of potential readers in each area. Using zip code-level circulation data, they provide evidence that consumer demand for each source is a response to the congruence between newspaper's partisan slant and ideology of potential readers. The authors used this measure to estimate that twenty percent of newspapers' partisan slant is a direct response to consumer preferences (Gentzkow and Shapiro, 2010).

The media frames that are ultimately presented to the public influence the way that people think about political issues and influence the attitudes that individuals hold. An attitude is "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagley and Chaiken, 1993, p. 1). Attitude formation has been conceptualized by social scientists using an expectancy value model (Chong and Druckman, 2011b; See Ajzen and Fishbein, 1980; Nelson et al., 1997). In this model, an attitude is formulated as $A=\Sigma v_i w_i$, where A is a person's attitude about a particular attitude object, *i* represents an attribute of the attitude object, *v* is the person's evaluation of attribute *i*, and *w* is the weight attached to attribute *i* (Chong and Druckman 2007a; Chong and Druckman, 2011b). When thinking about a specific attitude object, a potential KKK rally, for example, an individual may think about multiple attributes of the event before developing an attitude towards it. Two such attributes may be the civil liberties of members of the KKK (*i*=1) and public safety concerns about holding such an unpopular rally (*i*=2) (see Nelson, et al., 1997). Assuming protecting civil liberties of citizens is positively evaluated, v_1 is thus a positive consideration. Conversely, concern about public safety regarding the rally function as a negative consideration, representing v_2. How much the individual weights each consideration in this scenario (assuming these are the only two evaluations the individual has about this event) will ultimately determine the individual's attitude towards the rally. The collection of considerations about any given topic that determine an individual's opinion are referred to as an individual's *frame in thought* (Chong and Druckman, 2007a).

While this conceptualization is useful for scholars, it is imperative to remember that often times individuals do not have concrete preformed attitudes or opinions about issues before encountering media communications (Zaller, 1992; Chong and Druckman, 2007a). Druckman

(2014) states, “The reality is that citizens may not have the innate capacity to form preferences on their own, at least not without the messages provided by strategic political communications” (p. 468). Framed communications from the media and/or other strategic actors thus influence frames in thought through a process referred to as *framing effects* (Chong and Druckman, 2007a).

The field of Political Science has produced a massive amount of work that demonstrates the power of framing effects (Nelson et al., 1997; Brewer, 2001; Shapiro and Bolsen, 2019; Bolsen et al., 2020). For example, Bolsen et al. (2020) found that framed messages about the origins of Covid-19 not only affected an individual’s beliefs about how Covid-19 originated, but also had implications for their support for policies that financially punish China for the outbreak and their support for biomedical research. In this study, participants were assigned to either a control group that received no message or one of three groups that received differing framed messages: Covid-19 resulted from natural origins, Covid-19 originated in a laboratory, or both of these considerations presented in competition. The authors found that participants who received the natural origins framed message were more likely to believe that the virus had natural origins; and those that believed the virus had natural origins were in turn more likely to support providing additional funding for biomedical research. Conversely, respondents who received the framed message about the unnatural origins of Covid-19 were more likely to believe that Covid-19 did begin in a lab. This message also had downstream effects, with those who believed Covid-19 began in a lab being more willing to financially penalize China as a result of the virus (Bolsen et al., 2020).

Researchers have also found that issue framing has implications beyond beliefs and opinions (Myers et al., 2012; Lecheler et al., 2015). Myers et al. (2012) conducted an experiment

in which they presented participants with one of three framed messages about climate change to determine the emotional effects of each message. Climate change was framed in terms of environmental risks, national security risks, or public health risks. The authors found that the public health risk frame was most likely to generate hope across various segments of the population, while the national security frame was most likely to generate anger overall (Myers et al., 2012).

The abundance of experimental research on framing effects has shown that presenting one-sided frames about political topics to participants usually moves attitudes in the direction of the framed message. However, outside of a laboratory, individuals rarely only encounter frames that present one side of an issue (Chong & Druckman, 2007b; Sniderman and Theriault, 2004). Competitive framing effects occur when individuals are presented with messages that highlight different and oppositely valenced considerations about a single attitude object. Competition makes opposing considerations accessible in an individual's mind and applicable to the particular issue (Chong and Druckman, 2007b, Chong and Druckman, 2011b). However, all frames are not created equal; often one frame is stronger and thus more effective than another frame in a competitive context. Factors that help determine frame strength include the credibility of a frame's source and the frame's compatibility with a person's values and previously held beliefs (Chong and Druckman, 2007b, p. 104). Although frame strength is the strongest predictor of attitudes about a given topic, repetition of frames as well as the order in which an individual encounters competitive frames can also affect how likely individuals are to be influenced by a particular frame (Druckman and Bolsen, 2011; Druckman, Fein and Leeper, 2012).

1.2.2 Motivated Reasoning

Integral to understanding the attitudes that citizens hold about political topics is the concept of *motivated reasoning*. Druckman and McGrath (2019) explain the theory of motivated reasoning by asserting, "an individual's goals or motivations affect cognitive processes of reasoning and judgment" (p.3). Thus, when individuals are presented with new information about any issue, the information is always processed in the service of a goal, as "all reasoning is motivated" (Taber and Lodge, 2006, p. 756; see Kunda, 1990; Bolsen and Palm, 2019). Processing goals vary, but political scientists have largely focused on two types of goals: directional goals and accuracy goals.

Directional goals include any processing goals that are not accuracy goals (Kahan, 2016; Bolsen and Palm, 2019). This broad category includes goals to protect one's social identity and/or cultural worldview, maintaining previously held beliefs, and sustaining a positive view of one's self. Kunda (1987) showed that people judge their own attributes as being more likely to contribute to success. In this study, participants were told about a student who had gone on to attend graduate school and provided with a list of the student's attributes that included the student's religion, birth order, and whether their mother had worked outside the home, among others. The set of specific attributes shown to participants was varied. Kunda found that respondents who planned to attend graduate school themselves "rated items on which they matched the target person as better for success in professional school than items on which they did not match the target person." (Kunda, 1987, p. 641). The finding disappeared when looking at respondents who did not plan on attending graduate school. She concluded that "people tend to generate and evaluate causal theories in a self-serving manner […] These self-serving tendencies

seem to be explained best as resulting from cognitive processes guided by motivational ends" (Kunda, 1987, p. 646).

Three commonly discussed mechanisms of directional motivated reasoning are prior attitude effect, confirmation bias, and disconfirmation bias (Taber and Lodge, 2006; Druckman and McGrath, 2019). Prior attitude effect occurs when a person judges information that confirms their preexisting opinions as stronger than information that disconfirms prior opinions. Confirmation bias occurs when individuals seek out information that confirms beliefs that the individual already holds, while disconfirmation bias occurs when individuals exert more resources (time, cognitive effort, etc.) in order to resist new information that would disconfirm prior opinions (Taber and Lodge, 2006). Taber and Lodge (2006) provided evidence for these mechanisms in a study containing two experiments. In the first experiment, students were first asked their opinion on either gun control or affirmative action. The students were then given a choice of sixteen messages to read about the topic that they were assigned and told to read eight of them. Students exhibited a prior attitude effect by consistently rating the pro-attitudinal arguments that they read as stronger than the counter-attitudinal arguments. Additionally, students who showed more support (opposition) for gun control or affirmative action chose articles that supported (opposed) that position, providing evidence for confirmation bias. In an identical second experiment, the researchers measured the amount of time each student spent reading each article. Students spent longer amounts of time reading articles that went against their prior attitudes, suggesting disconfirmation bias. Students were also asked to write down their thoughts about each argument. As expected, the students had more thoughts about the articles that were incongruent with their prior attitudes than ones that confirmed their prior attitudes, providing additional evidence for disconfirmation bias (Taber and Lodge, 2006).

Identity-protective goals are one specific type of directional goal. Individuals engaging in this type of directional motivated reasoning evaluate new information with the goal of forming opinions that maintain their standing within social groups with which they identify and share cultural values (Kahan, 2016). Pursuing identity protective goals is rational, as individuals have very little control over government policy but much more control over their standing within groups with which they identify (Kahan, 2016). Prior research has shown that individuals derive self-esteem from being a member of a particular group (Tajfel and Turner, 1979). Kahan (2013) argued that "ideologically motivated cognition [should be viewed] not as a reasoning deficiency but as a reasoning adaptation suited to promoting the interest that individuals have in conveying their membership in and loyalty to affinity groups central to their personal wellbeing" (Kahan 2013, p. 417-418).

Scholars have long viewed partisanship as a form of social group identification (Campbell et al., 1960, Green et al., 2002; Greene, 1999; Nicholson, 2012). Partisanship is often argued to be as stable as other social group identities such as religion or ethnicity (Greene et al., 2002). Partisanship has also been shown to elicit similar amounts of affect for members of in-groups and conversely, similar or higher levels of animosity for members of out-groups as other identities such as race (Iyengar and Westwood, 2015). Maintaining allegiance to one's political party is oft theorized as a driving influence in opinion formation (Lavine, et al., 2012; Druckman, et al., 2013; Nicholson, 2012; Slothuus and Devrees, 2010). Partisan endorsements provide a lens through which to view new information. Druckman et al. (2013) provide evidence of this in a survey experiment. The authors manipulated frame strength, partisan endorsements, and partisan polarization in messages shown to participants. They found that partisan endorsements drove resulting opinions when frames were equally strong or weak. When frame

strength was unequal, respondents moved in the direction of the stronger frame as long as polarization was low. However, when partisan polarization was high, support for policies moved according to partisanship, regardless of frame strength (Druckman et al., 2013).

While directional goals lead individuals to protect their identities or prior attitudes, individuals pursue accuracy goals when they want to form an opinion about an attitude object that is the most objectively true or free from error (Kunda, 1999; Bolsen et al., 2014). People pursue accuracy goals for various reasons. They may be worried about being accountable to others for their opinion, or the stakes for holding an inaccurate opinion are high (Kunda, 1999). Druckman (2014) argues accuracy motivations are more normatively desirable than directional motivations. However, pursuing an accuracy goal does not guarantee that an individual will form an unbiased opinion. Druckman and McGrath (2019) argue *directional bias* is the result of directional motivated reasoning. However, directional bias in only one of several types of biases. People can be motivated to form an accurate opinion and still exhibit a *cognitive bias* or a *priors bias*. Cognitive biases are "a broad set of reasoning errors that are seemingly endemic to human cognition" (Druckman and McGrath, 2019, p. 4). An example of a cognitive bias includes the tendency of people to overestimate the occurrence of rare, highly publicized events, such as child kidnappings or plane crashes (see Kunda, 1999, Chapter 3). A priors bias occurs when prior information, beliefs, dispositions, or values color information processing. This type of bias can occur regardless of whether one pursues a directional goal or an accuracy goal when forming an opinion (Druckman and McGrath, 2019). For example, an individual may be motivated to reach an accurate conclusion when evaluating new information, but their prior beliefs about the credibility of an information source will still influence their resulting attitude. Druckman and McGrath (2019) illustrate this point with the example of a person being presented with both a

scientific study about climate change and a climate hoax news article. If the person weights the information in the scientific study more heavily than the information in the climate hoax article, they are using a priors bias. In this example, prior beliefs play a role in opinion formation even when a person is not motivated to protect prior beliefs or attitudes; instead, prior beliefs about the credibility of each source will determine how much each source influences the person's opinion about climate change.

This dissertation builds on the theoretical framework presented above in a variety of ways. First, I extend what is known about the specific considerations that the media uses to discuss solar panel tariffs. I also show how subsets of these considerations effectively move individuals' attitudes on the issue. Second, I demonstrate the Partisan Media Bias of two major news outlets in a novel way. The issue of solar panel tariffs provided a unique test of PMB, as virtually the same policy was implemented under presidential administrations of differing parties. To my knowledge, this method has not previously been utilized in the literature. Finally, very few scholars have directly induced motivational goals when conducting experiments on motivated reasoning. As such, this research provides novel evidence about the way that citizens form attitudes when pursuing accuracy goals, supports existing theories about the moderating role of knowledge in motivated cognition, and exposes partisan differences in information processing which are ripe for future study.

1.3 Chapter Outlines

The overarching goal of this dissertation is to provide insight into how the media has framed tariffs on solar panel tariffs and to examine how individuals form attitudes about the topic. In the following pages, I present three empirical studies to that end.

Chapter 2 presents an analysis of the way that two national newspapers, the *New York Times* and the *Wall Street Journal* cover the debate surrounding solar panel tariffs over time. I relied on framing theory to develop questions about specific considerations highlighted in newspaper coverage of the issue. Specifically, I sought to determine which frames about the effects of solar panel tariffs were most prevalent across sources and time periods. I also used previous literature regarding Partisan Media Bias (PMB) to develop predictions about how coverage in each newspaper during two distinct time periods was shaped by partisan congruence or incongruence with the presidential administration in power.

For this study, I conducted a content analysis of 90 articles that appeared in both newspapers from 2011 until 2018. I coded each article for the presence of effect frames and the direction of the story. Using this data, I found that coverage of the price increases and harm to consumers caused by the tariffs were the most mentioned effects of the tariffs overall. I also found that frames differed more over time than across sources. However, there were some interesting differences in coverage across sources within each time period. Further, I found evidence that both newspapers engaged in PMB. The *New York Times* presented more favorable coverage of the tariffs under the Obama administration than did the *Wall Street Journal*, while the opposite is true when these outlets reported on the Trump tariff.

Chapter 3 contains two survey experiments designed to determine how individuals respond to framed messages about the effects of tariffs on imported solar panels. I used framing theory to develop hypotheses about the direction in which citizen attitudes would move relative to a control as result of being presented with a pro-tariff message, anti-tariff message or both frames in competition.

Both experiments were conducted on student samples at Georgia State University. The first study was conducted in the Fall of 2020, while the second study was conducted in the Spring of 2021. I found strong evidence that the pro-tariff message moved respondent to support tariffs more. I also found evidence that the anti-tariff message reduced support for the policy. Finally, these studies provided evidence that presenting frames in competition results in a "canceling out" effect. Respondents who received the message with both positive and negative considerations showed similar levels of support for tariffs on foreign made solar panels as respondents in the control group who had received no positive or negative considerations about the policy.

Chapter 4 presents the final empirical study conducted in this dissertation. In this chapter, I used the theory of motivated reasoning to generate hypotheses about how individuals would respond to motivational inducements and elite partisan endorsements of tariffs on solar panels. Additionally, I drew on previous literature to predict how responses would vary based on political knowledge of respondents. I directly induced either no processing goal, an accuracy goal, or a directional identity-protective goal for each condition. Respondents were then all given a message containing competing frames about the effects of solar panel tariffs with either no endorsement, an endorsement by President Obama, or an endorsement by President Trump.

This experiment was conducted on a sample of respondents using Amazon Mechanical Turk in October of 2020. I found that individual's opinions are highly susceptible to elite partisan endorsements, and the study yielded strong evidence that inducing directional goals increases the effect of partisan cues. Further, I expected accuracy goals to moderate the effect of the partisan endorsement as previous literature had demonstrated (Bolsen, et al., 2014). However, I only found mixed support for this proposition. There are a two potential, plausible

explanations for this finding: the accuracy motivation was not able to overcome partisan endorsements in a highly polarized environment; or respondents were motivated to form accurate opinions, but saw an endorsement by a president of their own party as a credible source cue that still led them shift support in the direction of the endorsement (Druckman and McGrath, 2019). Additionally, I found that effects of the endorsements were magnified among the most knowledgeable participants. Finally, though not predicted, I found that Democrats drove all results in this study, while Republicans did not shift support in predicted directions.

Finally, Chapter 5 provides a review of the findings of this dissertation and how they contribute to existing bodies of work. Additionally, this chapter provides avenues for future research based on what has been learned through the studies contained within these pages.

2 CHAPTER 2: MEDIA FRAMING OF SOLAR PANEL TARIFFS OVER TIME AND ACROSS SOURCES

2.1 Introduction

Individuals learn about public policy through a variety of sources, including personal experiences and discussions with friends and family. However, most information about public policy, political issues, and events comes from mass media (Iyengar and Kinder, 1987; Graber, 2004). The mass media in the U.S. serves as the link between policymakers and the public, informing the public about current issues associated with political topics and public policies. The way journalists choose to report on issues sets the terms of debate and shapes citizens' attitudes about political issues (Scheufele, 1999; Baumgartner et al, 2008). It is for this reason that it is vitally important for scholars to examine how the media frames issues of public policy in the United States.

Media frames and public opinion surrounding trade and tariff policies, generally, in the United States have been woefully understudied until recently (see Mutz, 2021). Trade policy has broad implications for the U.S. economy, both at the macro and micro level. One particular policy that has far reaching implications beyond just economic repercussions is tariffs on imported solar panels and components. Tariffs on solar panels have impacted the amount of clean, renewable energy available in the United States, which has in turn affected the amount of greenhouse gas emissions the U.S. has produced over the last decade (Wood Mackenzie, 2020). Many scientists and policymakers alike argue that climate change as a result of CO_2 emissions is the most pressing issue facing the world today (UCS, 2021; Newberger, 2020). It is for this reason that special attention should be paid to the politics surrounding tariffs on solar panels and components.

In this chapter, I begin with an account of the history of tariffs on foreign-made solar panels and components over the past decade. I review the literature of framing theory and outline research questions about how two major U.S. news outlets, the *New York Times* and the *Wall Street Journal*, have presented the effects of solar panel tariffs. I then review extant literature on Partisan Media Bias, and make predictions about the way that these news outlets favored different political parties in how they covered solar panel tariffs under the Democratic administration of Barack Obama versus coverage under the Republican administration of Donald Trump. Ultimately, I identify which effects of the tariffs are highlighted most by news outlets over time and across sources as well as how frame usage shifts over time. I find that the *New York Times* and the *Wall Street Journal* were both more likely to report on the topic favorably when a partisan congruent president was in office. These results add to what we know about media frames surrounding trade and tariff policy generally, and solar panel tariffs, specifically. Additionally, this chapter adds to the growing literature on how news outlets display partisan bias in reporting on political issues.

2.2 History of Tariffs on Solar Panels in the U.S.

In October of 2011, a group of U.S.-based solar panel module makers petitioned the U.S. International Trade Commission (ITC) and the Department of Commerce claiming that the Chinese solar industry had dumped products into the U.S. market at less than the cost to manufacture and ship them. They additionally claimed that the Chinese government had unfairly subsidized its solar industry. The petitions were filed under the Tariff Act of 1930 which allows an industry in the U.S. to petition the government for relief when foreign-made products have been dumped into the U.S. and/or subsidized by foreign government programs. As required by

law, the ITC and the Department of Commerce (DOC) both conducted investigations into the claims.

The International Trade Commission is an independent, nonpartisan, quasi-judicial federal agency that investigates and makes determinations regarding trade cases in the U.S. In the case stemming from the 2011 filing, the ITC was first responsible for issuing a preliminary ruling on whether U.S. manufacturers were injured or not by Chinese imports. The ITC agreed that domestic manufacturers were injured in December 2011 (subject to a final ruling after the ITC conducted a full investigation), allowing the Department of Commerce to continue its investigation. The DOC, who is led a by a presidential appointee and is responsible for determining if tariffs are a necessary remedy in trade cases and deciding the rate of the tariffs, conducted its own investigation into the subsidy and dumping claims. In March of 2012, the DOC initially determined that China was subsidizing its solar industry and issued relatively low tariffs (between 2.9% and 4.73%). Then in May of 2012, the DOC ruled affirmatively on the dumping charge as well and issued higher tariffs (~31%) on the Chinese imports. In October of 2012, the DOC issued the final ruling reconciling the anti-subsidy and anti-dumping tariffs, setting final tariffs of ~24%-36% on Chinese solar products. In November of 2012, the ITC issued its final ruling, determining that U.S. solar manufacturers had been materially injured by the Chinese government's subsidizing of its industry and the dumping of panels below cost into the U.S. market. This decision allowed the tariffs to go into effect for a period of 5 years.

Although President Obama was not directly responsible for placing tariffs on imported solar panels, he was supportive of his administration's action against unfair trade practices in his rhetoric. In November of 2011, he stated that,

> We have seen a lot of questionable competitive practices coming out of China when it comes to the clean energy space, and I have been more aggressive than previous administrations in enforcing our trade laws. We have

> filed actions against them when we see these kinds of dumping activities, and we're going to look very carefully at this stuff and potentially bring actions if we find that the basic rules of the road have been violated. (KGW, 2011)

In June of 2013, the European Union followed the example of the U.S. and also imposed steep tariffs on imported solar panel modules and components from China. During 2013, both the U.S. and the European Union were in serious talks with Chinese officials to negotiate a settlement in which the tariffs would be removed, but China would have to charge more for their panels and would be limited on the number of panels that they could export to the U.S. and Europe. In July of 2013, the EU reached a settlement with China, while the United States never did.

The 2012 final ruling had left a loophole allowing Chinese manufacturers to evade the tariffs. The tariffs only applied to Chinese solar panels made from Chinese solar cells. However, before the ruling in the 2011 case were finalized, China was already beginning to manufacture solar cells in Taiwan before they were returned to China and used to make completed modules. This allowed Chinese manufacturers to avoid the tariffs. In December of 2013, SolarWorld, one of the complainants in the 2011 suit, filed a second petition to close the loophole that allowed China to move production of components to Taiwan. The process for this case was the same as for the 2011 case. In June of 2014, the DOC determined anti-subsidy tariffs of ~19%-35%, and in July ruled on the dumping portion of the case, issuing preliminary tariffs of ~20%-40%. Final determinations were made in December of 2014, with tariffs ranging from ~11%-78%. Again, the ITC determined that the U.S. industry was materially injured in January of 2015, allowing the tariffs to go into effect.

As a result, Chinese manufacturers again moved production of solar panels and/or cells to avoid the tariffs. Production was moved mainly to other southeast Asian countries, such as Thailand, Vietnam, and Malaysia. Manufacturers with factories in the United States again filed a

petition with the ITC in April of 2017 seeking a uniform tariff from all foreign countries. However, instead of filing the petition under the Tariff Act of 1930 (as the first two petitions had been done), the panel makers instead petitioned the government under Section 201 of the Trade Act of 1974. In these cases, the ITC determines if the domestic industry has been seriously harmed by high quantities of a foreign import. If they determine that it has, the ITC recommends a course of action to remedy or prevent further harm directly to the President. The President is then the final arbiter in Section 201 cases as opposed to the Department of Commerce. Another difference between this law and antidumping and countervailing duty laws is that no evidence of unfair trade practices must be found for a tariff to be issued. This method of petitioning for tariffs is far more uncommon. The last time it was used successfully before the 2017 solar panel industry petition was in 2002 for the steel industry.[1]

In September of 2017, the ITC ruled that the domestic solar industry had been harmed and recommended a uniform tariff of up to 35% in October of that year. In January of 2018, President Trump placed a tariff of 30% on all imported solar panels and cells. The tariff incrementally decreased each year until 2021, the last year of the tariff, when rates would equal 15%. In one of his last acts in office in 2020, Trump increased the tariff for 2021 to 18%.

2.2.1 Chinese Response and Retaliation

After the initial investigation into Chinese dumping and subsidies of solar panels and components began, the Chinese Commerce ministry claimed that they conformed to World Trade Organization rules. In November of 2011, China began a retaliatory subsidies investigation into various renewable energy products that the U.S. imported to China, including

[1] The steel tariffs were later repealed after foreign steel makers petitioned World Trade Organization, who ultimately ruled that the tariffs violated the WTO's tariff-rate commitments.

polysilicon, which is used by Chinese manufacturers in solar panel modules. In December of 2011, China put tariffs on imported U.S. vehicles with engine capacities above 2.5 liters, citing subsidizing by the U.S. government and dumping into the Chinese market as the reason. And in 2014, China finalized its investigation of U.S. manufactured polysilicon, levying duties of up to 57% on imports from the U.S.

Additionally, in May of 2014, a Justice Department indictment accused five Chinese military personnel of hacking the computer records of SolarWorld, a U.S. solar manufacturer involved in the 2011 petition, and stealing legal strategy details, technological secrets, production cost data, and cash flow projections. The indictment indicated that the cybertheft was retaliation for the petition and resulting solar product tariffs.

After the uniform solar panel tariff was levied in 2018, China again appealed to the World Trade Organization, arguing that the tariff (and concurrent tariffs on washing machines) were not consistent with WTO rules. China additionally issued retaliatory tariffs on a variety of goods, including soybeans and sorghum in response to the solar tariffs and additional tariffs imposed on other goods by the Trump administration in 2018.

2.2.2 Division within the Industry

As solar usage has grown in the United States, so has the solar industry. As of November 2019, there were almost 250,000 full-time and 95,000 part-time solar industry jobs in the U.S. The vast majority of jobs in solar industry are in demand-side sectors, including installation, project development, wholesale trade and distribution (Solar Jobs Census, 2019). These jobs make up 77% of solar industry jobs, while manufacturing jobs comprise the remainder of industry jobs.

Many in the industry argued that cheap materials benefitted the American industry and American consumers in multiple ways. In addition to the amount of installation and project development jobs that relied on cheap materials to keep the industry growing, the U.S. has also been the world leader in research and development of solar technology. As a response to the initial 2011 petition, several industry groups popped up or were founded in order to oppose the tariffs, including twenty-five solar industry companies who came together to form the Coalition for Affordable Solar Energy (CASE). This group actively lobbied against any tariffs on solar products from overseas. Furthermore, the Solar Energy Industries Association (SEIA), which is the national trade association for U.S. solar industry, vigorously opposed tariffs on all imported panels and cells after all three petitions. In 2011, SEIA CEO Rhone Resch argued that "Prior to these trade cases, the U.S. and Chinese solar industries enjoyed a strong, productive working relationship. For both sides to succeed going forward, we must return to our collaborative roots at both the industry and government levels" (SEIA, 2012).

2.3 Theory

2.3.1 Framing Theory

There has been widespread coverage of the events surrounding solar panel tariffs over the last decade. The role of the mass media is to present information about political issues and policies to the public. The way that media sources choose to present information on a given topic directly influences the way individuals structure their attitudes about the issue (Gamson and Modigliani, 1989; Nisbet, et.al., 2003; Entman, 2004). When reporting on a topic, journalists choose which features of the issue to highlight, presenting a *frame in communication,* also known as a *media frame*, to their audience (Gamson and Modigliani, 1987; Chong and Druckman, 2011b). Chong and Druckman (2011b) define a *media frame* as "an interpretation or

evaluation of an issue, event, or person that emphasizes certain of its features or consequences" (p. 240). Journalists are responsible for making choices when deciding which information to include and highlight in a news story; this is part of the *frame-building process* (Scheufele, 1999). Frame-building takes into account the "organizational or structural factors of the media system, or which individual characteristics of journalists, can impact the framing of news content" (Scheufele, 1999, p. 110). Thus, a *frame in communication* is a result of the *frame-building process*, and provides a cohesive narrative for an event or issue.

Individuals think about issues through *frames in thought* (Chong and Druckman, 2007a). The sum of positive and negative evaluations one holds about a given issue determines their attitude towards that issue (Nelson, et al. 1997; Chong and Druckman, 2011b). A *framing effect* occurs when a *frame in communication* influences a *frame in thought* (Druckman, 2001; Chong and Druckman, 2007a). *Framing effects* work by making certain considerations more accessible in people's minds or more applicable, meaning that an individual consciously applies a highlighted consideration to the issue at hand (Chong and Druckman, 2007a). For example, Baumgartner et al. (2008) show how the media was able to shift attitudes on capital punishment by the introduction of an "innocence frame" into national discourse beginning in the late 1990s. The "innocence frame" highlighted the possibility of error in the U.S. criminal justice system, subsequently resulting in less aggregate public approval of the death penalty as well as reduced willingness of juries to impose the death penalty (Baumgartner et al., 2008).

Based on the literature about issue framing reviewed above, this chapter seeks to answer the following research questions:

R1: What effects of solar panel tariffs did journalists highlight most when reporting on solar panel tariffs?

R2: Did reporting on the effects of the tariffs differ over time and across sources?

2.3.2 Partisan Bias of News Sources

One aspect of the *frame-building process* that can affect coverage of political issues is the role of partisan bias (Larcinese et al., 2011; Merkley, 2019; Shultziner and Stukalin, 2019). Shultziner and Stukalin (2019) define Partisan Media Bias (PMB) as "a political or ideological slanting of the news in a way that favors, criticizes, emphasizes, or ignores certain political actors, policies, events or topics" (p. 202). PMB may be expressed by a news outlet highlighting positive characteristics about an issue and/or selectively disregarding or omitting negative information about the same issue, depending on the congruence of the issue to the outlet's partisan leanings. Puglisi and Snyder (2011) provide an example of PMB. They found that newspapers that endorse more Democratic candidates in elections cover scandals involving Republicans at a higher rate. They found the opposite is true for Republican leaning news sources as well.

Researchers have argued that there are varied reasons for PMB, many of which relate to supply and demand (Gentzkow and Shapiro, 2010; Gentzkow et al. 2016; Puglisi and Snyder, 2015). For example, news outlets often try to cater to the political leanings of their audience (Gentzkow and Shapiro, 2010; Larcinese et al., 2011). PMB can also occur as a result of the political ideology and partisan preferences of owners, journalists, and editors (Shoemake and Reese, 2014; Puglisi and Snyder, 2015). Owners, editors, and journalists may have personal interests in producing articles that are slanted, but they are constrained by various factors (Shultziner and Stukalin, 2019). First, competition constrains PMB. When competition is high, news organizations are more incentivized to cover more aspects of a story, lest they lose members of their audience to competitors (Gentzkow et al. 2016). Second, journalists are

constrained because they are professionals who usually adhere to certain ethical standards and journalistic norms, despite personal partisan or ideological leanings or outside pressure. Finally, the news that gets reported is the result of the constraints of the context of each particular political issue or event (Shultziner and Stukalin, 2019).

Researchers have previously found that the *New York Times* is more favorable towards Democrats (Puglisi, 2011; Ad Fontes Media, 2021). Puglisi (2011) found that during presidential campaigns where the incumbent president was a Republican, the *New York Times* covered more issues over which Democrats had ownership. Issue ownership means the Democratic party was regarded as better able to handle those issues than Republicans. Conversely, the *Wall Street Journal* is slanted more favorably towards Republicans (Gentzkow and Shapiro, 2010; Feldman et al., 2017; Ad Fontes Media, 2021). Feldman et al. (2017) found that when reporting on climate change, the *Wall Street Journal* was less likely than other national newspapers to highlight the economic impacts of climate change and to present messages highlighting moral responsibility to take action, but more likely to use frames that highlighted the economic cost of taking action.

Coverage of solar panel tariffs provided a unique test of the PMB of these two news outlets, as the tariffs were originally put in place under the Obama administration, with supportive rhetoric from President Obama, but were then expanded directly by President Trump during his tenure in office. Based on previous literature demonstrating PMB of the *NYT* and the *WSJ*, I predict the following:

H1: Reporting in the *New York Times* will be more positive towards tariffs on solar panels during the Obama administration than reporting in the *Wall Street Journal*.

H2: Reporting in the *Wall Street Journal* will be more positive towards the tariff on solar panels during the Trump administration than reporting in the *New York Times*.

2.4 Method

Scholars have traditionally used content analyses to study the way the media frames particular issues (Gamson, and Modigliani, 1987; Entman, 2007, Bolsen, 2011; Chong and Druckman, 2011a). The focus of this chapter is on communications that may influence the attitudes that citizens hold about tariffs on solar panels and panel components. To analyze coverage surrounding solar panel tariffs over time, I follow previous scholars in examining an initial sample of news articles about solar panel tariffs in order to develop a coding instrument (Bolsen 2011; Chong and Druckman, 2011a). My goal in this research was to determine how news outlets presented the effects or potential effects of the tariffs and to determine if PMB was present in news coverage. Using this initial sample, I identified nine effect frames that were commonly discussed: tariffs increase panel prices/hurt consumers, tariffs create industry division/hurt U.S. solar jobs, China retaliated against the U.S./there is fear that China will retaliate against the U.S., tariffs protect manufacturers, tariffs slow solar growth, environmental concerns as a result of the tariffs, tariffs save jobs/create jobs/cause foreign manufacturers to move new production to the U.S., tariffs will not hurt consumers and/or increase price of panels, and tariffs will not save U.S. manufacturers. See Table 2-1 for examples of each frame within a news story.

Table 2-1. Example of Effect Frame Use

Effects Frames	Examples
Protect Manufacturers	"SolarWorld said it believes the remedies the companies have proposed remain the best option for solar manufacturers, and hopes President Trump feels the same. “We look forward to President Trump establishing remedies that will place this industry back on a path of robust growth,” the company said." - *WSJ*, 10/31/17
Save Jobs/Create Jobs/Move Production to U.S.	"New tariffs on Chinese solar panels, including widely anticipated duties imposed by Washington on Friday, are spurring companies to manufacture more solar-power equipment in the U.S." - *WSJ*, 7/25/2014
Too Late to Save U.S. Manufacturers	"Many analysts say the tariff may fall short of its goal of reviving solar manufacturing in the United States. […] 'This tariff only puts module prices back to where they were in 2015 or 2016, and U.S. manufacturers weren’t competitive then,” said Varun Sivaram, an expert on solar power at the Council on Foreign Relations.'" - *NYT*, 01/23/18
Solar Companies’ Failings are Their Own Fault	"But tariff opponents argued that SolarWorld had largely brought its problems on itself, and had proved unable to compete in a world where the low price of natural gas and declining subsidies were putting pressure on solar manufacturers to cut their prices sharply in order to survive." -*NYT*, 10/02/12
Industry Division/Hurt U.S. Solar Jobs	"[…] the tariffs will cause collateral damage by slowing down the installation of solar panels in the United States, destroying more jobs than they create, and provoking trade disputes and retaliation." *NYT*, 1/24/18
Increase Price/Hurt Consumers	"The opponents argue that the duties would make it more expensive for American families and companies to install solar systems." - *NYT*, 10/10/12
Tariffs Won't Hurt Consumers	"While [a tariff] could apply upward pressure on panel prices in general, technological improvements and production cost savings could cushion the effect. Also, utilities in some locales are mandated to procure renewable energy, which would sustain demand." - WSJ, 3/30/18
Slow Solar Growth	"The solar industry expects to continue adding installations, but growth is estimated to be about 11 percent lower than projections before the tariffs." - *NYT*, 5/3/18

I then conducted a content analysis of stories appearing in the *New York Times* and the *Wall Street Journal* between October 1, 2011 and April 1, 2021. This covers the time period from the month that the first case was filed until the day I began coding. After developing the coding instrument using the initial set of frames, I searched the *New York Times* and *Wall Street Journal* websites using the keywords: "solar tariff" and specifying the time frame. Every article that mentioned these two words anywhere in the title or text was examined. I coded the article if at least half of the content within the article was about solar tariffs or the effects of solar tariffs, specifically. I excluded extremely short articles (less than 200 words) if they included zero considerations about the effects of the tariffs. I also excluded letters to the editor and articles that appeared exclusively in *Wall Street Journal Pro*[2]. Finally, articles where the main focus of the article was the solar panel tariffs issued by the European Union were also excluded. Table 2-2 shows the number of articles analyzed by source and year (*N*=90).

Table 2-2. Frequency of News Coverage over Time

News Source	Year							
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
New York Times	8	11	4	7	0	0	5	6
Wall Street Journal	6	14	1	9	0	0	9	10
Total	**14**	**25**	**5**	**16**	**0**	**0**	**14**	**16**

Prior research has shown that events alter the content of frames surrounding issues (Gamson and Modigiani, 1989; Bolsen, 2011). Events create disturbances in ongoing issues that cause news organizations and journalists to reevaluate and reinterpret current narratives about a particular topic (Gamson and Modigliani, 1989). For example, Schnell and Callaghan (2005) found that the events of 9/11 fundamentally changed frames surrounding gun control, giving rise

[2] *Wall Street Journal Pro* articles do not appear in print and are only available behind an additional paywall. These articles also do not show up in ProQuest, unlike all other *Wall Street Journal* articles.

to a terrorism frame for this issue. Further, Bolsen (2011) found that events are the primary driver of news coverage surrounding energy conservation. Specifically, he found that the use of economic frames over time resulted from energy cost increases and environmental effect frames increased in response to growing evidence about global warming (Bolsen, 2011).

Table 2-3 shows the key events that occurred from 2011 through 2018 regarding petitions by U.S manufacturers for solar panel tariffs and resulting government actions. Comparing Tables 2-2 and 2-3 shows that the frequency of coverage over time tracks closely with key events that occurred from 2011 through 2018.

Table 2-3. Solar Tariff Events over Time

Year	***Month***	***Action***
2011	October	Solar panel manufacturers petitioned the ITC and the Dept. of Commerce for tariffs in response to Chinese subsidies and dumping under the Tariff Act of 1930.
	December	The ITC issued preliminary ruling that the U.S. was harmed by imports.
2012	March	The DOC determined that China was subsidizing its solar industry and issued preliminary tariffs (between 2.9% and 4.73%).
	May	The DOC found that China dumped solar panels into the U.S. below market value and issued preliminary duming tariffs (~31%)
	October	The DOC issued the final ruling reconciling the anti-subsidy and anti-dumping tariffs, setting final tariffs of ~24%-36% on Chinese solar products.
	November	The ITC issued its final ruling, determining that U.S. solar manufacturers had been materially injured by the Chinese government's subsidizing and dumping of solar panels.
2013	May	U.S. officials began talks with China to negotiate a settlement which would result in removal of the tariffs.
	December	U.S. manufacturers again petitioned the ITC and the Dept. of Commerce for tariffs under the Tariff Act of 1930, seeking to close the loophole that allowed China to to move production of components to Taiwan.
2014	February	The ITC issues preliminary ruling that the U.S. was harmed by imports.
	June	The DOC rules on the anti-subsidy portion of the petition, issuing preliminary tariffs of ~19%-35%.
	July	The DOC ruled on the anti-dumping portion of the petition, issuing preliminary tariffs of ~20%-40%.
	December	The DOC issued the final ruling reconciling the anti-subsidy and anti-dumping tariffs, setting final tariffs of ~11%-78%. on Chinese solar products with components made in Taiwan.
2015	January	The ITC determined that the U.S. industry was materially injured allowing the tariffs to go into effect.
2017	April	Manufacturers with factories in the United States filed a petition with the ITC seeking uniform tariffs from all foreign countries under Section 201 of the of the Trade Act of 1974.
	September	The ITC ruled that the domestic solar industry had been harmed, and recommended uniform tariffs of up to 35%.
2018	January	President Trump placed a tariff of 30% on all imported solar panels and cells, which would decrease by 5% each year and end in 2021.

A dichotomous measure was used to denote during which time frame the article appeared. Articles that were written as a result of the initial anti-subsidy and countervailing duties case against Chinese manufacturers or the second case from 2013 that closed the loophole allowing Taiwanese cells in Chinese panels to be imported tariff-free were coded "1." These cases utilize the same law, and the resulting tariffs were all issued by the Commerce Department under President Obama. The date range for these articles is from October of 2011 through December of 2014. Articles that cover the Section 201 case brought during President Trump's tenure were coded "2." These date range for these articles is April of 2017 to May of 2018.

I also used dichotomous coding for the presence of each effect frame within each article.[3] If an effect frame was mentioned at all in an article, I coded it "1." If no mention was made of a particular effect frame, it was coded "0."

Additionally, I coded each article for the direction of the story. Direction was coded on a 5-point scale, where 1 = anti-tariff, 2 = leans anti-tariff, 3 = both positive and negative considerations were highlighted relatively equally or very few or no positive or negative frames was present, 4 = leans pro-tariff, and 5 = pro-tariff. Most articles fell into either the "leans anti-tariff" or "leans pro-tariff" categories overall. These articles usually provided some opposing considerations, but clearly focused more on either positive or negative aspects of the story.

[3] Because of the specificity of the effect frames, I did not code for valence of the dimension, i.e. whether each frame was positively associated with tariffs or negatively associated with tariffs. For example, the effect frame, *protect manufacturers*, is always positive. Some of the frames are clearly oppositely valenced sides of the same dimension, such as the *increase price/hurt consumers* and *tariffs won't hurt consumers* frames. However, most effects frames used in these news sources had no opposing consideration on the same dimension, such as *environmental concerns*.

2.5 Results

2.5.1 Effect Frames Across Sources and Over Time

Research Question 1 asked which effects of solar panel tariffs journalists highlighted most often. Table 2-4 reports the percent of articles in which each coded effect frame is present by source and time period. The total usage of each effect frame across both sources and time periods is also reported. Table 2-4 shows that the potential for the tariff to cause an *increase in price and/or hurt consumers* was the effect frame most often employed in articles about tariffs on solar panels overall. This frame was highlighted in 61% of articles. The *division over the tariffs in the U.S. solar industry/tariffs to hurt U.S. solar jobs* was the second most utilized effect frame across time periods and sources, appearing in 57% of articles overall. News outlets chose to present the *Chinese retaliation* frame in 43% of articles overall, making it the third most common frame present in coverage of the tariffs. This frame included both actual actions China had taken or threatened to take in retaliation against the United States as well as fear of future retaliation by government officials or industry representatives in the U.S. The ability of the tariffs to *protect manufacturers* was the fourth most employed frame, appearing in 40% of articles across sources and time periods. The fact that tariffs either have, or would potentially, *slow solar growth* was highlighted in 38% of articles overall, making it the fifth most highlighted effect of the tariffs. Other effect frames employed at a lower rate include: *environmental concerns* (33%), *tariffs save jobs/create jobs/move production to U.S.* (32%), *tariffs will not hurt consumers* (14%), and *it is too late to save U.S. manufacturers* (13%).

Table 2-4. Frame Usage over Time across Sources (% of total including frame)

	2011 - 2014		2017 - 2018		
Frame	***NYT***	***WSJ***	***NYT***	***WSJ***	**Total**
Increase Price/Hurt Consumers	47%	50%	91%	84%	**61%**
Industry Division/Hurt U.S. Solar Jobs	50%	40%	91%	74%	**57%**
Chinese Retaliation	60%	43%	45%	16%	**43%**
Protect Manufacturers	40%	17%	64%	63%	**40%**
Slow Solar Growth	23%	23%	73%	63%	**38%**
Environmental Concerns	40%	37%	36%	16%	**33%**
Save Jobs/Create Jobs/Move Production to U.S.	30%	20%	36%	53%	**32%**
Tariffs Won't Hurt Consumers	17%	13%	0%	21%	**14%**
Too Late to Save U.S. Manufacturers	13%	7%	27%	16%	**13%**
	N=30	N=30	N=11	N=19	**N=90**

Research Question 2 asked if reporting on the effects of the tariffs differed over time and across sources. Results for changes over time are presented in Figure 2-1. The effect frame that received the greatest increase in coverage was that tariffs would *slow solar growth*. This frame appeared in 23% of articles during the Obama administration, but increased to be included in 67% of articles about the Trump tariff, resulting in a 43% increase. Reporting that tariffs would *increase price/hurt consumers* increased by the second largest percentage, jumping from inclusion in 48% of articles about tariffs during the earlier time period to 87% of articles during the second time period, a difference of 38%. News outlets also increased coverage of *industry division/hurt solar jobs*, with both considerations appearing in 35% more articles under the Trump tariff than they had under the Obama administration's tariff. The consideration that received the greatest decrease in coverage by news outlets was *Chinese retaliation.* [4]

[4] One important caveat should be noted before making any inferences about coverage of Chinese retaliation over time from these numbers. Only articles where solar panel tariffs were the focus of at least half of the article were coded in this study. However, after Trump issued tariffs on solar panels and washing machines, more tariffs followed. Actions by China increased after that point, but articles were not coded because solar panel tariffs were just one of many tariffs mentioned from mid-2018 forward. A broader analysis of tariff policy is necessary to capture the extent of coverage on Chinese retaliation after the 2017 solar panel petition.

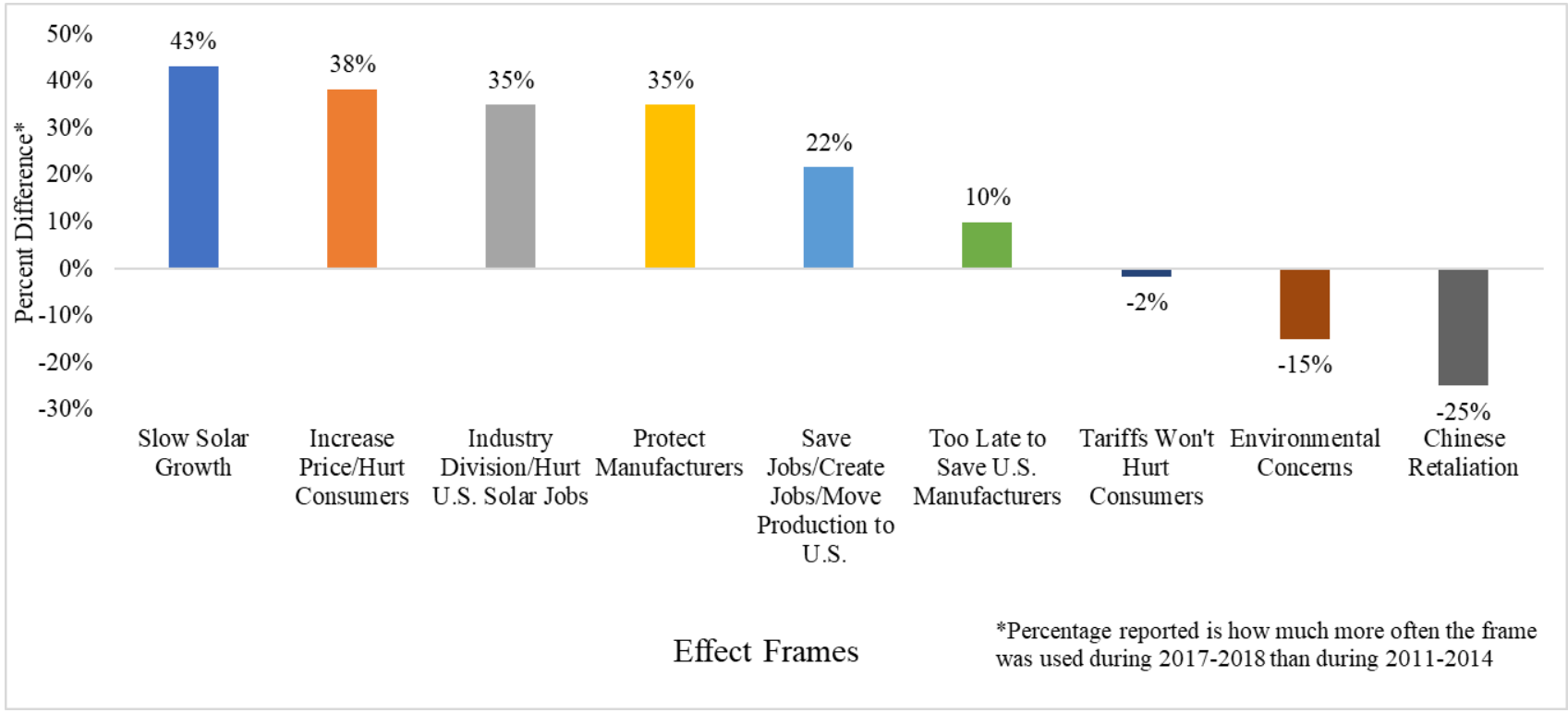

Figure 2-1. Percent Change in Frame Usage over Time

Figure 2-2 shows the results of comparing the frequency of each effect frame by source. These results show that differences between sources are smaller on average than differences over time. The most notable difference in coverage between sources when looking at the entire 7-year period is reporting on *Chinese retaliation*. The *NYT* included this consideration in 24% more of its articles on solar tariffs across both time periods. The second largest difference seen across sources was highlighting that tariffs *protect manufacturers*. The *NYT* included this effect frame in 12% more of their articles about the tariffs than did the *WSJ*. The *NYT* also highlighted *environmental concerns* in 11% more of their articles and *industry division/hurt U.S. solar jobs* in 8% more of their articles than did the *WSJ*. Finally, the *NYT* highlighted the effect frame that *it is too late to save U.S. manufacturers* in 7% more of their articles than did the *WSJ*. Effect frames used more often in the *WSJ* than the *NYT* have smaller differences, including: *increase price/hurt consumers* (5%), *tariffs won't hurt consumers* (4%), *slow solar growth* (2%), and *save/create jobs* (1%).

More variance is seen when comparing sources to each other within each time frame. Table 2-5 presents the percentage difference in frequency of frame usage between sources at each time period. Since reporting on *Chinese retaliation* was the effect frame that displayed the largest difference in frequency of coverage by source overall, it is not surprising that frequency of use of this frame makes up the largest difference during the Obama administration's tariffs, and the second largest difference between sources under the Trump tariff. The *NYT* reported on *Chinese retaliation* in 17% more of its articles during the Obama administration's tariffs and 30% more in articles about the Trump tariff.

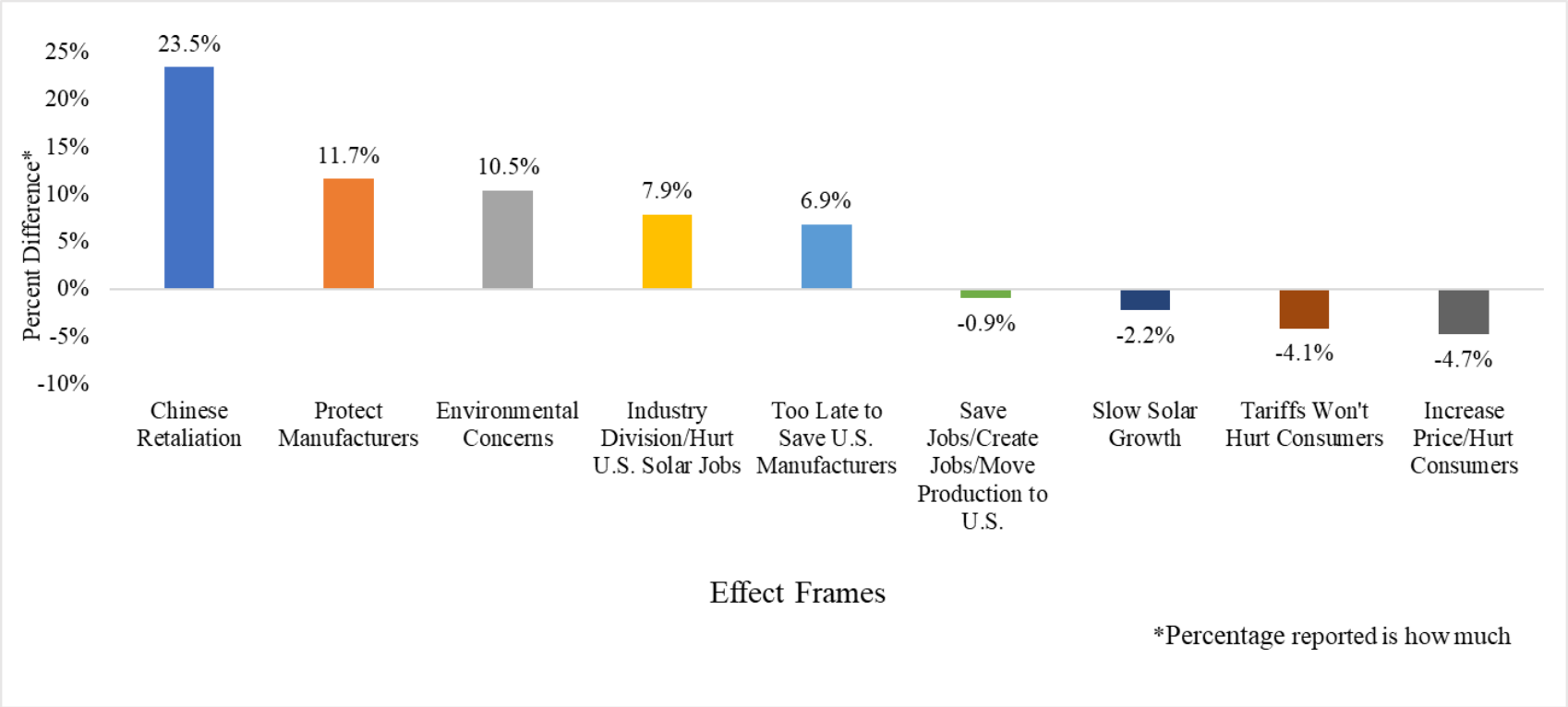

Figure 2-2. Percent Change in Frame Usage between Sources

There are also other notable differences when comparing sources within time frames. Table 2-5 shows that during the Obama administration's tariffs, the largest difference between sources was highlighting that the tariff would *protect manufacturers*. During this period, the *NYT* was 23% more likely to include this consideration in its articles than was the *WSJ*. However, differences in usage of this effect frame disappear completely in articles about the Trump tariff. Under the Trump tariff, highlighting *environmental concerns* and that *tariffs won't hurt consumers* tie for the second largest differences between sources. The *NYT* employed the *environmental concern* effects frame in 21% more articles than did the *WSJ* during its coverage of the Trump tariff. On the other hand, the *WSJ* highlighted that *tariffs won't hurt consumers* in 21% more of their articles about the Trump tariff.

While I offered no predictions for patterns or shifts in frame usage over time or across sources, many of the results presented in this section are unsurprising. Prior research has shown that advocacy groups help shape the narrative surrounding political issues (Bolsen, 2011). As previously discussed, the demand side of the solar industry mobilized in opposition to the tariffs. Messages crafted and disseminated by these groups potentially helps explain why the *increase price/hurt consumers* and *industry division/hurt U.S. solar jobs* effect frames were the most prominent frames used overall. These considerations represent the effects most salient to solar panel installers and project developers who make up the demand side of the industry. Future research might address the role of advocacy groups in the frame-building process underlying communications about solar panel tariffs.

Table 2-5. Differences Between Sources at Each Time Period

	% Difference*	
Frame	**2011-2014**	**2017-2018**
Chinese Retaliation	17%	30%
Environmental Concerns	3%	21%
Industry Division/Hurt U.S. Solar Jobs	10%	17%
Too Late to Save U.S. Manufacturers	7%	11%
Slow Solar Growth	0%	10%
Increase Price/Hurt Consumers	-3%	7%
Protect Manufacturers	23%	0%
Save Jobs/Create Jobs/Move Production to U.S.	10%	-16%
Tariffs Won't Hurt Consumers	3%	-21%

*Percentage reported is how much more often the *NYT* used a frame than the *WSJ*

Further, the partisan slant of each source may account for differences in effect frame usage across sources within the same time frame (see Feldman, 2017). For example, the Democrat-friendly NYT highlighted a positive consideration, tariffs protect manufacturers, far more than did the Republican-friendly WSJ during coverage of a Democratic administration's tariffs. Conversely, the WSJ highlighted positive considerations, tariffs won't hurt consumers and tariffs save jobs/create jobs/move production to U.S., much more than the NYT when reporting on the tariff put in place by a Republican president. Additionally, negative effect frames, environmental concerns and industry division/hurt U.S. solar jobs, about solar panel tariffs were highlighted far less in the WSJ than in the NYT when a Republican president was responsible for the tariffs. These results provide additional support for the PMB findings presented below.

2.5.2 Partisan Media Bias

Table 2-6 shows the mean of the valence of articles by source and time period on a 5-point scale. Stories surrounding tariffs on solar panel were generally unfavorable. This finding is

congruent with previous literature that shows the media exhibits an overall negativity bias in political reporting (Chong and Druckman, 2011a). The overall mean for all articles was 2.41 (std. dev = 1.004). At neither time period, did either source have an average above the midpoint on the scale.

Table 2-6. Article Valence by Outlet and Time Period

	Time Period		
	2011-2014	**2017-2018**	**Total**
New York Times			
Mean:	2.7	1.82	2.46
(Std. Dev.)	(.836)	(.751)	(0.897)
	N=30	N=11	N=41
Wall Street Journal			
Mean:	2.17	2.68	2.37
(Std. Dev.)	(1.01)	(1.15)	(1.093)
	N=30	N=19	N=49
Both Sources			
Mean:	2.43	2.37	2.41
(Std. Dev.)	(0.963)	(1.098)	(1.004)
	N=60	N=30	N=90

Hypotheses 1 postulates that reporting in the *New York Times* will be more positive towards tariffs on solar panels during the Obama administration than reporting in the *Wall Street Journal*. Conversely, Hypothesis 2 posits that reporting in the *Wall Street Journal* will be more positive towards the tariff on solar panels during the Trump administration than reporting in the *New York Times*. Many methods that attempt to measure partisan slant directly, especially over time, have been found to be unstable (Merkley, 2019; Shutlziner and Stukalin, 2019; see Gasper, 2011). Shultziner and Stukalin (2019) argue that Partisan Media Bias (PMB) is "expressed in the manner that market competitors cover the same political story within the same timeframe *relative* to one another […] The advantage of this approach is that it holds various factors and considerations of newsworthiness and media routines constant while teasing out the news

outlet's differing political orientation towards a specific story at a specific time, where such exists" (p. 202). For this reason, I did not code partisan slant of articles, and instead use the measure of direction of the story to compare the two news outlets' coverage during each of the two time periods. Since different political parties controlled the executive branch during each time period, comparing each outlet's direction of story measure during each time period provides a test of PMB.

I used one-tailed, independent t-tests to assess differences in coverage by the *New York Times* and the *Wall Street Journal*. I found strong support for Hypothesis 1. Table 2-7 shows that the *New York Times* reported more favorably on the tariffs during the Obama administration (mean = 2.7; std. dev. = .84) than did the *Wall Street Journal* (mean = 2.17; std. dev. = 1.02). This difference was statistically significant (*t* score = 2.21, *p* = 0.015). The opposite result is observed in the articles written during 2017 and 2018 as a result of the tariffs placed on solar panels by President Trump. There is also strong support for Hypothesis 2. During this time period, the *Wall Street Journal* reported more favorable on the tariffs (mean = 2.68; std. dev. = 1.16) than did the *New York Times* (mean = 1.82; std. dev. = .75). This difference was also statistically significant (*t* score = -2.22, *p* = 0.017).[5] These results provide evidence of PMB in both the *New York Times* and the *Wall Street Journal*.

[5] These results are robust to collapsing the 5-point scale into a 3-point scale. See Appendix A for one-tailed, independent t-test results using a 3-point scale.

Table 2-7. Article Valence by Source (t-tests)

	Observations	Mean	SE	SD	95% Conf.	Interval
Time Period 1 (2011-2014)						
New York Times	30	2.70	0.15	0.84	2.39	3.01
Wall Street Journal	30	2.17	0.19	1.02	1.79	2.55
Difference		0.53	0.24		0.05	1.02
t = 2.2144						
Degrees of Freedom = 58						
p-value = 0.0154						
Time Period 2 (2017-2018)						
New York Times	11	1.82	0.23	0.75	1.31	2.32
Wall Street Journal	19	2.68	0.27	1.16	2.13	3.24
Difference		-0.87	0.39		-1.67	-0.07
t = -2.2179						
Degrees of Freedom = 28						
p-value = 0.0174						

2.6 Discussion and Conclusion

This chapter examined how two major news outlets have covered solar tariffs over the past decade; specifically, I have shown which effect frames were highlighted by each source at each time period and the Partisan Media Bias of the coverage. The results presented in this chapter show that the most commonly highlighted effect frame across both newspapers and time periods was the increase in price and subsequent detriment to consumers that would be or were caused by the tariffs. Both outlets also relied heavily on the narrative of division within the solar industry, specifically under the Trump tariff. Chinese retaliation was a prominent frame in both news outlets, with the *NYT* accentuating this frame more than the *WSJ*. And finally, both sources highlighted how the tariff would slow solar growth in the U.S. more under the Trump tariff than they had previously done under the Obama administration's solar panel tariffs.

Despite many similarities in coverage by both news outlets, there were some notable differences, especially when comparing differences at the two distinct time periods. Under the Obama administration's tariffs, the *WSJ* rarely highlighted the tariffs' potential to protect or save U.S. manufacturers, while the *NYT* utilized this effect frame more than twice as much as the *WSJ* during this time period. Additionally, the *WSJ* chose to highlight detrimental environmental considerations less than half as much as the *NYT* when reporting on the Trump tariff. Finally, the *WSJ* chose to more than double its coverage of the tariff's ability to save or create jobs during coverage under the Trump tariff as opposed to the Obama administration's tariffs, while the *NYT*'s coverage of this effect changed very little across time.

In addition to describing what particular considerations were highlighted across coverage of the issue, this chapter provides evidence that the two major U.S. news outlets examined here engaged in Partisan Media Bias when reporting on this topic. This study utilized the method of measuring PMB suggested by Shultziner and Stukalin (2019), which compares sources to each other during the same time frames in order to accurately gauge PMB. Although both sources at both times display a negativity bias, the *NYT*'s coverage of the tariffs was more favorable than the *WSJ*'s during the tariffs imposed by the Obama administration, while the opposite is true during the coverage of the Trump tariff. These results suggest that both sources engaged in bias.

Very little work has analyzed the way that the media communicates about tariffs, or trade policy in general. Future research would benefit from expanding the scope of inquiry to include media frames on all tariffs, as well as frames about trade generally. Work of this kind would help elucidate whether the results found here generalize to the broader policy area. Future work might also examine whether or not the Partisan Media Bias of the *NYT* and *WSJ* found in this study exists across reporting on tariffs and trade policy over the Obama and Trump administrations.

Finally, this study was confined to two mass media sources. Future research should examine framing of these issues over a broader array of sources.

3 CHAPTER 3: FRAMING SOLAR PANEL TARIFF POLICY

3.1 Introduction

Increasing the use of solar energy in the United States is both publicly popular and critical in order to reduce harmful CO_2 emissions that cause global warming (Ansolabehere and Konisky, 2014; UCS, 2021). For these reasons, it is easy to imagine that the U.S. government would be incentivized to create policies that encourage the adoption of this clean energy source. However, for the majority of the last decade, the United States has had import taxes in place on foreign made solar panel cells and modules. The tariffs were placed on solar panel cells and modules as a result of cheap foreign solar products flooding the U.S. market, effectually edging out U.S. manufacturers. The current tariffs on solar panel components and modules are set to expire after 2021 if no new action is taken. It is currently unknown what the new Biden administration intends to do regarding this particular policy.

What the public thinks about this or any other policy is vitally important in the United States, as public opinion acts as a constraint and a guide for policymakers (Dahl, 1971; Druckman, 2013; Bolsen et al., 2016). There are a plethora of factors that go into when and why the public supports or opposes certain issues. One of the most important determinants of public opinion is how the media and political elites frame the discussion (Zaller, 1992; Kinder and Herzog, 1993; Sniderman and Theriault, 2004). Any information presented to the public is inevitably presented through a frame, which calls attention to certain aspects of an issue (Entman, 1993; Chong and Druckman, 2007a; Nisbit, 2009). Individuals give priority to the considerations highlighted in communications that they have encountered (Chong and Druckman, 2007a; Chong and Druckman, 2011b). Bolsen and Shapiro (2019) explain, “Media frames provide narratives and interpretive storylines that help define social problems, understand

who is responsible for it, and determine what should be done about it" (p. 2). Scholars have long fretted over the susceptibility of Americans to manipulation through media framing (Iyengar and Kinder, 1987; Zaller, 1993). For this reason, it is intensely important to understand how media frames shift individual attitudes on policies that affect Americans' lives and futures.

In this chapter, I present the results of two experiments that tested hypotheses about the effects of exposure to framed messages on opinion formation about solar panels tariffs. Specifically, highlighting the protection afforded to U.S. manufacturers and jobs by the tariffs, or conversely, the detriment to the environment and American consumers yields different levels of support for the policy and desired future action in this policy area. This chapter also explores the effects of presenting both positive and negative information about solar panel tariffs in competition. To my knowledge, there has not been any work done by scholars on opinion formation surrounding solar panel tariffs to date. This policy has far reaching implications for a variety of societal issues in the U.S., including our dependence on fossil fuels, global trade, consumer costs, and solar industry jobs.

3.2 Solar Panel Tariff Policy

In 2011, U.S. solar panel manufacturers filed antidumping and countervailing duty petitions with the U.S. International Trade Commission (ITC) and the U.S. Department of Commerce (DOC) against Chinese solar panel cell and module manufacturers. The U.S. manufacturers claimed that imported Chinese solar products were subsidized by the Chinese government and thus able to be sold at less than fair market value. In 2012, the ITC determined U.S. manufacturers had been harmed by imports, and the DOD issued tariffs averaging 35% on solar products imported from China. After 2012, China moved many of its solar product manufacturing operations to Taiwan in order to avoid the tariffs. U.S. manufacturers again filed

suit. The DOC issued new tariffs that covered both China and Taiwan in 2015. Chinese and Taiwanese companies then outsourced production of solar panel modules and cells to other countries in the region in order to again avoid U.S. tariffs. As a result, the Trump administration placed a uniform tariff on all foreign-made solar panel products. The tariff was 30% for 2018, and was supposed to drop to 15% by 2021, the last year covered by the tariff. However, President Trump raised the tariff for 2021 to 18% before leaving office. Because this action makes installing solar panels more expensive, members of the solar industry sued that this action was unlawful, arguing that the rate increase put billions of dollars' worth of solar contracts in jeopardy (Hancock, 2021). The Biden administration asked that the case be dismissed in March of 2021, leaving the rate at 18% for the remainder of 2021.

3.2.1 Effects of the Tariffs

Solar panel tariffs have impacted the U.S. solar industry in a variety of ways. They increased prices of solar products, which led to a decrease in U.S. production of solar energy in favor of traditional energy sources (SEIA, 2019; Wood Mackenzie, 2020). After the 2018 uniform tariff was issued, solar product imports decreased from $5.1 billion to $2.8 billion in the first year of the policy (U.S. Census Bureau's USA Online Trade Tool). It is estimated that CO_2 emissions have already or will increase by at least 26 million metric tons as a result of the most recent tariffs, which is equivalent to the emissions of 7 coal plants or 5.5 million cars (SEIA, 2019). In addition to the environmental impact of the tariffs, the policy has also negatively impacted consumers. Researchers estimate that from 2018 to 2020 consumers in the U.S. paid $1.3 billion more for solar energy products as a result of the tariffs (Czapla and Lee, 2021).

Despite the negative impact on consumers and the environment, the 2012 tariffs caused an increase in employment in the U.S. solar panel manufacturing industry as intended (The Solar

Foundations' National Solar Jobs Census, 2017). However, this gain came at the loss of other jobs in the industry. In 2017, manufacturing jobs only accounted for 15% of jobs created in the solar energy field, while installation jobs made up 52% of total employment in the industry (Nguyen and Kinnucan, 2019). Researchers found that as of 2017, the tariffs actually reduced employment in the solar industry as a result of lost installation, sales and distribution, and project development jobs (among others), despite moderate gains in manufacturing jobs (Nguyen and Kinnucan, 2019). Additionally, researchers projected the loss of another 88,000 jobs between 2018 and 2021 (Shum, 2017).

3.2.2 Attitudes Towards Solar Energy in the U.S.

Generally, Americans have positive attitudes towards solar energy, and they support policies that aim to increase the use of solar power (Bolsen and Cook, 2008; Gallup, 2019; Gustafson et al., 2020). Eighty percent of Americans believe that the United States should put more emphasis on producing domestic energy from solar power (Gallup, 2019). The reason for this preference is that Americans favor energy sources that they believe are "cheap" and "clean" (Ansolabehere and Konisky, 2014). This means that they primarily use two pertinent dimensions when evaluating sources of energy in the United States—economic cost and environmental harm (Ansolabehere and Konisky, 2014; Gustafson et al., 2020). Considerations about economic cost include costs to consumers. Research from before 2011 showed that individuals often supported solar and other renewable energy because they mistakenly thought that it was a cost-efficient option. Once informed of the actual cost of renewables, which at the time were significantly higher than the cost of fossil fuels, people significantly reduced their support for solar and other renewable energy sources (Ansolabehere and Konisky, 2014). Additionally, Gustafson et al. (2020) found that Republicans in the U.S. rated "reduce energy costs" among the most important

reasons for supporting renewable energy policies (p. 8). They also discovered that a main driver of support for renewables among Republicans was "improves economic growth and provides new jobs," highlighting another economic consideration—job creation and industry growth in the U.S. (Gustafson et al., 2020, p. 8).

When conceptualizing environmental harm, Americans often think of local harm, such as pollution of a local stream, or environmental harm on a global scale, i.e. climate change, both of which drive support for solar production in the U.S. (Ansolabehere and Konisky, 2014; Gustafson et al., 2020). Various studies have found that concerns about local harm positively affect attitudes towards solar for all segments of the population, while concerns about global warming are the main driver of support for solar among Democrats in the U.S. (Gustafson et al., 2020).

3.2.3 Attitudes Towards Trade and Tariffs in the U.S.

Attitudes towards free trade in the U.S. have remained high over time. Since 2008, a majority of Americans have supported free trade agreements, with the exception of a dip during the 2016 presidential election (Pew Research, 2018; The Chicago Council, 2019). Conversely, attitudes towards tariffs are generally negative (Gallup, 2018; Casler and Clark, 2021). After the Trump administration imposed tariffs on solar panels, along with other goods manufactured by Chinese corporations, polling research found that 45% Americans thought the new tariffs would make the U.S. economy worse compared to 31% who thought they would make the economy better, and 19% who predicted there would be "not much difference" in the economy (Gallup, 2018). Experimental research has provided evidence that individuals are able to connect tariff policies to economic welfare, and thus oppose tariffs because they do not want to pay the resulting higher costs of imported goods (Casler and Clark, 2021). Despite tariffs being generally

unpopular, Americans do tend to think that China engages in unfair trading practices with the United States (Gallup, 2018).

3.3 Framing Effects

Mass media in the United States serves to inform the public about political issues and public policies. When reporting on any given issue, a media outlet highlights certain aspects of the issue or policy while ignoring other aspects or considerations, presenting a *frame in communication* (Gamson and Modigliano, 1987; Entman, 1993; Chong and Druckman, 2007a; Chong and Druckman, 2011b). A *frame in communication* is defined as "a central organizing idea or story line that provides meaning to an unfolding strip of events…The frame suggests what the controversy is about, the essence of the issue" (Gamson and Modigliano, 1987, p. 143). For example, the issue of gun laws in the U.S. can be discussed through the frame of individual rights, i.e. a citizen's right to own a gun. Conversely, gun laws can highlight safety considerations, i.e. the number of mass shootings that occur each year. Each of these frames highlights a different evaluative dimension that people can use when determining their attitudes about gun policies.

The way individuals think about gun laws or any other attitude object in their minds is a *frame in thought* (Chong and Druckman, 2007a; Chong and Druckman, 2011b). A *frame in thought* is "an individual's cognitive understanding of a given situation" (Chong and Druckman, 2007a). Frames presented in media or elite communication influence *frames in thought* (Chong and Druckman, 2007a). The way the media and/or political elites present an issue has the ability to greatly influence the way the public perceives particular issues. For example, researchers have demonstrated that the invasion of Iraq in 2003 was successfully framed as an extension of the

war on terror by both the Bush administration and the mainstream media, thereby garnering massive public support for the military actions (Gershkoff and Kushner, 2005).

When a *frame in communication* affects a *frame in thought*, this is called a *framing effect* (Chong and Druckman, 2011b). *Framing effects* work by changing the weight associated with an existing evaluation (Druckman, 2001; Chong and Druckman, 2007a). An expectancy value model of attitude formation can be formulated as $A = \Sigma v_i w_i$ where *A* is a person's attitude about an attitude object, *v* is a view or evaluative dimension towards that object, *w* is the weight attached to each evaluative dimension, and each individual *frame in thought* is represented by an *i* (Chong and Druckman 2007a; Chong and Druckman, 2011b). The media and political elites are able to use *framing effects* to change the weight given to a particular consideration through accessibility or applicability. Accessibility means "the consideration *subconsciously* enters the individual's working memory," while applicability means "the individual *consciously* views the dimension as a relevant or important basis of opinion" (Chong and Druckman, 2011b, p. 309).

There exists a long list of prior research showing the effects of presenting univalenced, one-sided frames to individuals (Nelson et al., 1997; Brewer, 2001; Shapiro and Bolsen, 2019; Bolsen et al., 2020). For example, Nelson et al. (1997) showed that when participants are shown a civil rights frame, they become more supportive of allowing a KKK rally. Conversely, when individuals are presented with a message framing a KKK rally as a disruption of public order, they become less supportive of allowing the rally. Based on the voluminous literature that shows the effects of one-sided frames in moving individuals' attitudes, I predict the following:

H1: Individuals exposed to a pro-tariff argument will increase support for tariffs on foreign made solar panels and for support of the continuation of the policy by the next presidential administration relative to a control.

H2: Individuals exposed to an anti-tariff argument will decrease support for tariffs on foreign made solar panels and for support the continuation of the policy by the next presidential administration relative to a control.

As previously mentioned, frames in communication often contain multiple considerations about a policy. The present study utilizes considerations about the benefit of solar panel tariffs to U.S. solar manufacturers and jobs in a one-sided pro-tariff frame, considerations about the harm done to the environment and consumers in an anti-tariff frame, and both sets of considerations in a competitive frame. Framing theory suggests that highlighting these considerations should move support for the policy and continuing the policy; additionally, beliefs about the considerations themselves should also shift as a result. For example, individuals who are told that solar panel tariffs increase costs to consumers, should report that they believe there is more harm than benefit to consumers as a result of the tariffs compared to a group that did not receive this information. I further offer the following predictions:

H3: Individuals exposed to a pro-tariff argument will increase their assessment of the benefit the policy has on U.S. companies and U.S. workers relative to a control.

H4: Individuals exposed to an anti-tariff argument will increase their assessment of the harm the policy has on the environment and consumers relative to a control.

3.3.1 Competitive Framing

In an individual's natural environment, they are often exposed to varied communications that contain multiple frames about the same political topic (Chong & Druckman, 2007b; Sniderman and Theriault, 2004). Competition of frames occurs when an individual is presented with both a positively valenced consideration and a negatively valenced consideration about the same attitude object, making opposing stances on an issue equally accessible (Chong and

Druckman, 2007b, Chong and Druckman, 2011b). One frame may be stronger, i.e. more effective, than another frame in a competitive context. Prior research has found that frame strength is the strongest predictor of resulting attitudes in competitive framing contexts (Chong and Druckman, 2007b). Frame strength is determined by the credibility of the frame's source, whether or not the frame is compatible with consensus values, and congruence with individuals' strongly held prior beliefs (Chong and Druckman, 2007b, p. 104). When competing frames are of relatively similar strength, the frames will cancel each other out and moderate public opinion on a given issue (Chong and Druckman, 2007b; Chong and Druckman, 2011b).

For example, Aklin and Urpelainen (2013) looked at the effect of competitive frames on support for clean energy. They gave participants either a positively valenced message about economic or security considerations of clean energy paired with a negatively valenced message about economic or security concerns regarding clean energy. Regardless what combination of evaluative dimensions was shown to respondents, when they received one positive message and one negative message, the frames canceled each other out, resulting in equal levels of support from respondents across all competitive framing conditions. Based on prior research that demonstrates that presenting frames in competition nullifies the effect of both frames on attitude shifts, I offer the following prediction:

H5: Exposure to competing frames will eliminate the individual effect of exposure to either message (i.e., no change relative to the control).

3.4 Study 1

3.4.1 Study Design

In order to test my hypotheses, I implemented two online survey experiments. Respondents were recruited through Georgia State University's SONA system. The first study

was conducted from October 7th through December 6th, 2020. 403 respondents completed the survey. Sample demographics are detailed in Appendix B.

Participants were randomly assigned to one of 4 experimental conditions: (a) *control*, (b) a *pro-tariff frame*, (c) an *anti-tariff frame,* or (d) *competitive frames*. Respondents who were randomly assigned to the control condition (N= 107) received only the following information: the definition of tariffs, what solar panels are and how they work, and a sentence telling them that the government put a tariff on solar panels. Respondents in all three other conditions also received this information.

Respondents who were randomly assigned to the *pro-tariff frame* condition (N=101) received content that highlighted positive considerations regarding solar panel tariffs. The information was presented under the headline, "Tariffs on Foreign-Made Solar Panels Protect U.S. Jobs and Manufacturers." The content of the information they received highlighted the benefit of the tariffs to U.S. manufacturers as a result of making their products competitive with foreign imports. The message also highlighted the "protection" of workers in the U.S. in the form of job maintenance and creation.

Respondents who were randomly assigned to the *anti-tariff frame* condition (N=103) received content that highlighted negative effects of tariffs on solar panels. The headline for this treatment read, "U.S. Tariffs on Solar Panels Punish Consumers and Harm the Environment." The content that followed included information about the detrimental effects of the tariffs on the environment as a result of continued reliance on fossil fuels. It also highlighted the fact that the tariffs lead to increased consumer costs.

Finally, respondents in the *competitive frames* condition (N=92) received content that highlighted both positive and negative considerations about solar panel tariffs. The information

was presented under the headline, “Do Tariffs on Foreign-Made Solar Panels Help or Hurt Americans?” The content that followed highlighted that there is disagreement about the benefit of the tariffs. Considerations about the benefit to U.S. manufacturers and jobs as well as considerations about the negative impact on consumers and the environment were presented in this treatment.[6]

3.4.2 Measures

The first dependent variable of support for the policy itself was asked immediately after the treatments were presented. Participants were asked, “Given this information, to what extent do you oppose or support solar panel tariffs?” Answer choices were presented on a 7-point fully labeled scale ranging from “strongly oppose” to “strongly support.” Because the survey was conducted during the 2020 presidential election, participants were also asked, “Do you support the continuation of tariffs on solar panels by the next presidential administration?” with answer choices presented on a 7-point fully labeled scale ranging from “strongly oppose” to “strongly support.”

In addition to support for the policy and support for continuation of the policy, respondents were also asked whether solar panel tariffs harmed or benefited U.S. companies, American workers, consumers, and the environment. Answer choices were measured on a 7-point fully labeled scale ranging from “definitely harmed” to “definitely benefitted.”

3.4.3 Results

I begin by reporting the effect of the experimental conditions on support for solar panel tariffs, continuation of the policy, harm or benefit to companies, workers, consumers and the environment, the standard deviation, 90% confidence interval, and N for each condition in Table

[6] See Appendix B for complete treatment wording.

3-1.[7] Figure 3-1 shows the percent shift on the 7-point response scale of support for solar panel tariffs and support for continuation of the policy by the next administration for each condition relative to the baseline. Figure 3-2 shows the percent shift on the 7-point response scale of assessment of harm or benefit by solar panel tariffs to the environment, consumers, U.S. companies, and U.S. workers.

The results provide strong support for Hypothesis 1, which stated that receiving a pro-tariff argument highlighting the benefit to U.S. manufacturing and jobs would increase support for the policy and support for continuation of the policy by the next administration. Respondents who received the pro-tariff message increased support for the policy by 9.97% relative to the baseline ($p \leq 0.01$). Respondents who received the *pro-tariff frame* message also increased support for continuation of the policy by 9.44% relative to the baseline ($p \leq 0.01$).

The results provide no evidence for Hypothesis 2, which predicted that individuals exposed to an anti-tariff message would decrease support for the policy and or continuation of the policy by the next presidential administration relative to the baseline. Figure 3-1 shows that respondents who received the anti-tariff message shifted support for solar panel tariffs positively .14%, and decreased support for continuation of the policy by the next administration by -2.99% relative to the baseline. Neither of these shifts were statistically significant.

[7] I estimated a series of ordinary least squared (OLS) regressions that included robust standard errors. 90% confidence intervals are appropriate as I used one-tailed tests throughout, because I had directional hypotheses. OLS results can be found in Appendix B. These results are robust to using ordered logit models; the results of which can also be found in Appendix B.

Table 3-1. Dependent Variable Means (Study 1)

Support for Solar Panel Tariffs	N	Mean	Std. Dev.	90% Confidence Interval	
Baseline	107	3.25	1.55	3.00	3.50
Pro Tariff Frame	101	3.95	1.42	3.72	4.19
Con Tariff Frame	103	3.26	1.80	2.97	3.56
Both Frames	92	3.46	1.32	3.23	3.69
Support for Continuation of Policy					
Baseline	104	3.28	1.57	3.02	3.53
Pro Tariff Frame	99	3.94	1.48	3.69	4.19
Con Tariff Frame	101	3.07	1.80	2.77	3.37
Both Frames	92	3.53	1.40	3.29	3.78
Companies Benefit (Disagree-Agree)					
Baseline	104	4.54	1.38	4.31	4.76
Pro Tariff Frame	101	4.68	1.56	4.43	4.94
Con Tariff Frame	102	4.86	1.56	4.61	5.12
Both Frames	92	4.57	1.50	4.31	4.83
Workers (Definitely Harm - Definitely Benefit)					
Baseline	104	3.92	1.39	3.70	4.15
Pro Tariff Frame	101	4.07	1.63	3.80	4.34
Con Tariff Frame	102	3.93	1.56	3.67	4.19
Both Frames	92	3.78	1.40	3.54	4.02
Consumers (Definitely Harm - Definitely Benefit)					
Baseline	104	3.18	1.45	2.95	3.42
Pro Tariff Frame	99	3.49	1.55	3.24	3.75
Con Tariff Frame	101	2.87	1.49	2.63	3.12
Both Frames	92	3.24	1.58	2.97	3.51
Environment (Definitely Harm - Definitely Benefit)					
Baseline	104	3.40	1.90	3.09	3.71
Pro Tariff Frame	99	3.86	1.97	3.53	4.19
Con Tariff Frame	101	2.82	1.88	2.51	3.13
Both Frames	92	3.47	1.98	3.12	3.81

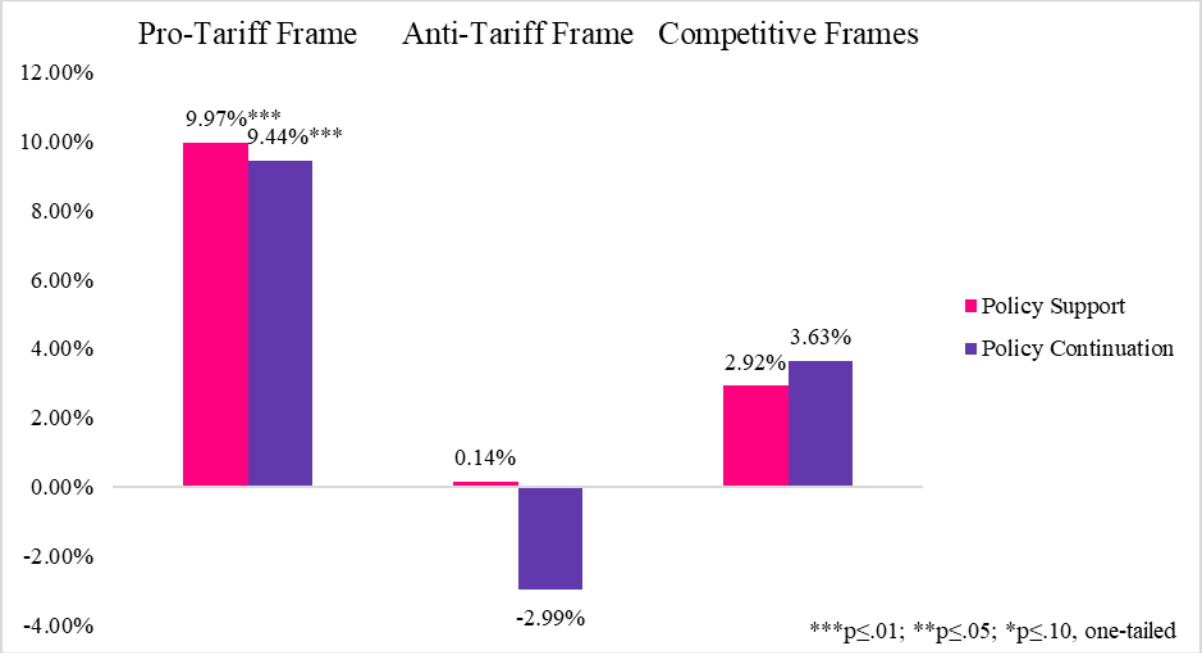

Figure 3-1. Support for Policy and Continuation of Policy by Next Administration by Condition in Study 1

Hypothesis 3 posited that because the message in the *pro-tariff frame* condition explicitly mentions the benefit to U.S. manufacturers and U.S. workers, respondents would increase their assessment of the benefit to these entities. The results do not provide support for this hypothesis. Figure 3-2 shows that respondents who received the pro-tariff message increased their assessment of the benefit of the tariffs to companies by 2.07% relative to the baseline. They also increased their assessment of the benefit to workers by 2.09% relative to the baseline. However, neither of these differences were statistically significant. The information in the *pro-tariff frame* condition does not include considerations about consumers and the environment, thus no prediction was made for how the treatment would impact the assessment of harm or benefit on these entities. Respondents nevertheless significantly increased their assessment of the benefit of the tariffs to consumers by 4.46% ($p \leq 0.1$), and benefit to the environment by 6.50% ($p \leq 0.1$).

Hypothesis 4 predicted that respondents in the *anti-tariff frame* condition would increase their assessment of harm done to the environment and consumers as a result of the tariffs. Figure 3-2 shows that respondents in this condition did increase their assessment of the harm to both the environment by 8.32% ($p \leq 0.05$) and to consumers by 4.45% ($p \leq 0.1$) relative to the baseline. Again, because this treatment does not mention U.S. companies nor U.S. workers, no prediction was made about how respondents might shift assessed harm or benefit to these two entities relative to the baseline. Figure 3-2 shows that respondents who received the anti-tariff message positively shifted their assessment of the benefit to U.S. companies by 4.63% relative to the baseline ($p \leq 0.1$). They shifted their assessment of the benefit to U.S. workers by .12%, which is not statistically significant.

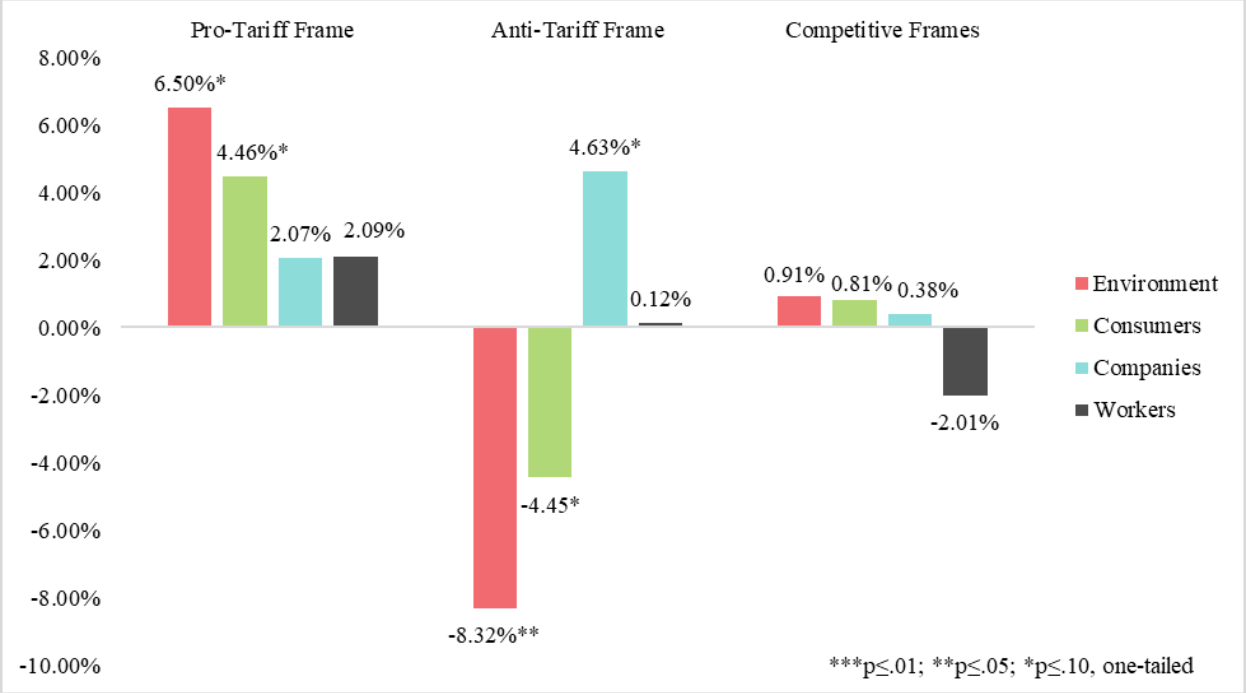

Figure 3-2. Harm – Benefit Assessment by Condition in Study 1

There is strong support for Hypothesis 5. When the pro-tariff and anti-tariff frames are presented simultaneously in competition, the frames cancel each other out. Figure 3-1 shows that

respondents who were assigned to the *competitive frames* condition increased support for the policy by 2.92% and increased support for continuation of tariffs on solar panels by the next administration by 3.63% relative to the baseline, but these differences are not statistically significant, as predicted.

While the information in the *competitive frames* condition explicitly mentions a benefit to U.S. companies and workers and a harm to consumers and the environment, there are no statistically significant differences from the baseline regarding the harm or benefit to any of these entities as seen in Figure 3-2.

3.5 Study 2

3.5.1 Study Design

I implemented a second online survey experiment. Respondents were again recruited through Georgia State University's SONA system. This study was conducted from March 16th through April 2nd, 2021. 272 respondents completed the survey. Sample demographics are detailed in Appendix B. Study 2 was identical to Study 1, except that the word "some" was removed from the messages when presenting what experts think in the *pro-tariff frame* and the *anti-tariff frame* conditions. The treatments were also formatted to look like news articles in this study. See Figure 3-3 for treatments. The measures for this study were the same as the measures for Study 1 with the exception of the question that asked respondents, "Do you support the continuation of tariffs on solar panels by the next presidential administration?" This question was changed to reflect that the Biden administration had taken office. The question instead read, "Do you support the continuation of tariffs on solar panels by the Biden administration?" Answer choices were again presented on a 7-point fully labeled scale ranging from "strongly oppose" to "strongly support."

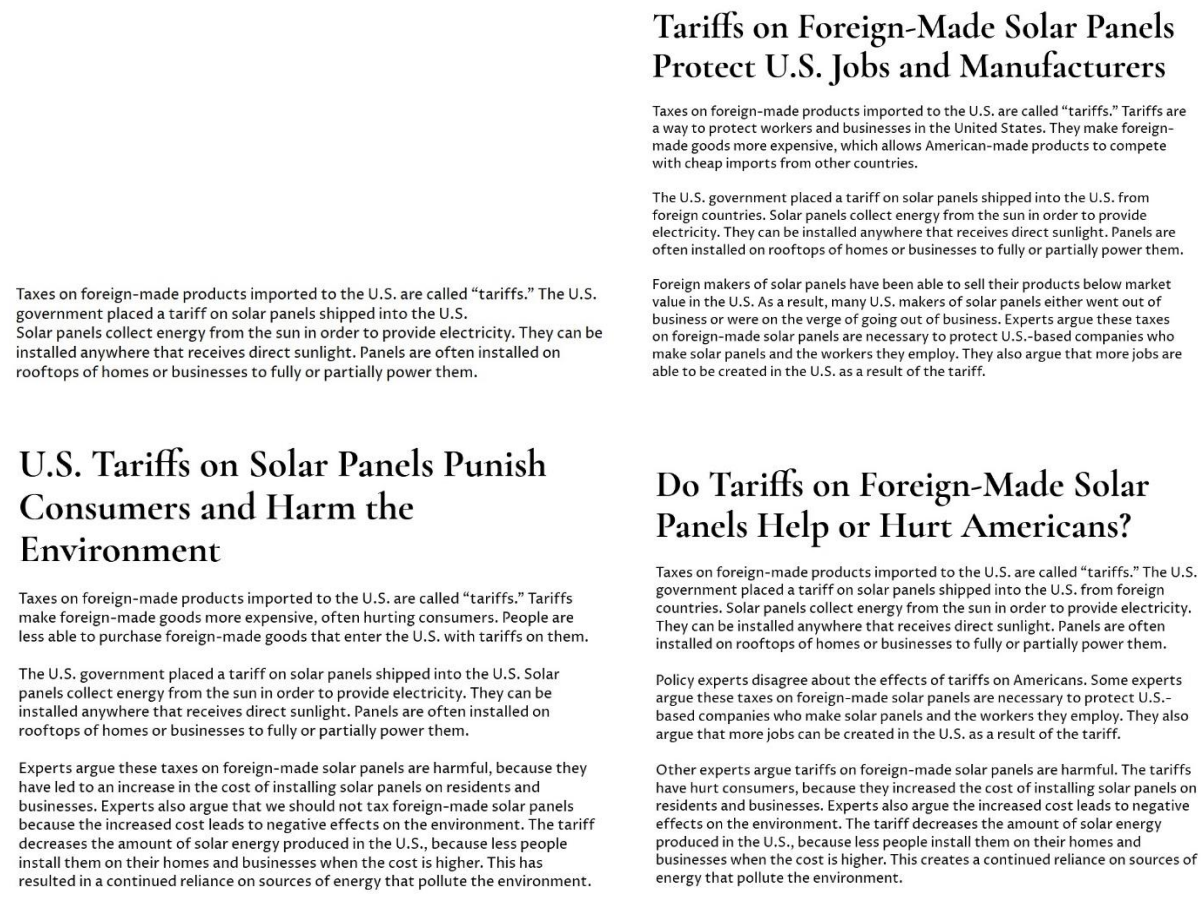

Figure 3-3. Study 2 Treatments

3.5.2 Results

I report the effect of the experimental conditions on support for solar panel tariffs, continuation of the policy, harm or benefit to companies, workers, consumers and the environment, the standard deviation, 90% confidence interval, and N for each condition for Study 2 in Table 3-2. Figure 3-4 shows the percent shift on the 7-point response scale of support for solar panel tariffs and support for continuation of the policy by the next administration for each condition relative to the baseline. Figure 3-5 shows the percent shift on the 7-point response scale of assessment of harm or benefit by solar panel tariffs to the environment, consumers, U.S. companies, and U.S. workers.

Figure 3-4 shows that the results again provide strong evidence for Hypothesis 1. Respondents who received the pro-tariff framed message increased support for the policy by 11.41% ($p \leq 0.01$) and support for continuation of the policy by the Biden administration by 9.59% ($p \leq 0.01$) relative to the baseline. There is also strong support for Hypothesis 2, contrary to the findings of Study 1. Respondents assigned to the *anti-tariff frame* condition reduced support for the policy by 5.52% ($p \leq 0.1$). They also reduced support for continuation of the policy by the Biden administration by 10.89% ($p \leq 0.01$).

Hypothesis 3 predicted that when told that solar panel tariffs helped U.S. solar panel manufacturers and jobs, respondents would positively shift their assessment of the benefit of the tariffs on U.S. companies and U.S. workers. Figure 3-5 shows that the results of Study 2 provide some evidence for this prediction. When shown the pro-tariff framed message, respondents shifted their assessment of the benefit of the tariffs to U.S. workers by 6.44% ($p \leq 0.01$). Their assessment of the benefit to companies shifted positively by 4.44%, but this move was not statistically significant. Respondents also positively shifted their assessment of the benefit to the environment by 7.12% ($p \leq 0.1$) and consumers (not statistically significant), although these entities were not mentioned in the treatment.

The results from Study 2 provide support for Hypothesis 4 similarly to the support found in Study 1. When respondents are told that the solar tariffs would "punish tariffs and harm the environment," they increased their assessment of the harm done to the environment by 11.95% ($p \leq 0.05$) and consumers by 7.20% ($p \leq 0.1$), as shown in Figure 3-5. The *anti-tariff frame* treatment did not mention the effect of the tariffs on U.S. companies and workers. Figure 3-5 shows that attitudes about the harm or benefit done by solar tariffs to companies and workers shifts minimally and is not statistically significant.

Table 3-2. Dependent Variable Means (Study 2)

Support for Solar Panel Tariffs	N	Mean	Std. Dev.	90% Confidence Interval	
Baseline	75	3.39	1.46	3.11	3.67
Pro-Tariff Frame	70	4.19	1.24	3.94	4.43
Anti-Tariff Frame	58	3.00	1.71	2.63	3.37
Both Frames	69	3.45	1.40	3.17	3.73
Support for Continuation of Policy					
Baseline	75	3.40	1.49	3.11	3.69
Pro-Tariff Frame	70	4.07	1.46	3.78	4.36
Anti-Tariff Frame	58	2.64	1.46	2.32	2.96
Both Frames	69	3.42	1.47	3.13	3.72
Companies Benefit (Disagree-Agree)					
Baseline	75	3.95	1.80	3.60	4.29
Pro-Tariff Frame	70	4.26	2.08	3.84	4.67
Anti-Tariff Frame	58	3.93	1.97	3.50	4.36
Both Frames	69	4.46	1.76	4.11	4.82
Workers (Definitely Harm - Definitely Benefit)					
Baseline	75	3.51	1.45	3.23	3.78
Pro-Tariff Frame	70	3.96	1.88	3.58	4.33
Anti-Tariff Frame	57	3.42	1.53	3.08	3.76
Both Frames	69	4.09	1.62	3.76	4.41
Consumers (Definitely Harm - Definitely Benefit)					
Baseline	75	3.29	1.62	2.98	3.60
Pro-Tariff Frame	70	3.56	1.53	3.25	3.86
Anti-Tariff Frame	57	2.79	1.86	2.38	3.20
Both Frames	69	2.91	1.51	2.61	3.22
Environment (Definitely Harm - Definitely Benefit)					
Baseline	75	3.57	2.38	3.11	4.03
Pro-Tariff Frame	70	4.07	2.23	3.63	4.52
Anti-Tariff Frame	57	2.74	2.29	2.23	3.24
Both Frames	69	3.28	2.34	2.80	3.75

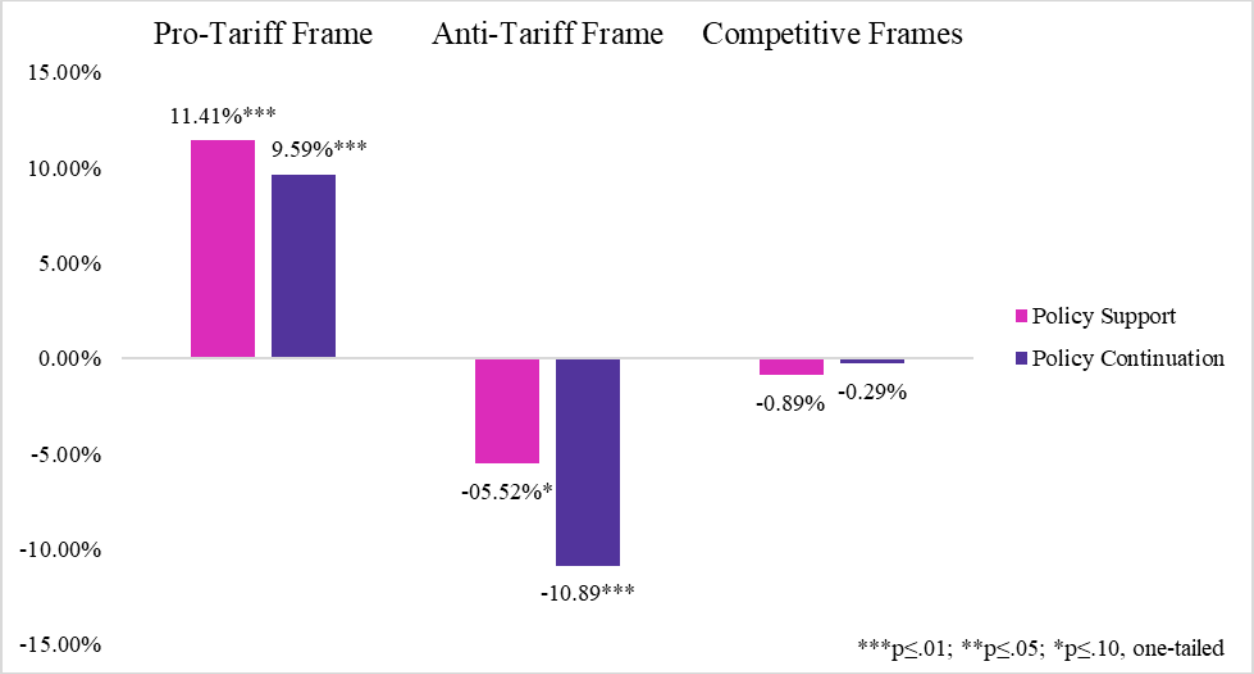

Figure 3-4. Support for Policy and Continuation of Policy by Next Administration by Condition in Study 2.

Again, there is strong support for Hypothesis 5 which posited that support in the competitive frames condition would not significantly differ from the baseline. Figure 3-4 shows that there is a "cancelling out" effect from showing the respondents both positive and negative considerations in the same treatment. Support for the solar panel tariffs and support for the Biden administration to continue the policy both differ from the baseline by less than 1% and neither are statistically significant.

The message that respondents received in the *competitive frame* condition explicitly mentions considerations about all four entities measured in Figure 3-5. Respondents increased their assessment of harm done to the environment by 4.26% which was not statistically significant and to consumers by 5.43% ($p \leq 0.1$). They increased their assessment of the benefit to U.S. companies by 7.39% ($p \leq 0.05$) and to workers by 8.29% ($p \leq 0.05$).

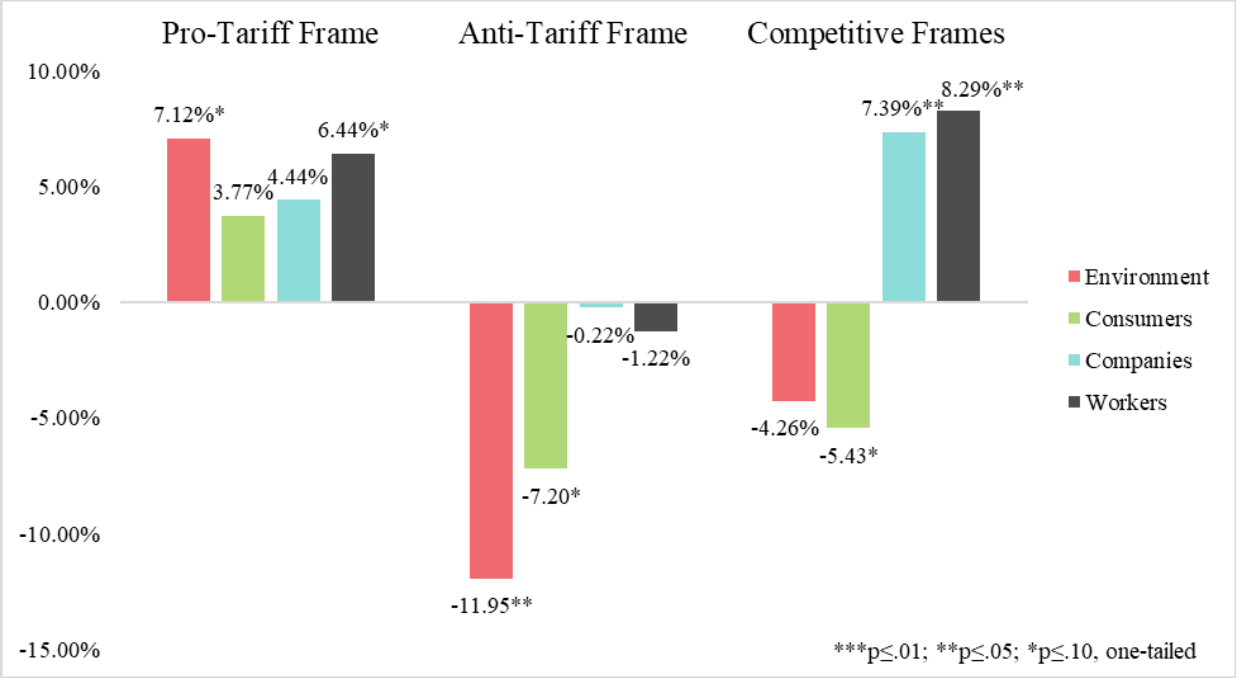

Figure 3-5. Harm – Benefit Assessment by Condition in Study 2

3.6 Conclusion

This study examined how individuals respond to framed messages about the effects of tariffs on foreign-made solar panel cells and modules. This research is important, because there has been very little work done by scholars on attitudes surrounding tariff policies in general, and to my knowledge there has been no research done on public opinion formation regarding solar panel tariffs. This study has ramifications for democratic responsiveness to issues surrounding global trade practices, clean energy policies, and climate change mitigation efforts.

This chapter specifically contributes to our understanding of how varying arguments on solar panel tariffs moves public opinion on the issue. Prior research has shown that one-sided messages are usually successful in moving attitudes, but those effects often disappear when arguments are presented in tandem (Chong and Druckman, 2007b, Chong and Druckman, 2011b). I presented students with either a pro-tariff argument, an anti-tariff argument, or both. I

found strong framing effects for the pro-tariff argument. Participants' attitudes in both studies were significantly moved by highlighting the potential benefit to U.S. manufacturers and the workers that they employ. I found some support for the effects of the anti-tariff framed message that highlighted the damaging effects of tariffs to consumers, who pay more for clean energy technology, and on the environment, as a result of reduced adoption of solar technology. In Study 2, respondents who received the anti-tariff message negatively shifted their support for the policy and their support for the continuation of tariffs on imported solar products by the Biden administration. I also found strong support that presenting both sets of considerations canceled out the effects of both frames. Additionally, this research showed that highlighting considerations about who benefits and who or what is harmed predictably makes individuals aware and shifts attitudes about the effects of solar panel tariffs on U.S. companies and workers, consumers and the environment.

4 CHAPTER 4: THE EFFECT OF PARTISAN ENDORSEMENTS AND MOTIVATIONAL INDUCEMENTS ON SUPPORT FOR SOLAR PANEL TARIFFS

4.1 Introduction

Widescale adoption of renewable energy sources in the United States is critical if global climate change is going to be mitigated. There are a multitude of government policies that either directly or indirectly serve to speed up or slow down the adoption of new cleaner energy technologies. One such policy is tariffs on foreign made solar panels and components. Tariffs were placed on solar panels and components as a response to cheap foreign solar products flooding the U.S. market, undercutting U.S. manufacturers. However, the policy has had the result of slowing the adoption of solar energy in the U.S (Wood McKenzie, 2020). The policy was initiated under the Obama administration and broadened under the Trump administration. The current tariffs are set to expire after 2021, and whether or not the Biden administration will renew the policy is currently unknown.

Public support for this policy and all government policies in the United States serve to constrain and guide policymakers in decision-making (Bolsen et al., 2016; Druckman, 2013). There are multiple factors that individuals take into consideration when forming an opinion about any particular policy. One critical dimension of information about a policy that citizens rely on to form opinions is whether the policy is endorsed by leaders of their own party and/or leaders of the other major party in the United States. Partisanship is a highly salient identity for many Americans (Campbell et al., 1960; Greene, 1999; Green et al., 2002). Attitudes surrounding policies that address global warming are highly polarized along partisan lines (McCright and Dunlap, 2011; Guber, 2012). Additionally, attitudes towards tariffs among

partisans have been polarizing in the last few years, with Republicans becoming more supportive and Democrats less supportive of protectionist trade policies (Pew, 2018).

One reason we see polarization of attitudes along partisan lines is because of the way individuals process new information received about particular policies. The theory of motivated reasoning posits that individuals always have unconscious goals or motivations when forming opinions (Kunda, 1999; Druckman, 2012). Maintaining one's identity as a member of a political party is one motivating goal individuals can hold when evaluating new information about a particular government policy (Bolsen et al., 2014; Kahan, 2016; Bayes et al., 2020). There is concern that the tendency to engage identity-protective cognition has dire consequences for the quality of citizen's opinions and for democratic responsiveness (Druckman, 2014). As such, it is imperative for scholars to understand when differing goals take precedence for individuals thinking about policy. Scholars have also offered evidence that the effects of partisanship on opinion formation can be mitigated by imploring individuals to consciously shift their motivation from identity-protection to accuracy (Bolsen et al., 2014; Bayes et al., 2020).

In this chapter, I present the results of an experiment that tested hypotheses about individuals' support for solar panel tariffs. I directly induced different types of motivations and varied partisan endorsements for the policy. To my knowledge, there has been no work done by scholars on opinion formation surrounding solar panel tariffs to date. This policy has important implications for climate change mitigation as well as the United States' role in global trade. This chapter also contributes to the growing literature on the role partisanship and motivated reasoning play in specific policy support. While there has been substantial work done using partisan endorsements, very few studies directly induce motivational goals (Druckman and McGrath, 2019). This study thus contributes to our understanding of attitudes surrounding solar

panel tariffs generally, the role of partisanship in forming policy attitudes, and the effect of information processing goals on attitude formation.

4.2 The Politics of Solar Panels

The market for solar cells and panels has been steadily increasing in the United States as there is a global push to move away from using fossil fuels as our primary sources of energy. Fossil fuels include coal, oil, and natural gas. These "traditional" energy sources currently provide 80% of the United States' energy (EIA, 2020). Climate scientists assert that use of fossil fuels is the number one contributor to global warming (UCS, 2021). Additionally, fossil fuels are a finite resource and are not sustainable sources of energy. As such, there has been a growing focus on increasing the use of renewable energy sources, including solar energy. Solar energy consumption has risen drastically in the last decade (EIA, 2020). Since 2008, U.S. installations of solar panels has increased over 35-fold (energy.gov). A 2012 study found that "PV panels on just 0.6% of the nation's total land area could supply enough electricity to power the entire United States" (energy.gov). Because of the massive potential to mitigate climate change and create sustainable and independent energy in the U.S., understanding the policies and politics surrounding solar energy and the way the public views these issues is imperative.

In 2012, the Obama administration placed hefty tariffs on Chinese solar panels and solar cells used to make solar panels imported to the U.S. The decision came after U.S. solar manufacturers filed a complaint with the U.S. International Trade Commission (ITC) and the Department of Commerce (DOC) against the Chinese companies. It was determined that Chinese manufacturers were "dumping" products into the U.S. solar market for lower than the cost to manufacture the goods. The products had been heavily subsidized by the Chinese government allowing for the flood of cheap goods into the U.S. market. While the drop in prices of solar

panels as a result of Chinese dumping had been a boon to consumers wanting to adopt the green technology, it had all but decimated the profit margins of U.S. solar panel manufacturers (U.S. International Trade Commission, 2012). After the initial round of tariffs, Chinese manufacturers were able to move their operations to Taiwan to evade the tariffs. As a result, an additional tariff on solar cells imported from Taiwan was added in 2015 by the Obama administration (U.S. International Trade Commission, 2015).

China once again shifted their locus of manufacturing to other foreign countries following the 2015 decision. U.S. solar manufacturers again filed a petition for relief, citing their inability to compete with the subsidized Chinese companies. The ITC determined that the foreign imports were substantially harming U.S. manufacturers. As a result, President Trump placed tariffs commensurate to the original Obama tariffs on all foreign imports (excluding Mexico and Canada) in 2018. These tariffs decreased by 5% each subsequent year and are set to expire in 2022. While the tariffs were touted as a way to protect U.S. manufacturing jobs, clean energy and consumer advocates argued that the decision would drive up costs to consumers and depress the growth of solar energy adoption in the U.S.

After the Trump tariff was issued in 2018, the University of Maryland's Program for Public Consultation gave arguments for and against solar panel tariffs to a nationally representative sample (Program for Public Consultation, 2018). They found that overall 40.8% of respondents favored the tariffs while 58.4% opposed them. Republicans generally held more favorable attitudes, with 57.5% of Republican respondents favoring the tariff and 41.9% opposing it. Democrats overwhelmingly opposed the tariff, with only 23.1% of respondents supporting the policy, while 75.9% opposed it (Program for Public Consultation, 2018).

Prior research has shown that Americans are generally supportive of policies that aim to increase the use of renewable energy (Gallup, 2019; Gustafson, et al., 2020; Bolsen and Cook, 2008). Eighty percent of Americans believe that the United States should put more emphasis on producing domestic energy from solar power (Gallup, 2019). Gustafson, et al. (2020) found that Republicans and Democrats differed in their motivations for supporting renewable energy. Republicans are driven to support renewable energy by considerations of economic costs/benefits, while Democrats are motivated to support these policies by concerns about global warming.

Partisans also differ on attitudes regarding free trade and tariffs. Attitudes towards free trade have polarized among partisan lines over time. In 2008, 53% of Democrats said free trade agreements have been good for the United States, while 57% of Republicans agreed (Pew Research, 2017). By 2017 only 36% of Republicans still thought that free trade agreements had been a good thing for the U.S., while the percentage of Democrats agreeing rose to 67% (Pew Research, 2017). Republicans negatively adjusted their views largely as a result of the rhetoric during the 2016 presidential campaign, specifically by Donald Trump (see Boucher and Thies, 2019). These opinions were notably held more strongly by Trump supporters (Pew, 2016). After the Trump administration added tariffs on solar panels along with other goods largely made in Asian countries, 49% of Americans disapproved of the move, responding that the tariffs will be bad for the country (Pew Research, 2018). Forty percent responded that the tariffs would be good for the country, and 11% did not know if the tariffs would be good or bad. The results broke down along partisan lines. Seventy-three percent of Republicans or Republican leaners supported the tariffs, while only 15% of Democrats or Democrat leaners support them (Pew Research, 2018).

4.3 The Role of Partisanship in Attitude Formation

Public opinion on any particular political issue or policy is influenced by a host of factors. Certainly, the content of the policy itself plays a huge role, including who or what stands to benefit as a result of the policy, how costly the policy will be, whether individuals think the policy is an issue the government should attempt to solve, and so on. In addition to these substantive considerations, the stances of the two major political parties are endemic to public opinion on any given public policy in the United States.

Scholars have long understood that partisanship is essential to opinion formation (Campbell et al., 1960; Cohen, 2003; Druckman et al., 2013). Previous research provides evidence for the influence of partisan endorsements both at the aggregate level and at the individual level in the United States. Partisan positions on broad issue areas have been shown to mold aggregate public opinion over time (Layman and Carsey, 2002; Zaller, 1992). Layman and Carsey (2002) used National Election Study data (NES) to show that when party elites hold clearly different positions on issues, and citizens can recognize the differences, a large number of partisans actually moved their position on issues to be in line with that of party elites. Similarly, experimental research has shown that providing research participants with a partisan endorsement for a policy shapes individuals' opinions considerably (Cohen, 2003; Druckman et al., 2013; Bolsen et al., 2014). Cohen (2003) demonstrated that even when respondents are shown a policy that does not align with their party's ideology, but is still endorsed by their in-party, respondents will rely more on the party position than on the content of the policy itself.

Motivated reasoning is the unconscious tendency to achieve a predetermined goal when processing information (Kunda 1990; Kunda, 1999; Lodge and Taber, 2000; Taber and Lodge 2006). Goals can be either non-directional or directional. Non-directional goals include, but are

not limited to, the motivation to be accurate, the motivation to develop a justifiable opinion, and the motivation to form the most concise opinion (Bayes, et al., 2020). Individuals motivated by accuracy seek to reach the most accurate conclusion or the one that most closely approximates some objective reality in the world, despite any personal stake an individual may have in an issue (Kunda, 1990; Kunda, 1999; Taber and Lodge, 2006; Druckman, 2012). Conversely, individuals motivated by directional goals are motivated to reach a specific, predetermined conclusion.

Identity-protective goals are a subset of directional goals that are often at work when individuals engage in processing political information (Kahan, 2016). Individuals who hold identity-protective goals when processing new information are not necessarily protecting prior attitudes when they assimilate new beliefs into their belief system. Instead, their goal is "the formation of beliefs that maintain a person's connection to and status within an identity-defining affinity group whose members are united by shared values" (Kahan, 2016, p. 2). Identity-protective goals are more individually rationally than accuracy goals, as the benefits are far more immediate to the individual (Kahan, 2016). Put another way, it is more personally beneficial for an individual to maintain similar opinions as their family and friends (regardless of the accuracy of those opinions) than to hold an accurate opinion that potentially conflicts with the individual's social circle.

However, mass reliance on partisan goals by members of the electorate ultimately results in a collective action problem. Evidence of this problem can be seen with attitudes towards climate change risk. Kahan, et al. (2012) posit that there is no cost for individuals to conform to a "culturally congenial" opinion on climate change risk that is wrong, but that it is ultimately extremely harmful in the aggregate when large groups within society hold false perceptions (p. 3). If members of the public are motivated to maintain their identity as partisans as opposed to

accurately evaluating policy information, then accountability of elected officials who are responsible for policies and policy positions of the party is diminished.

Affective partisan polarization among the electorate is currently high, meaning that individuals feel more positively towards their copartisans and more hostile towards individuals who identify with the opposing party than in the past (Iyengar et al., 2012; Iyengar and Westwood, 2015). Thus, partisan identity is currently a particularly salient group identity. Individuals are motivated to maintain their allegiance to a particular political party. When political information includes partisan endorsements, individuals are more likely to use maintaining party identification as their processing goal (Lavine, et al., 2012; Druckman, et al., 2013; Nicholson, 2012; Slothuus and Devrees, 2010). Individuals see partisan endorsements as a "perceptual screen" through which to view the information given, which can lead them to reason in a variety of ways to make sure they are in line with their identity-conferring social group.

Bolsen et al. (2014) provided evidence that partisan endorsements can significantly bolster support for the Energy Policy Act of 2007 if the policy is endorsed by an individual's in-party and significantly decreases support if the policy is supported by an individual's out-party, irrespective of policy considerations. They also showed how this process can be moderated by inducing an accuracy goal. In their experiment, they found that prompting the respondents to hold an accuracy goal as opposed to an identity-protective goal caused respondents to rely more on the content of the policy itself when determining their level of support. Based on this research, I offer the following predictions (all hypotheses tested in this study were preregistered with Open Science Framework (OSF):

H1: Individuals who receive an in-party (out-party) endorsement will be more likely (less likely) to support the policy than individuals who receive the policy information sans an endorsement.

H2: An accuracy prime will moderate the effect of a partisan endorsement linked to a solar tariff policy, so that respondents who receive the in-party (out-party) endorsement will be less (more) likely to support the policy than individuals who receive the in-party (out-party) endorsement with no motivational prime.

H3: A partisan directional reasoning prime will moderate the effect of a partisan endorsement linked to a solar tariff policy, so that respondents who receive the in-party (out-party) endorsement will be more (less) likely to support the policy than individuals who receive the in-party (out-party) endorsement with no motivational prime.

4.4 Political Knowledge as a Moderator

Previous research has also shown that more knowledgeable partisans are more likely to engage in identity-protective motivated reasoning (Taber and Lodge, 2006; McCright and Dunlap, 2011; Kahan et al, 2012; Bolsen et al., 2015). This result has been attributed to the fact that knowledgeable partisans are better able to identify and selectively credit the information that best suits their identity-defining groups' position. Kahan et al. (2012) found that as knowledge of scientific facts increases, attitude polarization about climate change occurs, because "members are motivated to fit their interpretations of scientific evidence to their competing cultural philosophies" (Kahan et al., 2012, p. 733). Bolsen et al. (2015) found that Republicans who are more knowledgeable about politics, energy, and science are less likely to say that global warming is happening. These findings discount the idea that citizens simply need more information to more accurately judge public policy. Instead, when individuals have more

resources available to them in the form of knowledge, it is often used to further identity-protective goals, as opposed to accuracy goals.

H4: High knowledge respondents will be more likely to increase (decrease) support as a result of the in-party (out-party) endorsements than low knowledge respondents.

4.5 Study Design

In order to test my hypotheses, I implemented an online survey experiment. Respondents were recruited through Amazon Mechanical Turk. This study was conducted on October 26-27, 2020, the week before the 2020 presidential election. 1,092 respondents completed the survey. I excluded participants who identify as pure Independents following previous work (Bullock, 2011; Druckman et al., 2012; Bolsen, et al., 2014). The total number of participants was 992 once pure Independents are removed. 52.42% identified with the Democratic Party, while 47.58% identified with the Republican Party. Sample demographics are detailed in Appendix C.

After answering basic demographic questions, participants were randomly assigned to one of 8 experimental conditions (Table 4-1). The study was a 3 x 3 factorial design that varied the presence of partisan endorsements (none, Democrat, Republican) and motivational primes (none, accuracy prime, directional prime).[8] In order to isolate the effects of partisan endorsements on policy opinions, it is necessary to hold policy information constant across conditions, varying only partisan endorsements (Bolsen et al., 2014; Druckman and McGrath, 2019; Kahan, 2016). A design that meets this criterion demonstrates that respondents change the weight they give to various policy considerations based on the partisan endorsement that they are shown. To meet this requirement, respondents in all experimental conditions received identical

[8] While this was a 3x3 factorial design, there is no condition that received a directional prime and no partisan endorsement, because there were no clear predictions for how support would change in such a condition. Also, an additional baseline condition was included in the experiment that contained no policy information. It was dropped from the analyses given it was not a preregistered baseline for the hypothesis tests.

information about the policy itself. All participants were presented with the following initial statement: “Taxes on foreign-made products imported to the U.S. are called ‘tariffs.’” All respondents were also informed, “Solar panels collect energy from the sun in order to provide electricity. They can be installed anywhere that receives direct sunlight. Panels are often installed on rooftops of homes or businesses to fully or partially power them.” Additionally, participants in all conditions were presented with two competing sets of considerations about solar panel tariffs. The statement emphasizing positive considerations of the policy read as follows, “Some people argue that the tariff has protected U.S.-based companies who make solar panels and the workers they employ by allowing them to compete with foreign countries.” While the statement highlighting negative considerations read, “Other people argue that the tariff has increased the cost of installing solar panels for consumers, thereby decreasing solar energy production and continuing a dependence on fossil fuels.”

Respondents were first randomly assigned to one of three motivational conditions: (a) *no motivational prime*, (b) an *accuracy prime,* or (c) a *directional prime*. Respondents who received *no motivational prime* were told prior to reading any information, “We will next ask you to read a brief article. We then will ask you to answer questions about the policy it describes.” I follow Bolsen et al. (2014) by asking participants who received the *accuracy prime* to “try to view the policy in an evenhanded way and from various perspectives.” Respondents were also informed that they would later be asked to justify the reasons for their judgment. Participants in this condition were provided with the opportunity to justify their opinions towards the end of the survey. For the *directional prime,* I follow Bayes et al. (2020) by first asking participants their ideology and party identification. Next, in order to activate partisan identity, respondents were presented with a series of partisan-as-social-identity questions (see Huddy et al., 2015; Bayes et

al., 2020). These questions included, “When talking about Republicans (Democrats) how often do you use “we” instead of “they”?” with answer choices ranging from “Never” to “All of the time.” Another question included was, “How important is being a Republican (Democrat) to you?” with answer choices ranging from “Not at all important” to “Extremely important.” Finally, participants were asked how much they agree that the party with which they just identified is “falling apart and lacking consensus”. Respondents were presented with an asymmetrical scale for this question ranging from “agree somewhat” to “agree completely.” This scale does not allow for disagreement, priming a sense of threat to the individual’s partisan identity (Petrocelli et al., 2010; Bayes et al., 2020).

After the motivation prime was induced, respondents were presented with the short article containing the positive and negative considerations about solar panel tariffs. Responsibility was attributed to either the U.S. Government, President Obama, or President Trump. Headlines read, “U.S. Government Places Tariff on Foreign-Made Solar Panels,” “Obama Places Tariff on Foreign-Made Solar Panels,” or “Trump Places Tariff on Foreign-Made Solar Panels.” For the conditions that attributed responsibility to the U.S. government, the following sentence was included within the body of the text: “The U.S. government placed a tariff on imported solar panels.” I specifically avoided including a timeframe in this sentence in order to leave partisan responsibility for the tariff ambiguous. For the conditions that had a partisan endorsement, within the body of the article it stated that the respective president placed a tariff on imported solar panels in 2014 for the Obama treatments, and in 2018 for the Trump treatments. As mentioned, these are factually accurate statements, and no deception was used in this study.

Table 4-1. Experimental Conditions & Predictions

	No Partisan Endorsement	**In-Party Endorsement**	**Out-Party Endorsement**
No Prime	*Condition 1* Baseline	*Condition 3* Increase Support (Hyp. 1)	*Condition 6* Decrease Support (Hyp. 1)
Accuracy Prime	***Condition 2*** **Baseline**	*Condition 4* Decrease Support relative to Condition 3 (Hyp. 2)	*Condition 7* Decrease Support relative to Condition 6 (Hyp. 2)
Directional Prime		*Condition 5* Increase Support relative to Condition 3 (Hyp. 3)	*Condition 8* Increased Support relative to Condition 6 (Hyp. 3)

Table 4-1 shows treatment conditions with predicted support for tariffs on solar panels for each group. For the in-party and out-party endorsements, I matched individuals' self-reported party identification with the partisan source endorsement they received. For example, if a respondent identified as a Democrat and viewed an Obama endorsement, they were included in an in-party endorsement condition. I follow Bolsen et al. (2014) in using the condition that included no partisan endorsement and accuracy prime as the appropriate baseline for my hypothesis tests. This is because without a motivational prime, respondents may be likely to use a directional motivation in order to form an evaluation, e.g., as a "default" baseline for processing political information (Gronendyke and Krupnikov, 2021). Figure 4-1 shows the treatments that respondents saw.

Figure 4-1. Treatments

4.6 Measures

In order to measure party identification, respondents were first asked "Generally speaking, do you usually think of yourself as a Republican, a Democrat, an independent, or what?" The answer choices available were "Republican," "Independent," and "Democrat." If the participant chose "Independent," they were next shown the following question, "Do you think of yourself as closer to the Republican Party or the Democratic Party?" Respondents could choose between "closer to the Republican Party," "closer to the Democratic Party" or "neither." I follow prior research on partisan attitudes and group independents who lean towards either party with partisans for the purpose of analysis (Bullock, 2011; Druckman et al., 2012; Bolsen et al., 2014).

My main dependent variable of support for the policy itself was asked immediately after the treatments were presented. Participants were asked, “Given this information, to what extent do you oppose or support solar panel tariffs?” Answer choices were presented on a 7-point fully labeled scale ranging from “strongly oppose” to “strongly support.” Because the survey was conducted the week before the presidential election, participants were also asked, “Do you support the continuation of tariffs on solar panels by the next presidential administration?” with answer choices presented on a 7-point fully labeled scale ranging from “strongly oppose” to “strongly support.” I expected to see the same effects that would be seen on the main support variable on this variable as well.

To assess the effects of political knowledge on support for solar panel tariffs, I asked 4 knowledge questions from the 2019 ANES Pilot Study. The questions were combined to create a 4-point index which indicates the number of questions a respondent answered correctly. I split the results into low knowledge participants who answered two or less questions correctly (55.67% of sample) and high knowledge participants who answered three or four questions correctly (44.33% of sample).

4.7 Results

I begin by reporting the effect of the experimental conditions on support for solar panel tariffs. In Table 4-2, I report the mean support for solar panel tariffs, the standard deviation, 90% confidence interval, and N for each condition.[9] Figure 4-2 shows the percent shift on the 7-point response scale of support for solar panel tariffs for each condition relative to the baseline.

[9] I estimated a series of ordinary least squared (OLS) regressions that included robust standard errors. 90% confidence intervals are appropriate as I used one-tailed tests throughout, because I had directional hypotheses. OLS results can be found in Appendix C. These results are robust to using an ordered logit; the results of which can also be found in Appendix C.

4.7.1 Effects of Partisan Endorsements

There is support for Hypothesis 1. Respondents were more likely to support the policy relative to the baseline in all three conditions where respondents received an attribution of responsibility for solar panel tariffs to a president of their own party. Respondents who received no motivational prime and saw the policy attributed to a president of their own party increased support for the policy by 5.43% ($p \leq 0.05$). Respondents who received an accuracy prime and an in-party endorsement increased support by 9.54% ($p \leq 0.01$). For this condition, it was expected that the endorsement would have less of an effect because of the accuracy prime (Hypothesis 2). However, the results only support the evidence of the effects of the party endorsement, as the accuracy prime did not moderate the power of an in-party attribution for the policy. The individuals who received a directional prime and an in-party endorsement increased support by 7.95% from the baseline ($p \leq 0.01$). Hypothesis 1 does not hold for the condition in which respondents received an out-party endorsement and no motivational prime. This condition does not statistically differ from the baseline. However, respondents in the condition with an out-party endorsement and a directional motivation reduced support for the policy by 6.62% ($p \leq .05$). These results provide strong evidence that elite partisan support for a policy, independent of the content of the policy itself, is a crucial factor in determining the level of support individuals exhibit.

4.7.2 Effects of Motivational Primes

In order to determine the effects of the accuracy prime, I used one-tailed, independent t-tests[10]. The first test compared the group of respondents who received no motivational prime and saw the policy attributed to a president of their own party to group who received an accuracy

[10] Results of all t-tests can be found in Appendix C.

prime and saw the same in-party endorsement. According to hypothesis 2, respondents who receive the accuracy prime and an in-party endorsement should have significantly reduced support for the policy (i.e., opinions were predicted to look similar to those in the baseline condition where evaluations were based only on the content provided). As stated, Figure 4-2 shows that individuals who received an accuracy motivation and an in-party endorsement significantly *increased* support for the policy relative to the group that received no motivational prime and the in-party endorsement. Hypothesis 2 is not supported by these results. However, the shift in support that results from an accuracy motivation and an in-party endorsement should not necessarily be seen as a failing of respondents to use accuracy as their processing goal. The results of being motivated by the accuracy prime and the directional prime look similar, but the underlying mechanism still potentially differs. The accuracy motivated individuals could have arrived at a high level of support not because they were driven to defend a partisan identity, but instead because they saw the administration of a president of their own party as a credible source to use when attempting to form an accurate opinion (see Druckman and McGrath, 2019).

Individuals who received an accuracy motivation and an out-party endorsement were also expected to increase support for the policy compared to the out-party/no prime group. Again, support moved in the opposite direction from what was predicted. Respondents who received the accuracy prime and an out-party endorsement were significantly less likely to support the policy than respondents in the group that received an out-party endorsement and no motivational prime ($p \leq .10$). Despite these results, the group that received the accuracy prime and an out-party endorsement does not significantly differ from the accuracy prime/no partisan endorsement group. Further, the magnitude of the effect is less than what is observed in the group that

received a directional prime and out-party endorsement, providing some evidence that the accuracy prime may have had a moderating effect on the out-party endorsement only.

Table 4-2. Support for Solar Panel Tariffs by Condition

	No Endorsement	In-Party	Out-Party
No Motivation	*Condition 1*	*Condition 3*	*Condition 6*
Mean:	4.02	4.27	4.16
(Std. Dev.)	(1.95)	(1.79)	(2.06)
90% Confidence Interval:	(3.73, 4.30)	(4.01, 4.53)	(3.85, 4.47)
	N = 127	N = 133	N = 121
Accuracy Prime	***Condition 2 (Baseline)***	*Condition 4*	*Condition 7*
Mean:	**3.89**	4.56	3.80
(Std. Dev.)	**(1.81)**	(1.63)	(1.85)
90% Confidence Interval:	**(3.62, 4.17)**	(4.30, 4.81)	(3.53, 4.07)
	N=119	N = 111	N = 129
Directional Prime		*Condition 5*	*Condition 8*
Mean:		4.45	3.43
(Std. Dev.)		(1.6)	(1.84)
90% Confidence Interval:		(4.20, 4.70)	(3.17, 3.69)
		N = 114	N = 138

Entries in each cell report the mean support for solar panel tariffs (1–7 oppose/support scale), standard deviation in parentheses, 90% confidence interval associated with estimated support in parentheses, and the N. Baseline condition is in boldface.

The results provide mixed support for Hypothesis 3. Again, I used one-tailed, independent t-tests in order to see if the directional prime moderated (i.e., increased) the effect of the in- and out-party endorsements. Figure 4-2 shows that when respondents received an in-party endorsement and a directional prime, the percent shift in support for the policy was greater than when participants received no motivational prime, but the difference does not reach statistical significance. Respondents who received the directional prime and an out-party endorsement

reduced support by 10.42% from the group of respondents who were shown an out-party endorsement and no prime ($p \leq .01$). It is worth noting that when defense of partisanship is primed, support for the policy shifts 14.57% on a 7-point scale moving from an in-party endorsement to an out-party endorsement. These results provide some evidence that when primed to defend their partisan identity, respondents will rely more heavily on partisan endorsements to form policy opinions.

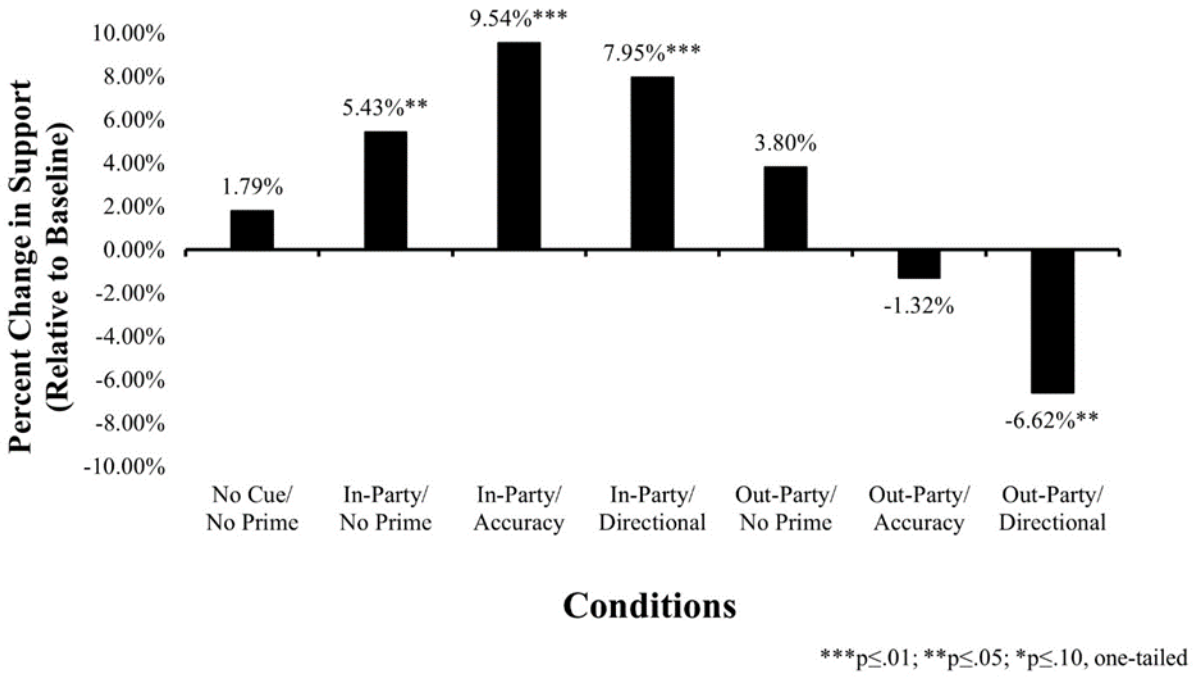

Figure 4-2. Support for Solar Panel Tariffs Among All Respondents

4.7.3 Knowledge Effects

I find strong support for Hypothesis 4. Figure 4-3 and 4-4 are analogous to Figure 4-2, except Figure 4-3 only includes high knowledge respondents (N=443) while Figure 4-4 only includes low knowledge respondents (N=550), respectively.[11] In Figure 4-3, it is evident that the

[11] See Appendix C for OLS and Ologit models for both high and low knowledge participants.

magnitude of the treatment effects is greater in the high knowledge model than in the full model. In the conditions where respondents received in-party endorsements, support increased 11.57% (no motivational prime), 12.86% (accuracy prime), and 13.85% (directional prime). All were significant at $p \leq .01$. In the conditions where respondents received an out-party endorsement, again only the condition in which respondents received a directional prime differed significantly from the baseline, with support decreasing by 11.27% ($p \leq .01$). Figure 4-4 shows changes in support among low knowledge participants. No condition reached significance in the low knowledge model. These results provide evidence that individuals who pay attention to politics are the ones who are most likely to be motivated to protect their identity as partisans when forming opinions. Additionally, since the accuracy prime/in-party group again significantly differs from the baseline, high knowledge respondents may rely more heavily on partisan endorsements as credible messengers of information when attempting to form accurate opinions.

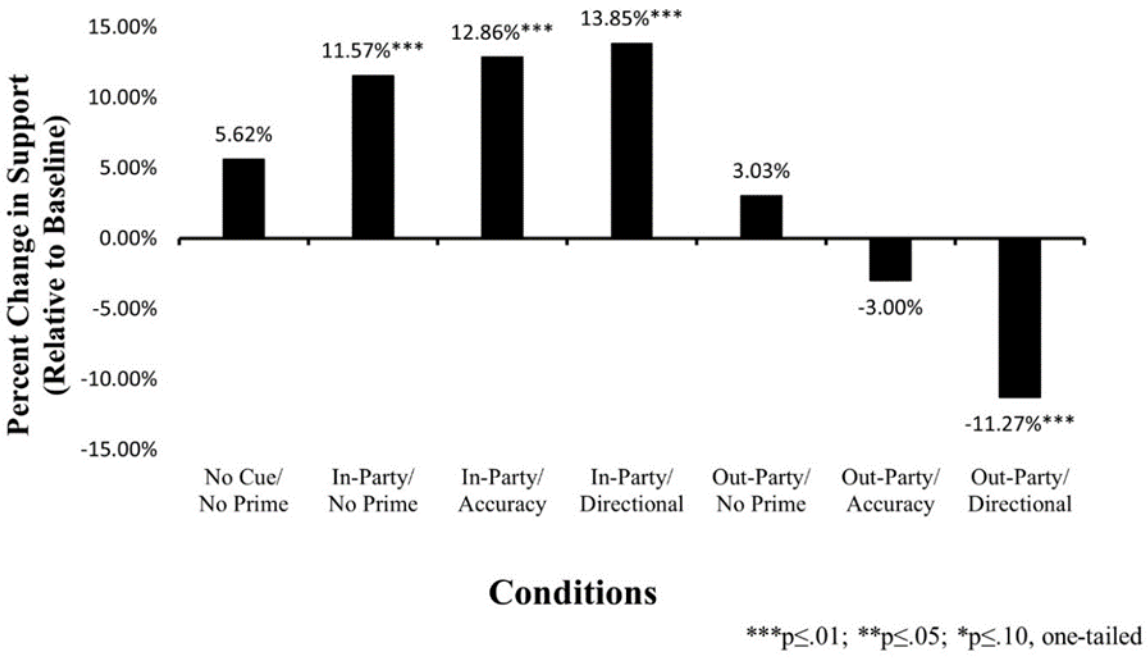

Figure 4-3. Support for Solar Panel Tariffs Among High Knowledge Respondents

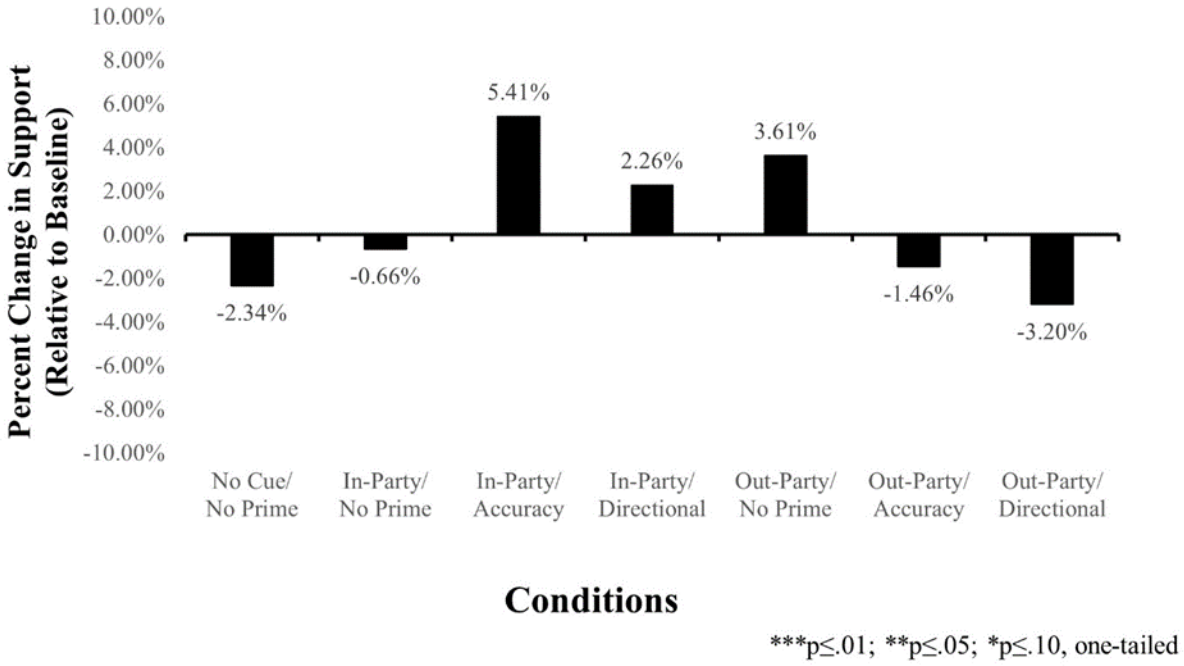

Figure 4-4. Support for Solar Panel Tariffs Among Low Knowledge Respondents

4.7.4 Analyses by Party Identification

This study examines the effects of partisanship on policy support and uses endorsements from presidents of both major U.S. political parties. Prior research shows that Democrats are generally less supportive of tariffs, specifically ones on solar panels, than Republicans (Program for Public Consultation, 2018; Pew, 2019). Despite expecting different levels of baseline support among Democrat and Republican respondents, there was no reason to expect that there would be different effects of the treatments among members of different parties. Thus, the following analysis is purely exploratory. Below I analyze the treatment effects among copartisans.

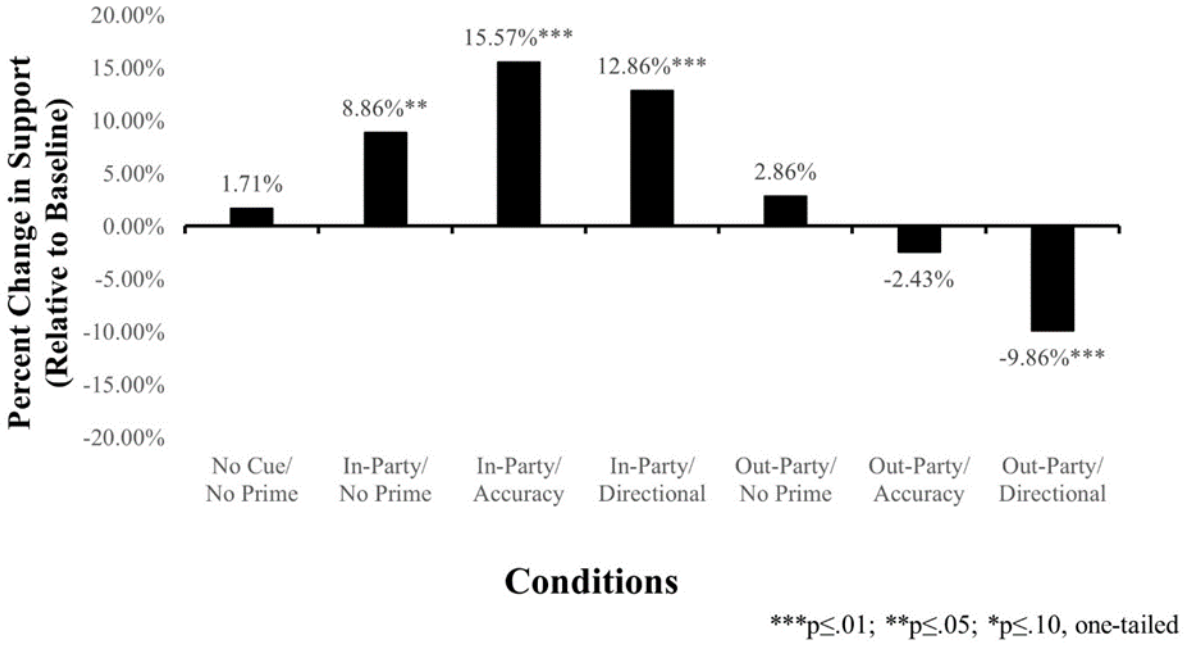

Figure 4-5. Support for Solar Panel Tariffs Among Democrats

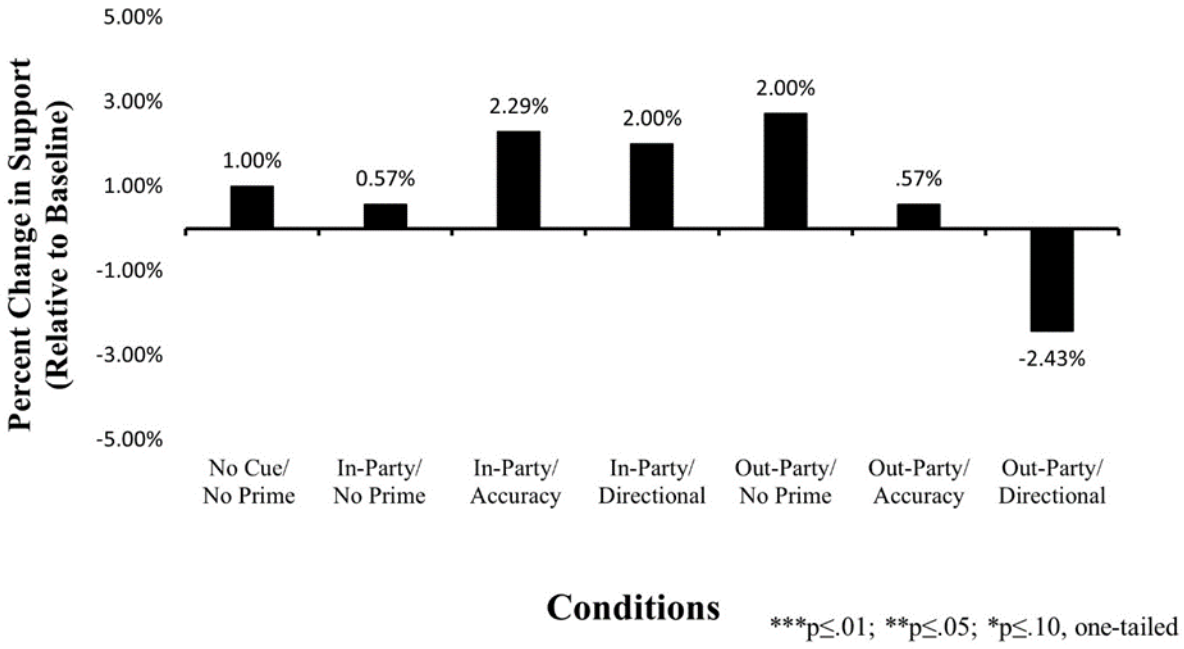

Figure 4-6. Support for Solar Panel Tariffs Among Republicans

Figures 4-5 and 4-6 show the same information as Figure 4-2, with the sample broken down into Democrats (N=520) and Republicans (N=472), respectively.[12] Despite no predictions about partisan differences within the sample, the data shows that the effects discussed above were driven exclusively by Democrats. All three in-party conditions reach statistical significance for Democrats, and the magnitude of the effect is greater than in the full model. Figure 4-5 shows that when shown an in-party endorsement and no prime, Democrat respondents increased their support of the policy by 8.86% ($p \leq .05$). When given an in-party endorsement and an accuracy prime, support increased by 15.57% ($p \leq .01$), and when given a directional prime with an in-party cue, support increased by 12.86% ($p \leq .01$). Again, as in the full model, the only group who received an out-party endorsement that significantly differed from the baseline was the condition that received a directional prime. Support decreased by 9.86% ($p \leq .01$) in this condition. Comparing the two groups in which respondents were primed to defend their partisan identities reveals a massive shift in support for the policy. When Democrat respondents were primed to defend their identity as a Democrat, support for solar panel tariffs decreased 22.72% on a 7-point scale from the in-party endorsement (Obama) to the out-party endorsement (Trump). None of the conditions reach statistical significance amongst Republicans, as shown in Figure 4-6. Support is positively signed for all groups, except the group that received an Obama endorsement and were primed to defend their partisanship.

[12] See Appendix C for means and OLS and Ologit models for Democrats and Republicans.

4.7.5 Support for Continuation of Solar Panel Tariffs by the Next Presidential Administration

Table 4-3. Policy Continuation Support by Condition

	No Endorsement	In-Party	Out-Party
No Motivation	*Condition 1*	*Condition 3*	*Condition 6*
Mean:	3.91	4.47	4.17
(Std. Dev.)	(1.89)	(1.78)	(1.97)
90% Confidence Interval:	(3.64, 4.19)	(4.22, 4.73)	(3.88, 4.47)
	N = 127	N = 133	N = 121
Accuracy Prime	***Condition 2 (Baseline)***	*Condition 4*	*Condition 7*
Mean:	**4.08**	4.52	3.81
(Std. Dev.)	**(1.85)**	(1.57)	(1.86)
90% Confidence Interval:	**(3.80, 4.36)**	(4.28, 4.77)	(3.54, 4.08)
	N=119	N = 111	N = 129
Directional Prime		*Condition 5*	*Condition 8*
Mean:		4.50	3.67
(Std. Dev.)		(1.63)	(1.90)
90% Confidence Interval:		(4.25, 4.75)	(3.41, 3.94)
		N = 114	N = 138

Entries in each cell report the mean support for the continuation of solar panel tariffs by the next administration (1–7 oppose/support scale), standard deviation in parentheses, 90% confidence interval associated with estimated support in parentheses, and the N. Baseline condition is in boldface.

In Table 4-3, I report the mean support for continuation of the policy by the next administration, the standard deviation, 90% confidence interval, and N for each condition. In Figure 4-7, I show the percent shift on a 7-point scale of support for continuation of the policy by the next administration.[13] The same pattern emerges for this dependent variable as for the policy support variable. For the condition in which respondents received no motivational prime with an in-party endorsement, support for the policy increased by 5.57% ($p \leq 0.05$). Again, the in-party

[13] See Appendix C for OLS and Ologit models.

endorsement was not moderated by the accuracy prime, with the respondents in the group who received an in-party endorsement and an accuracy prime increasing support by 6.29% ($p \leq 0.05$). Respondents who received an in-party endorsement and a directional prime increased support by 6% ($p \leq 0.05$). The pattern of support is identical to the pattern seen with the support for the policy variable for the out-party conditions as well. Respondents were less likely to support continuation of the policy in both the condition with an accuracy prime and the condition with a directional prime. Figure 4-7 shows that the group who received a directional prime and were shown an endorsement from a member of their out-party reduced support for continuation of the policy by 6.58% ($p \leq 0.05$). The group of respondents who received the out-party endorsement and no prime again is not statistically significant nor is the condition in which respondents received an out-party endorsement and an accuracy prime.

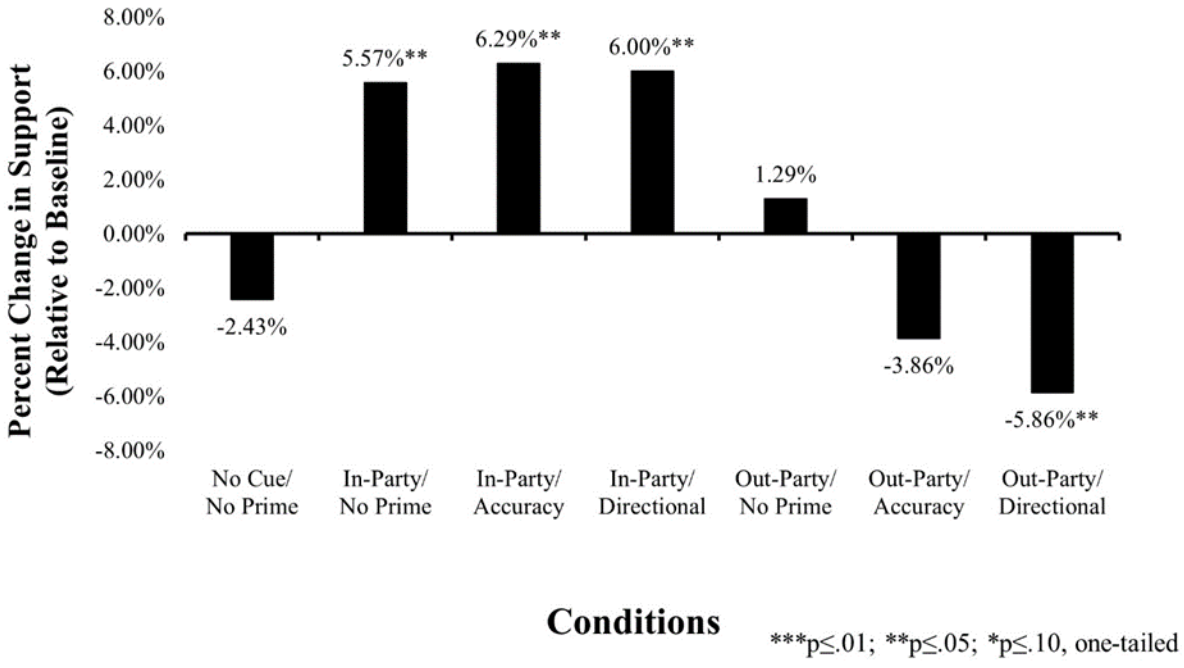

Figure 4-7. Support for Policy Continuation Among All Respondents

4.8 Conclusion and Discussion

Opinions about tariffs on foreign-made solar panels are highly susceptible to elite partisan endorsements. In this experiment, I found clear evidence of motivated reasoning in opinion formation about this policy. Holding all substantive policy information constant, when individuals are told that a president of their party was responsible for tariffs on solar panels, they were more likely to support the policy than if they were not given a clear attribution of responsibility or if they were told that a president of the opposing party was responsible for the tariffs.

I found mixed evidence that support for solar panel tariffs could be moderated by imploring respondents to process the information in an evenhanded manner and having them justify their opinion. One potential explanation is that the accuracy prime failed to alter respondents' information processing goals. Because partisan polarization and affective polarization among the electorate is currently high, it is plausible that simply asking people to view information in an even-handed way and telling them to justify their opinions is not enough to change an individual's processing goal. The timing of the experiment, the week before the 2020 presidential election, meant that political preferences were highly salient in individual's minds, lending credence to this possibility. A second potential explanation is that respondents' information processing goals *were* altered, but that the partisan endorsement from a president of one's own party served as a credible source cue that led respondents to increase support of the policy (see Druckman and McGrath, 2019). In this case, individuals use what they deem to be a credible source as a means to forming an accurate opinion. [14]

[14] The method by which the accuracy motivated respondents learn is still often biased. Individuals can have a priors bias of whether or not a source is trustworthy. The key difference in this type of processing and identity-protective directional reasoning is that directional reasoning leads to a predetermined conclusion while accuracy motivated reasoning does not (Druckman and McGrath, 2019).

This study also yielded some evidence that the tendency to engage in directional motivated reasoning is heightened when individuals' feel their identity as a member of a political party is threatened. In this case, individuals feel the need to reaffirm the importance of and defend the identity that has been threatened. When respondents were primed to hold a directional goal and saw the policy attributed to a president of the opposite party, support decreased significantly more than if they had not received the prime and saw the same information. Thus, even in the current polarized climate, specifically having one's partisan identity threatened can still make partisan goals more salient and their effect on policy opinions more polarized.

This study also adds to the growing amount of research that counters the proposition that more information is all citizens need to overcome partisan bias. Respondents with the highest levels of political knowledge exhibited the largest movement in support for solar panel tariffs as a result of the partisan endorsements. No effects at all were found among participants with low levels of knowledge. Future work should focus on how to moderate motivated reasoning among the highly knowledgeable subset of the population, as these individuals are more likely to vote and more likely to talk to their friends and families about political topics.

Finally, although it was not the focus of this study, I found asymmetrical effects among partisans. The effects of the treatments were concentrated among Democrats. There are several potential reasons for these results. 73% of Republicans support tariffs in general, a statistic that significantly grew over the course of Donald Trump's campaign and presidency (Pew, 2019). Research suggests that the more salient a policy is, the less likely an attitude is to be moved by new information (Kahan, 2016). Perhaps, Republican attitudes on tariffs were more crystalized, reducing the effects of the treatments. Additionally, because Trump has been vocal about protectionist trade policies, Republicans were potentially initially more aware than Democrats of

their party leadership's position on the issue. Another potential explanation is that Republicans have abysmally low trust in mass media, 10% compared to 73% among Democrats (Gallup, 2020). The information was presented to respondents in the form of a news article, albeit one with no media source. It is potentially plausible that Republicans did not trust the information they were given, explaining a lack of attitude shifts as a result. Partisan differences in information processing of partisan endorsements on political topics is an area ripe for future work by scholars.

5 CHAPTER 5: CONCLUSION

5.1 Findings and Contributions to the Literature

The goal of this dissertation has been to examine the way the media framed the debate surrounding tariffs on solar panels and the way that individuals form attitudes about the topic. While there is a voluminous literature that examines how the media frames energy sources and policies as well as literature that explores the considerations that affect attitude formation on the topic, no prior work has focused on frames and attitudes surrounding trade policies that alter the price and availability of clean energy sources. I used theories of framing, frame-building, partisan media bias, and motivated reasoning in order to predict and explain how the media has framed the topic and why, how highlighting different considerations about the topic shapes public opinion, and the role that elite partisan endorsements play in opinion formation within this issue domain. This dissertation begins to fill in the gaps in the literature so that we may have a fuller understanding of the connection between the media, elites, and citizens when trade policy and clean energy intersect.

Throughout this dissertation, I relied on literature that demonstrates that the attitudes the public forms are largely a result of the way that information is presented in the media. In Chapter 2, I investigated what coverage of tariffs on solar panels looked like over the last 10 years. Specifically, I explored how the media presented the effects of the tariffs and whether or not the two media sources examined exhibited partisan bias. I found that both media sources most often highlighted that tariffs increased the price of solar energy and harmed consumers; tariffs created division within the solar industry; and China's reaction to the tariffs. I found that the coverage of the considerations mentioned was relatively stable across sources, but changed more over time. I

also found that the *New York Times* and the *Wall Street Journal* both reported more favorably on the tariffs when a partisan congruent president was in office.

To my knowledge, this study is the only research to date that examines how the media has framed any subset of U.S. tariff policy or trade policy, generally. Polling data shows that attitudes have shifted on this topic considerably over the past decade, and this research is a first step in understanding the causes of that shift. Polling data also shows that attitudes surrounding trade have polarized along partisan lines. The findings presented in Chapter 2 help illuminate one potential cause of polarized opinions towards tariffs, Partisan Media Bias, in two of the most widely read news outlets today. Political communication scholars have recently argued that PMB can only be observed by comparing news sources to each other, as opposed to comparing sources to measures that attempt to ascertain some objective reality of an issue (Shultziner and Stukalin, 2019). The research presented in Chapter 2 takes this proposition a step further by comparing sources to each other at two separate time periods, one where Democrats benefitted from positive tariff coverage and one where Republicans benefitted from positive tariff coverage. Thus, this study provided a unique and stronger test of PMB than what is found in much of the scholarship on this topic.

In Chapter 3, I relied on framing theory to develop hypotheses about how varying considerations would shift support for solar panel tariffs. When presented with a pro-tariff message that highlighted the tariffs' protection of manufacturers and manufacturing jobs, respondents significantly increased support for the policy and continuation of tariffs by the next administration relative to respondents who did not receive messages containing any positive or negative considerations. I also found evidence that an anti-tariff message emphasizing costs to consumers and environmental harm caused respondents to decrease support for the policy and

support for the Biden administration to continue the policy relative to the no information condition. Finally, the experiment provided evidence that when an anti-tariff and a pro-tariff message are presented in competition, the messages counteract each other, resulting in levels of support for the policy and the continuation of the policy similar those seen in respondents who received no positive or negative information about the tariffs.

While there is an abundance of literature that provides evidence on how citizens form attitudes when presented with framed messages, there has been little work done that applies this knowledge to trade policies, specifically tariffs. Additionally, prior research has shown that individuals think about energy sources through two main evaluative dimensions, economic costs and environmental benefits. The studies presented in Chapter 3 used messages that highlight considerations along these dimensions about a novel issue, tariffs on solar panels. This research thus contributes to the literature by expanding what is known about how citizens think and how attitudes can be shifted on trade and tariff policies, specifically this novel issue.

In Chapter 4, I used the theory of motivated reasoning to predict how support for solar panel tariffs and continuation of the policy in the future would change when elite partisan endorsements were varied and information processing goals were induced. I hypothesized that endorsements from a president of one's own political party would increase support for tariffs, while an endorsement from a president of the opposite party would cause respondents to decrease support for the policy relative to a group that received no elite partisan endorsement. The results strongly supported this hypothesis. Presidential endorsements were a significant driver of attitude formation about solar tariff policy. Further, I predicted that priming individuals to be protective of their partisan identity would increase the effects of the endorsements. The results yielded some evidence for this hypothesis. Respondents relied more heavily on partisan

endorsements when they received both an in-party and an out-party endorsement, although only the later was statistically significant. I also predicted that an accuracy motivation would temper the effects of the partisan endorsements. There was no evidence for this hypothesis when individuals were primed to be accurate and shown an in-party endorsement, and mixed evidence for support when individuals were primed to be accurate and shown an out-party endorsement. These findings do not necessarily represent a failing of accuracy motivations to influence respondents. As Druckman and McGrath (2019) argue, one can pursue an accuracy goal, but still selectively credit and discredit sources of information used to form evaluations in biased ways. When this occurs, resulting opinions may appear similar to those formed using directional goals.

In this study, I also utilized previous literature about attributes that make one more susceptible to engaging in identity-protective cognition to make predictions. Partisans who have higher levels of political knowledge were hypothesized to be more likely to rely on the partisan endorsement to form an attitude than partisans with low levels of political knowledge. The results of this study provided strong evidence for this proposition. Finally, although not predicted, I found large differences between Democrat respondents and Republican respondents. Democrats solely drove the results of this study. When looking at Republican respondents only, I found little to no support for my predictions.

The results presented in Chapter 4 contribute to existing literature in numerous ways. First, there is a dearth of research that directly induces processing goals when evaluating political information. Prior literature has identified this step as crucial for understanding the underlying mechanisms that citizens use when processing information. Further, while some results presented in Chapter 4 bolster previous findings, i.e. individuals rely heavily on partisan endorsements when forming opinions, some findings are novel. For example, contrary to prior research, I found

that inducing an accuracy goal did not always temper the use of partisan endorsements (see Bolsen et al., 2014). Additionally, this research suggests that having more knowledge about political topics does not result in less reliance on elite partisan endorsements, contrary to much conventional thought. While other studies have found similar results, none to my knowledge have done so in conjunction with manipulated processing goals.

5.2 Limitations and Implications for Future Work

Future scholarship can utilize and build upon the findings presented in this dissertation in a number of ways. First, I have presented how the media frames and citizens form attitudes about solar panel tariffs, specifically. This is a start, but there is much work to be done in understanding the framing of tariff policies more broadly. Future work should examine media frames surrounding different tariffs over time. Further, framing experiments on a wider variety of trade and tariff policies would add to our understanding of which considerations matter most when citizens form attitudes about these topics as well as how differing considerations function in competition.

Second, solar tariffs provided a unique examination of Partisan Media Bias, given that two presidential administrations of different political parties issued and implemented almost identical policies. A more comprehensive examination might include a larger number and variety of sources in order to more accurately gauge the PMB within the media landscape in the United States. Future work might also benefit from examining coverage of other policies that remain similar across administrations of different parties.

Third, while the results presented in Chapter 4 provide novel insights about how accuracy goals affect opinion formation, there is still much to disentangle. For instance, future research should attempt to provide direct evidence for how perceived source credibility of information

moderates attitude formation in the presence of accuracy goals. Understanding when and how even accuracy motivated individuals engage in bias can ultimately lead to more effective communication and potentially less partisan polarization in the electorate.

Finally, partisan differences in information processing of partisan endorsements deserves attention in future scholarship. Future research might specifically focus on understanding whether Republicans' current extremely low levels of trust in the media affect the way they process information.

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APPENDICES

Appendix A

Table A- 1. Article Valence on a 3-Point Scale (t-tests)

	Observations	Mean	SE	SD	95% Conf. Interval	
Time Period 1 (2011-2014)						
New York Times	30	1.77	0.10	0.57	1.55	1.98
Wall Street Journal	30	1.53	0.11	0.63	1.30	1.77
Difference		0.53	0.15		-0.08	0.54
t = 1.5078						
Degrees of Freedom = 58						
p-value = 0.0685						
Time Period 2 (2017-2018)						
New York Times	11	1.18	0.12	0.40	0.91	1.45
Wall Street Journal	19	1.84	0.18	0.76	1.47	2.21
Difference		-0.87	0.13		-1.17	-1.49
t = -2.6443						
Degrees of Freedom = 28						
p-value = 0.0066						

Appendix B

Appendix B.1. Treatment Wording

The treatments presented to respondents were worded as follows:

Control:

Taxes on foreign-made products imported to the U.S. are called “tariffs.”
The U.S. government placed a tariff on solar panels shipped into the U.S. Solar panels collect energy from the sun in order to provide electricity. They can be installed anywhere that receives direct sunlight. Panels are often installed on rooftops of homes or businesses to fully or partially power them.

Pro-Tariff Frame:

Tariffs on Foreign-Made Solar Panels Protect U.S. Jobs and Manufacturers
Taxes on foreign-made products imported to the U.S. are called “tariffs.” Tariffs are a way to protect workers and businesses in the United States. They make foreign-made goods more expensive, which allows American-made products to compete with cheap imports from other countries.

The U.S. government placed a tariff on solar panels shipped into the U.S. from foreign countries. Solar panels collect energy from the sun in order to provide electricity. They can be installed anywhere that receives direct sunlight. Panels are often installed on rooftops of homes or businesses to fully or partially power them.

Foreign makers of solar panels have been able to sell their products below market value in the U.S. As a result, many U.S. makers of solar panels either went out of business or were on the verge of going out of business. Some experts argue these taxes on foreign-made solar panels are necessary to protect U.S.-based companies who make solar panels and the workers they employ. They also argue that more jobs are able to be created in the U.S. as a result of the tariff.

Anti-Tariff Frame:

U.S. Tariffs on Solar Panels Punish Consumers and Harm the Environment

Taxes on foreign-made products imported to the U.S. are called “tariffs.” Tariffs make foreign-made goods more expensive, often hurting consumers. People are less able to purchase foreign-made goods that enter the U.S. with tariffs on them.

The U.S. government placed a tariff on solar panels shipped into the U.S. Solar panels collect energy from the sun in order to provide electricity. They can be installed anywhere that receives direct sunlight. Panels are often installed on rooftops of homes or businesses to fully or partially power them.

Some experts argue these taxes on foreign-made solar panels are harmful, because they have led to an increase in the cost of installing solar panels on residents and businesses. Experts also argue that we should not tax foreign-made solar panels because the increased cost leads to negative effects on the environment. The tariff decreases the amount of solar energy produced in the U.S., because less people install them on their homes and businesses when the cost is higher. This has resulted in a continued reliance on sources of energy that pollute the environment.

Competitive Frames:

Do Tariffs on Foreign-Made Solar Panels Help or Hurt Americans?

Taxes on foreign-made products imported to the U.S. are called “tariffs.” The U.S. government placed a tariff on solar panels shipped into the U.S. from foreign countries. Solar panels collect energy from the sun in order to provide electricity. They can be installed anywhere that receives direct sunlight. Panels are often installed on rooftops of homes or businesses to fully or partially power them.

Policy experts disagree about the effects of tariffs on Americans. Some experts argue these taxes on foreign-made solar panels are necessary to protect U.S.-based companies who make solar panels and the workers they employ. They also argue that more jobs can be created in the U.S. as a result of the tariff.

Other experts argue tariffs on foreign-made solar panels are harmful. The tariffs have hurt consumers, because they increased the cost of installing solar panels on residents and businesses. Experts also argue the increased cost leads to negative effects on the environment. The tariff decreases the amount of solar energy produced in the U.S., because less people install them on their homes and businesses when the cost is higher. This creates a continued reliance on sources of energy that pollute the environment.

Table B-1. Study 1 Descriptive Statistics

Variable	**Distribution**
Age	Under 18: 5.7%; 18-24: 86.45%; 25-34: 5.88%; 35-44: 2.05%; 45-54: .26%
Education	Less than high school: 1.53%; High school graduate: 41.69%; Some college: 48.08%; 2 year degree: 4.86%; 4 year degree: 3.07%; Professional degree: .77%
Religion	Christian Religious: 41.94%; Catholic: 12.28%; Jewish: .26%; Muslim: 12.02%; Hindu: 5.12%; Other: 7.67%; Not Religious: 20.72%
Gender	Male: 28.28%; Female: 71.47%; Other: .26%
Income	Less than $10,000: 3.89%; $10,000 - $19,999: 8.81%; $20,000 - $29,999: 9.84%; $30,000 - $39,999: 11.14%; $40,000 - $49,999: 9.07%; $50,000 - $59,999: 10.62%; $60,000 - $69,999: 5.44%; $70,000 - $79,999: 8.29%; $80,000 - $89,999: 6.99%; $90,000 - $99,999: 2.85%; $100,000 - $149,999: 13.99%; More than $150,000: 9.07%
Global Knowledge	Know what office John Roberts holds: 61.76% Knows what office Angela Merkel holds: 55.81% Knows for how long Senators serve: 61.89% Knows in which area the U.S. spends the least: 44.47%
Ideology	Very liberal: 22.11%; Somewhat liberal: 37.28%; Slightly liberal: 15.42%; Neither liberal nor conservative: 15.68%; Slightly conservative: 5.66%; Somewhat conservative: 2.06%; Very conservative: 1.80%
Party Identification	Strong Republican: 2.83%; Weak Republican: 3.86%; Independent leans Republican: 2.57%; Independent: 10.28%; Independent leans Democrat: 21.59%; Weak Democrat: 25.96%; Strong Democrat: 32.90%

Table B-2. Study 1 Dependent Variables (OLS Models)

Condition	Policy Support	Policy Continuation	Environment	Consumers	Companies	Workers
Pro-Tariff Frame	0.698***	0.661***	0.455*	0.312*	0.145	0.146
	(0.206)	(0.214)	(0.272)	(0.211	(0.206)	(0.212)
Anti-Tariff Frame	0.0098	-0.21	-0.582**	-0.311*	0.324*	0.0083
	(0.232)	(0.236)	(0.264)	(0.206)	(0.205)	(0.206)
Both Frames	0.204	0.254	0.0635	0.0564	0.0268	-0.14
	-0.203	-0.213	(0.278)	(0.218)	(0.207)	(0.2)
Constant	3.252***	3.279***	3.404***	3.183***	4.538***	3.923***
	(0.15)	(0.154)	(0.187)	(0.143)	(0.135)	(0.136)
Observations	403	396	396	396	399	399
R-squared	0.034	0.042	0.036	0.021	0.007	0.004

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B-3. Study 1 Dependent Variables (Ordered Logit Models)

Condition	Policy Support	Policy Continuation	Environment	Consumers	Companies	Workers
Pro-Tariff Frame	0.830***	0.695***	0.403**	0.305	0.256	0.166
	(0.238)	(0.239)	(0.243)	(0.240)	(0.238)	(0.252)
Anti-Tariff Frame	-0.0515	-0.345	-0.583**	-0.429**	0.481**	-0.00674
	(0.286)	(0.286)	(0.248)	(0.252)	(0.243)	(0.240)
Both Frames	0.288	0.296	0.0466	0.0172	0.0688	-0.152
	(0.230)	(0.238)	(0.251)	(0.253)	(0.246)	(0.231)
Observations	403	396	396	396	399	399

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B-4. Study 2 Descriptive Statistics

Variable	**Distribution**
Age	Under 18: 5.17%; 18-24: 82.66%; 25-34: 9.96%; 35-44: .74%; 45-54: .37%; 55-64: .74%; 75-84: .37%
Education	Less than high school: 1.11%; High school graduate: 40.59%; Some college: 50.18%; 2 year degree: 6.27%; 4 year degree: 1.85%
Religion	Christian Religious: 33.21%; Catholic: 12.18%; Jewish: 1.11%; Muslim: 7.75%; Hindu: 4.80%; Other: 6.64%; Not Religious: 34.32%
Gender	Male: 27.24%; Female: 71.64%; Other: 1.12%
Income	Less than $10,000: 7.14%; $10,000 - $19,999: 6.02%; $20,000 - $29,999: 9.02%; $30,000 - $39,999: 9.77%; $40,000 - $49,999: 6.39%; $50,000 - $59,999: 9.40%; $60,000 - $69,999: 6.39%; $70,000 - $79,999: 9.77%; $80,000 - $89,999: 4.51%; $90,000 - $99,999: 4.51%; $100,000 - $149,999: 16.54%; More than $150,000: 10.53%
Global Knowledge	Know what office John Roberts holds: 62.88% Knows what office Angela Merkel holds: 62.17% Knows for how long Senators serve: 68.27% Knows in which area the U.S. spends the least: 43.54%
Ideology	Very liberal: 20.66%; Somewhat liberal: 35.06%; Slightly liberal: 20.30%; Neither liberal nor conservative: 14.39%; Slightly conservative: 5.17%; Somewhat conservative: 4.43%; Very conservative: 0%
Party Identification	Republican/Leans Republican: 11.8%; Independent: 8.12%; Democrat/Leans Democrat: 80.07%

Table B-5. Study 2 Dependent Variables (OLS Models)

Condition	Policy Support	Policy Continuation	Environment	Consumers	Companies	Workers
Pro Tariff Frame	0.799***	0.671***	0.498*	0.264	0.310	0.450*
	(0.225)	(0.245)	(0.383)	(0.261)	(0.324)	(0.280)
Con Tariff Frame	-0.387*	-0.762***	-0.836**	-0.504*	-0.0156	-0.0856
	(0.280)	(0.257)	(0.409)	(0.309)	(0.332)	(0.263)
Both Frames	0.0626	0.0203	-0.298	-0.380*	0.517**	0.580**
	(0.238)	(0.247)	(0.394)	(0.261)	(0.297)	(0.256)
Constant	3.387***	3.400***	3.57***	3.29***	3.95***	3.51***
	(0.169)	(0.172)	(0.275)	(0.187)	(0.208)	(0.167)
Observations	272	272	271	271	272	271
R-squared	0.079	0.101	0.040	0.034	0.014	0.029

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table B-6. Study 2 Dependent Variables (Ordered Logit Models)

Condition	Policy Support	Policy Continuation	Environment	Consumers	Companies	Workers
Pro Tariff Frame	1.030***	0.925***	0.406*	0.304	0.295	0.453*
	(0.287)	(0.301)	(0.281)	(0.270)	(0.312)	(0.312)
Con Tariff Frame	-0.667*	-0.988***	-0.728**	-0.797**	-0.0229	-0.0983
	(0.341)	(0.314)	(0.346)	(0.365)	(0.307)	(0.279)
Both Frames	0.0666	0.00332	-0.204	-0.421*	0.450**	0.657***
	(0.298)	(0.295)	(0.308)	(0.281)	(0.260)	(0.280)
Observations	272	272	271	271	272	271

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix C

Table C-1. Descriptive Statistics

Variable	Distribution
Age	18-24: 5.95%; 25-34: 34.88%; 35-44: 26.71%; 45-54: 17.44; 55-64: 10.08%; 65-74: 4.64%; 75-84: 0.2%; 85 or older: 0.1
Education	Less than high school: 0.1; High school graduate: 7.01; Some college: 11.18; 2 year degree: 10.16; 4 year degree: 52.85; Professional degree: 17.07; Doctorate: 1.63
Religion	Christian Religious: 37.31%; Catholic: 30.64%; Jewish: 2.93%; Muslim: 1.82%; Hindu: 2.02%; Other: 2.83%; Not Religious: 22.45%
Gender	Male: 48.69%; Female: 50.81%; Other: 0.5%
Income	Less than $10,000: 3.74%; $10,000 - $19,999: 5.66%; $20,000 - $29,999: 9.09%; $30,000 - $39,999: 10.1%; $40,000 - $49,999: 13.94%; $50,000 - $59,999: 16.46%; $60,000 - $69,999: 7.58%; $70,000 - $79,999: 8.28%; $80,000 - $89,999: 6.16%; $90,000 - $99,999: 5.56%; $100,000 - $149,999: 10.2%; More than $150,000: 3.23%
Global Knowledge	Know what office John Roberts holds: 65.35% Knows what office Angela Merkel holds: 60.26% Knows for how long Senators serve: 48.38% Knows in which area the U.S. spends the least: 31.88%
Ideology	Very liberal: 16.33%; Somewhat liberal: 17.64%; Slightly liberal: 17.14%; Neither liberal nor conservative: 11.39%; Slightly conservative: 13.61%; Somewhat conservative: 12.9%; Very conservative: 10.99%
Party Identification	Independent leans Republican: 7.86%; Weak Republican: 10.48%; Strong Republican: 29.23%; Independent leans Democrat: 9.38%; Weak Democrat: 16.94%; Strong Democrat: 26.01%
2016 Vote Choice	Donald Trump: 42.18%; Hillary Clinton: 34.81%; Gary Johnson: 5.35%; Jill Stein: 2.32%; Someone else: 2.83%; I did not vote.: 12.51%
2020 Vote Choice	Donald Trump: 40.91% Joe Biden: 47.27%; Jo Jorgensen: 5.45%; Someone else: 2.53%; I do not plan on voting.: 3.84%

Table C-2. Policy Support (OLS Models)

Condition	All	Democrats	Republicans
No Party Cue/No Prime	0.125	0.123	0.0675
	(0.239)	(0.317)	(0.348)
In-Party/No Prime	0.380**	0.621**	0.0425
	(0.227)	(0.284)	(0.343)
In-Party/Accuracy Prime	0.668***	1.089***	0.158
	(0.226)	(0.289)	(0.351)
In-Party/Directional Prime	0.557***	0.902***	0.139
	(0.223)	(0.285)	(0.343)
Out-Party/No Prime	0.266	0.207	0.187
	(0.250)	(0.358)	(0.339)
Out-Party/Accuracy Prime	-0.0923	-0.165	0.041
	(0.232)	(0.308)	(0.329)
Out-Party/Directional Prime	-0.463**	-0.692***	-0.174
	(0.228)	(0.286)	(0.336)
Constant	3.891***	3.508***	4.352***
	(0.166)	(0.219)	(0.239)
Observations	992	520	472
R-squared	0.035	0.099	0.003

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table C-3. Policy Support (Ordered Logits)

Condition	All	Democrats	Republicans
No Party Cue/No Prime	0.135	0.157	0.106
	(0.235)	(0.329)	(0.325)
In-Party/No Prime	0.355*	0.606**	0.101
	(0.217)	(0.281)	(0.325)
In-Party/Accuracy Prime	0.609***	1.100***	0.149
	(0.214)	(0.300)	(0.314)
In-Party/Directional Prime	0.500***	0.936***	0.123
	(0.208)	(0.285)	(0.314)
Out-Party/No Prime	0.299	0.213	0.216
	(0.254)	(0.407)	(0.311)
Out-Party/Accuracy Prime	-0.0872	-0.158	0.00851
	(0.220)	(0.319)	(0.290)
Out-Party/Directional Prime	-0.443**	-0.676**	-0.163
	(0.218)	(0.301)	(0.301)
Log pseudolikelihood	-1889.937	-959.792	-899.474
Observations	992	520	472

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table C-4. Policy Support (t-tests)

	Observations	Mean	SE	SD	95% Conf.	Interval
In-Party/No Prime	133	4.27	0.16	1.79	3.96	4.58
In-Party/Accuracy Prime	111	4.56	0.15	1.63	4.25	4.86
Difference		-0.29	0.22		-0.72	0.15
t = -1.3022						
Degrees of Freedom = 242						
p-value = 0.0970						
In-Party/No Prime	133	4.27	0.16	1.79	3.96	4.58
In-Party/Directional Prime	114	4.45	0.15	1.60	4.15	4.74
Difference		-0.18	0.22		-0.61	0.25
t = -0.8118						
Degrees of Freedom = 245						
p-value = 0.2088						
Out-Party/No Prime	121	4.16	0.19	2.06	3.79	4.53
Out-Party/Accuracy Prime	129	3.80	0.16	1.85	3.48	4.12
Difference		0.36	0.25		-0.13	0.85
t = 1.4516						
Degrees of Freedom = 248						
p-value = 0.0739						
Out-Party/No Prime	121	4.16	0.19	2.06	3.79	4.53
Out-Party/Directional Prime	138	3.43	0.16	1.84	3.12	3.74
Difference		0.73	0.24		0.25	1.21
t = 3.0122						
Degrees of Freedom = 257						
p-value = 0.0014						

Table C-5. Support for Policy by Knowledge Level (OLS Models)

Condition	High Knowledge	Low Knowledge
No Party Cue/No Prime	0.393	-0.164
	(0.340)	(0.334)
In-Party/No Prime	0.810***	-0.0461
	(0.333)	(0.308)
In-Party/Accuracy Prime	0.900***	0.379
	(0.356)	(0.297)
In-Party/Directional Prime	0.970***	0.158
	(0.344)	(0.294)
Out-Party/No Prime	0.212	0.253
	(0.377)	(0.326)
Out-Party/Accuracy Prime	-0.210	-0.103
	(0.350)	(0.304)
Out-Party/Directional Prime	-0.789***	-0.224
	(0.309)	(0.314)
Constant	3.574***	4.224***
	(0.235)	(0.228)
Observations	442	550
R-squared	0.089	0.013

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table C-6. Support for Policy by Knowledge Level (Ordered Logit Models)

Condition	High Knowledge	Low Knowledge
No Party Cue/No Prime	0.379	-0.149
	(0.315)	(0.351)
In-Party/No Prime	0.744***	-0.0527
	(0.312)	(0.302)
In-Party/Accuracy Prime	0.786***	0.372
	(0.319)	(0.293)
In-Party/Directional Prime	0.884***	0.111
	(0.312)	(0.284)
Out-Party/No Prime	0.181	0.303
	(0.386)	(0.331)
Out-Party/Accuracy Prime	-0.210	-0.130
	(0.332)	(0.298)
Out-Party/Directional Prime	-0.716***	-0.236
	(0.293)	(0.313)
Log pseudolikelihood	-831.80642	-1040.012
Observations	442	550

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table C-7. Support for Policy Continuation (OLS Models)

Condition	All	Democrats	Republicans
No Party Cue/No Prime	-0.162	-0.215	-0.171
	(0.238)	(0.325)	(0.328)
In-Party/No Prime	0.398**	0.645**	0.0456
	(0.229)	(0.304)	(0.326)
In-Party/Accuracy Prime	0.447**	0.677**	0.181
	(0.226)	(0.299)	(0.333)
In-Party/Directional Prime	0.424**	0.797***	-0.0269
	(0.228)	(0.312)	(0.324)
Out-Party/No Prime	0.0979	-0.000824	0.0413
	(0.247)	(0.362)	(0.317)
Out-Party/Accuracy Prime	-0.262	-0.182	-0.324
	(0.235)	(0.328)	(0.315)
Out-Party/Directional Prime	-0.402**	-0.569**	-0.187
	(0.234)	(0.307)	(0.331)
Constant	4.076***	3.662***	4.574***
	(0.169)	(0.237)	(0.224)
Observations	992	520	472
R-squared	0.029	0.069	0.007

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table C-8. Support for Continuation of Policy (Ordered Logits)

Condition	All	Democrats	Republicans
No Party Cue/No Prime	-0.151	-0.185	-0.103
	(0.232)	(0.330)	(0.307)
In-Party/No Prime	0.372**	0.623**	0.154
	(0.226)	(0.307)	(0.328)
In-Party/Accuracy Prime	0.384**	0.649**	0.216
	(0.212)	(0.298)	(0.304)
In-Party/Directional Prime	0.362**	0.775**	-0.0184
	(0.218)	(0.318)	(0.299)
Out-Party/No Prime	0.119	0.0292	0.0783
	(0.246)	(0.399)	(0.299)
Out-Party/Accuracy Prime	-0.249	-0.167	-0.310
	(0.227)	(0.347)	(0.284)
Out-Party/Directional Prime	-0.387**	-0.523	-0.125
	(0.229)	(0.318)	(0.313)
Log pseudolikelihood	-1889.425	-972.190	-888.954
Observations	992	520	472

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix C.1. Policy Effects Scale

In addition to support for the policy and support for continuation of the policy, respondents were also asked whether solar panel tariffs harmed or benefited U.S. companies, American workers, consumers, and the environment. Answer choices were measured on a 7-point fully labeled scale ranging from definitely harmed to "definitely benefitted." All of these entities were directly mentioned in either the positive or negative considerations in the article

that participants read. Responses to these four questions formed a reliability index (α =.74). The index is labeled Policy Effects Scale and is coded so that a lower score indicates a more negative perception of the effects of the policy and a higher score indicates more positive perceptions of the effects of solar panel tariffs (7-point composite index).

I did not have specific predictions about this indexed set of variables. Research shows, that while support for a policy may be influenced by partisanship, understanding of facts that influence that opinion are not necessarily as easy to be influenced (Gaines et al., 2007). Instead, interpretation of the facts is the locus of observable differences in opinion (Gaines et al., 2007). As stated, the considerations included were positive or negative, never both, about each of these entities. For this reason, it would be surprising if significant effects of the magnitude seen in either support for the policy itself or in support for continuation of the policy had been discovered.

In Table C-9, I present the results of a series of ordinary least squared (OLS) regressions that includes robust standard errors.[15] I regressed the Policy Effects Scale on my condition indicators, excluding condition 2 (no partisan source endorsement/accuracy prime) as the baseline. Only the out-party endorsement/accuracy prime and out-party endorsement/directional primes reach significance (b=-.354, $p \leq 0.05$; b=-.528, $p \leq 0.05$, respectively). The fact that partisanship seemed to matter less for this variable provides evidence for the claim that partisanship does not necessarily overpower facts.

[15] The results are robust to using an ordered logit. See Table C-10 for ordered logit results.

Table C-9. Policy Effects Scale (OLS Models)

Condition	All	Democrats	Republicans
No Party Cue/No Prime	-0.236*	-0.219	-0.277
	(0.179)	(0.254)	(0.252)
In-Party/No Prime	0.0745	0.181	-0.0661
	(0.173)	(0.235)	(0.254)
In-Party/Accuracy Prime	0.108	0.230	-0.0364
	(0.168)	(0.216)	(0.266)
In-Party/Directional Prime	-0.0846	0.0747	-0.276
	(0.177)	(0.227)	(0.278)
Out-Party/No Prime	-0.148	-0.224	-0.132
	(0.186)	(0.267)	(0.258)
Out-Party/Accuracy Prime	-0.354**	-0.347*	-0.349*
	(0.186)	(0.256)	(0.266)
Out-Party/Directional Prime	-0.400**	-0.528**	-0.240
	(0.175)	(0.240)	(0.251)
Constant	4.471***	4.327***	4.644***
	(0.124)	(0.168)	(0.184)
Observations	992	520	472
R-squared	0.016	0.032	0.007

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table C-10. Policy Effects Scale (Ordered Logits)

Condition	All	Democrats	Republicans
No Party Cue/No Prime	-0.264	-0.218	-0.345
	(0.220)	(0.313)	(0.301)
In-Party/No Prime	0.153	0.316	-0.0408
	(0.210)	(0.292)	(0.299)
In-Party/Accuracy Prime	0.120	0.339*	-0.0920
	(0.201)	(0.257)	(0.328)
In-Party/Directional Prime	-0.118	0.126	-0.386
	(0.220)	(0.279)	(0.359)
Out-Party/No Prime	-0.145	-0.186	-0.176
	(0.229)	(0.332)	(0.316)
Out-Party/Accuracy Prime	-0.476**	-0.487*	-0.475*
	(0.232)	(0.323)	(0.319)
Out-Party/Directional Prime	-0.487**	-0.636**	-0.348
	(0.218)	(0.307)	(0.301)
Log pseudolikelihood	-3053.012	-1587.104	-1445.416
Observations	992	520	472

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix C.2 Opinion Strength

Previous research suggests that an individual's opinions are often stronger when individuals for opinions through motivated reasoning (Bolsen et al., 2014). I follow previous researchers in measuring the strength of a participant's opinion on the main support variable by asking, "How important to you is your opinion towards solar panel tariffs (e.g., how strongly do

you feel about your opinion)?" (see Bolsen et al., 2014). Answer choices were presented on a 7-point fully labeled scale ranging from "extremely unimportant" to "extremely important."

I estimated a series of ordinary least squared (OLS) regressions that included robust standard errors.[16] I regressed each dependent variable on my condition indicators, excluding condition 2 (no partisan source endorsement/accuracy prime) as the baseline. The results are presented in Table C-11. Opinions generated as a result of receiving an attribution of responsibility for the policy from a partisan source, regardless of whether it was from one's own party and from the opposing party, do not attach more importance than those opinions. Interestingly, every condition with a partisan source endorsement is negatively signed. Three conditions reach significance. Respondents were significantly more likely to report weaker opinions when they received an in-party endorsement with an accuracy prime ($b=-0.313$, $p \leq .05$), in-party endorsement with a directional prime ($b=-0.446$, $p \leq .01$), and an out-party endorsement with a directional prime ($b=-0.382$, $p \leq .05$). The significant results are driven by Republicans. No condition was significant in the Democrats only model.

[16] The results are robust to using an ordered logit. See Table C-12 for ordered logit results.

Table C-11. Opinion Strength (OLS Models)

Condition	All	Democrat	Republican
No Party Cue/No Prime	-0.167	-0.0308	-0.347*
	(0.173)	(0.239)	(0.247)
In-Party/No Prime	-0.153	-0.220	-0.174
	(0.169)	(0.231)	(0.236)
In-Party/Accuracy Prime	-0.313**	-0.0266	-0.662***
	(0.181)	(0.242)	(0.269)
In-Party/Directional Prime	-0.446***	-0.276	-0.654***
	(0.174)	(0.241)	(0.247)
Out-Party/No Prime	-0.224	0.215	-0.684***
	(0.184)	(0.257)	(0.257)
Out-Party/Accuracy Prime	-0.382**	-0.0449	-0.797***
	(0.175)	(0.243)	(0.245)
Out-Party/Directional Prime	-0.192	0.0575	-0.492**
	(0.172)	(0.235)	(0.247)
Constant	5.025***	4.785***	5.315***
	(0.118)	(0.163)	(0.165)
Observations	992	520	472
R-squared	0.001	0.01	0.033

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table C-12. Opinion Importance (Ordered Logit Models)

Condition	All	Democrats	Republicans
No Party Cue/No Prime	-0.129	-0.00212	-0.330
	(0.225)	(0.315)	(0.320)
In-Party/No Prime	-0.118	-0.216	-0.0997
	(0.213)	(0.279)	(0.319)
In-Party/Accuracy Prime	-0.326*	0.0347	-0.773**
	(0.227)	(0.304)	(0.344)
In-Party/Directional Prime	-0.510***	-0.260	-0.824***
	(0.212)	(0.284)	(0.322)
Out-Party/No Prime	-0.175	0.384	-0.778**
	(0.240)	(0.335)	(0.345)
Out-Party/Accuracy Prime	-0.414**	0.0410	-0.975***
	(0.222)	(0.312)	(0.313)
Out-Party/Directional Prime	-0.200	0.142	-0.622**
	(0.217)	(0.292)	(0.328)
Log pseudolikelihood	-1698.662	-889.854	-796.321
Observations	992	520	472

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1