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Two sides to every story

Causes and consequences of selective exposure to balanced political information

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I Stick to My Guns: Motivated Reasoning and Biased Processing of Balanced Political Information

Abstract

Many citizens seek balanced political messages. The media also primarily offer content that presents two sides of a political issue. Despite that, most work on information processing tests exposure to one-sided content, i.e., either pro- or counter-attitudinal. We advance research on information processing by studying (1) how balanced and one-sided messages affect information processing; (2) whether processing of balanced content is moderated by individual motivations; and (3) the impact of balanced exposure on attitude polarization. Using an online experiment, we primed either an accuracy or defensive motivation and examined information processing about climate change and Syrian refugees ($N = 677$). On both issues, participants engaged in *less* biased processing in response to balanced content, compared to pro- and counter-attitudinal content. Also, balanced content was processed in a similar manner by both the defensive and the accuracy motivated individuals. Furthermore, only pro-attitudinal content, not balanced content, polarized individual attitudes, and this effect was not moderated by motivation.

Keywords: information processing, attitude congruency bias, disconfirmation bias, motivated reasoning, balanced information, attitude polarization

An earlier version of this chapter was presented at Etmaal van de Communicatiewetenschap, Tilburg, Netherlands, as:

Brenes Peralta, C., Wojcieszak, M., Lelkes, Y., & de Vreese, C. I Stick to My Guns: Motivated Reasoning and Biased Processing of Balanced Political Information.

I Stick to My Guns: Motivated Reasoning and Biased Processing of Balanced Political Information

The current media environment offers citizens unprecedented freedom to choose content about politics and public affairs. Studying individual choices and their effects on information processing and various attitudinal outcomes, political communication scholars have mostly focused on one-sided political content, pro- or counter-attitudinal (e.g., Arceneaux & Johnson, 2013; Garret & Stroud, 2014). That work has shown that people prefer pro- over counter-attitudinal content (e.g., Iyengar & Hahn, 2008), that they uncritically accept pro-attitudinal information and refute counter-attitudinal arguments (e.g., Ditto & Lopez, 1992; Druckman & Bolsen, 2011; Taber & Lodge, 2006), and that this biased information processing is the main reason why people's attitudes become more extreme after exposure to either pro- or counter-attitudinal content (e.g., Garret & Stroud, 2014, Prior, 2013; Sunstein, 2012; Taber & Lodge, 2006).

In this paper, we shift this dominant focus away from pro- and counter-attitudinal messages and toward exposure to balanced media messages, those that present both pro- and counter-attitudinal arguments side by side within one message. This shift in focus is crucial because, after all, the majority of information in the current media environment continues to be balanced, both in the U.S. and in other Western democracies (see Hallin & Mancini, 2004; Prior, 2013; Umbricht & Esser, 2014). Also, when given choice, people do select balanced news (Feldman et al., 2013; Garret & Stroud, 2014; Levendusky, 2013), and may even prefer it over one-sided content (Brenes Peralta, Wojcieszak, Lelkes, & de Vreese, 2016; Kohut, Doherty, Dimock, & Keeter, 2010).

Despite its popularity, evidence on how people interpret and are affected by balanced media content is limited and inconsistent. Compared to one-sided information, some work has suggested that people respond to balanced information more open-mindedly (see Lodge & Taber, 2000; Metzger et al., 2015), which could reduce attitude polarization (Slater, 2007; Sunstein, 2009) and bring different social factions closer to each other (Matthes & Valenzuela, 2012). However, other studies have indicated that individuals interpret balanced content in the same biased fashion as one-sided messages, which could exacerbate attitude polarization (see Arceneaux & Johnson, 2015; Taber et al., 2009; Kahan et al., 2008).

One possible explanation for these inconsistencies is that these effects are contingent on individual motivations to process political content. Motivated reasoning theory posits that defensive motivated people process information in biased ways to reinforce their priors, and accuracy motivated individuals are more objective because they seek a correct

conclusion (Kunda, 1990; Kruglanski & Klar, 1987; Pyszczynski & Greenberg, 1987). We integrate and extend this work by studying whether defensive and accuracy motivations shape individual processing of balanced political information, and in addition, whether the relationship between balanced exposure and attitude polarization is moderated by defensive and accuracy motivations.

We use data from an online experiment on a Mechanical Turk sample of Americans. First, we randomly assigned participants to three motivation conditions: control, defensive goal, or accuracy goal prime. Subsequently, we assigned them to three message exposure conditions: pro-attitudinal, counter-attitudinal or balanced. Then, we collected data on how participants processed messages about two political issues, refugees and climate change, and – lastly – measured attitude polarization. Before presenting the data and the findings, we review research on political information processing to predict how people process balanced information, compared to one-sided messages. Then, we outline the motivated reasoning theory to examine whether information processing is moderated by individual motivations. Finally, we test whether and how information exposure and motivation affect attitude polarization.

Biased processing of political arguments

Numerous studies have consistently demonstrated that people process one-sided political messages (i.e., pro- or counter-attitudinal) in a biased manner. Specifically, individuals exhibit two types of cognitive biases: an *attitude congruency bias*, such that pro-attitudinal messages are evaluated as stronger than counter-attitudinal messages, and a *disconfirmation bias*, such that people spend cognitive resources bolstering pro-attitudinal messages and denigrating counter-attitudinal ones (see Ditto & Lopez, 1992; Druckman & Bolsen, 2011; Lord et al., 1979; Redlawsk, 2002; Taber et al., 2009; Taber & Lodge, 2006). However, it is not clear whether these well-established processing patterns also emerge when people process balanced messages.

Available evidence on the subject is limited and inconsistent. One perspective has suggested that people do not perceive balanced messages as neutral, but instead treat them as either supporting or opposing their prior views (e.g., Druckman & Bolsen, 2011; Kahan et al., 2008; Lord et al., 1979). As a result, balanced content is processed in the same biased manner as one-sided messages (Arceneaux & Johnson, 2015; Glaeser & Sunstein, 2013), with people perceiving pro-attitudinal arguments in balanced messages as stronger than counter-attitudinal arguments and uncritically accepting the former while dismissing the latter (Taber et al., 2009). This perspective, for instance, is reflected in the well-documented hostile media effect (e.g., Hansen & Kim, 2011).

However, an alternative perspective has indicated that attitude congruency and disconfirmation biases should be weaker in response to balanced compared to one-sided messages. For instance, research on attitude congruency bias has shown that individuals grant little credibility to counter-attitudinal messages, but they perceive balanced information as more credible than pro-attitudinal messages (Metzger et al., 2015). This finding would suggest then that people use their prior opinions as a benchmark against which to evaluate the strength of one-sided messages. But, because balanced media content offers diverse perspectives, people may see a balanced message as objective and useful.

Additional research has argued that a disconfirmation bias should also be weaker in response to balanced exposure. Although people generally accept pro-attitudinal arguments, this tendency is stronger if information is one-sided, but weaker if a message also contains a competing perspective – as is typical in balanced messages (Lodge & Taber, 2000; Zaller, 1996). Also, individuals are less likely to refute counter-attitudinal views in balanced, compared to one-sided messages. This may be because individuals must generate their own counter-arguments in response to counter-attitudinal messages, but not to balanced messages, as the latter already include arguments that refute the opposing side (see Lodge & Taber, 2000). Overall people should be less likely to have supporting thoughts about pro-attitudinal arguments and to dismiss counter-attitudinal arguments, when both views are embedded in a balanced message.

Given the mixed evidence in the literature, we offer two competing hypotheses:

Biased processing (attitude congruency and disconfirmation biases) of pro- and counter-attitudinal arguments will be similar when these arguments are presented in balanced messages, compared to one-sided messages (Hypothesis 1a).

Biased processing (attitude congruency and disconfirmation biases) of pro- and counter-attitudinal arguments will be weaker when these arguments are presented in balanced messages, compared to one-sided messages (Hypothesis 1b).

In addition to our competing expectations, it is possible that some individuals are more biased in response to balanced information, while others are more open-minded. We thus argue that different motivations shape whether people process balanced messages in a similar or less biased fashion than one-sided messages.

Motivated reasoning and balanced information processing

Motivated reasoning theory posits that motivations determine the cognitive strategies people use to process information (Chaiken et al., 1996; Kunda, 1990). Motivation is defined as “as any wish, desire, or preference to achieve desired outcomes” (Kunda, 1990, p.480), and human reasoning is said to rely on two major motivations that guide information processing: a defensive motivation and an accuracy motivation (Kruglanski & Klar, 1987; Levendusky, 2013; Pyszczynski & Greenberg, 1987).³

A defensive motivation drives people to use cognitive strategies that help them reinforce and protect their existing beliefs, attitudes, and behaviors (Kunda, 1990; Kruglanski, 1989; Pyszczynski & Greenberg, 1987). Extensive research has shown that attitude congruency and disconfirmation biases are the prevailing strategies used by defensive motivated people to process one-sided information about politics (Bolsen et al., 2014; Lodge & Taber, 2000; Taber & Lodge, 2006).

In contrast, an accuracy motivation leads people to use cognitive strategies that are optimal to reach a correct conclusion about a certain issue (Kunda, 1990). Motivated reasoning theory suggests that accuracy motivated individuals are less likely to rely on attitude congruency and disconfirmation biases to process political messages (Bolsen et al., 2014; Druckman, 2012). Instead, they process information in a more open-minded and unbiased fashion, regardless of whether or not this information is pro-attitudinal (Chaiken et al., 1996; Kunda, 1990). However, other research suggests that, despite an individual’s best intention to be accurate, in reality people are constantly biased in response to political messages (Taber et al., 2009; Taber & Lodge, 2006).

To the best of our knowledge, no extant work has shown how defensive and accuracy motivated individuals respond to the same balanced messages. Nevertheless, previous research provides some insights. Among defensive motivated people, their desire to reinforce their priors should strongly color their evaluations of balanced messages, and as such, these messages should be processed in the same biased fashion as one-sided information. We propose then that a defensive motivation will drive people to judge balanced and counter-attitudinal messages as weaker, compared to pro-attitudinal messages. Moreover, defensive motivated people will bolster attitude-reinforcing opinions and denigrate counter-attitudinal arguments when exposed to both one-sided and balanced messages. Therefore we expect that:

Defensive motivated people will evaluate balanced and counter-attitudinal messages as weaker than pro-attitudinal messages (Hypothesis 2a).

Defensive motivated individuals will be equally likely to bolster pro-attitudinal arguments and denigrate counter-attitudinal arguments in a one-sided message, as in balanced messages (Hypothesis 2b).

On the contrary, and despite some evidence suggesting that accuracy motivated individuals are not capable of being unbiased, we largely expect these individuals to evaluate the strength of a message based on whether it offers an opportunity to reach a correct conclusion about a certain issue. As such, the accuracy motivated people should judge balanced messages as stronger, relative to one-sided messages. Moreover, we expect these individuals to be more open-minded and objective when they must weigh evidence in support and against a certain issue, compared to when the evidence is one-sided. We thus predict that:

Accuracy motivated people will evaluate balanced messages as stronger than one-sided messages (Hypothesis 3a).

Accuracy motivated individuals will be less likely to bolster pro-attitudinal arguments and to denigrate counter-attitudinal arguments in balanced messages, compared to one-sided messages (Hypothesis 3b).

Balanced exposure and Polarization

Our last goal in this study is to show that the interaction between balanced messages and individual motivations influences not only how people process these messages, but also how they react to them. We focus on attitude polarization as a socially consequential outcome of information exposure. When it comes to one-sided political content, there is consensus that exposure to pro-attitudinal messages can polarize citizens (Garret et al., 2014; Levendusky, 2013; Stroud, 2011), whereas evidence on the effects of counter-attitudinal exposure is less consistent. Some studies have suggested that people refute counter-attitudinal messages to reinforce prior views, which ultimately results in more extreme attitudes (Arceneaux & Johnson, 2010; Wojcieszak, 2012). Yet other work has shown that counter-attitudinal exposure weakens polarization, and instead promotes more moderate views (Garret et al., 2014; Mutz, 2002; Parsons, 2010).

Although exposure to balanced content is often seen as an effective remedy to polarization, in that it could correct misinformed opinions and promote mutual understanding between citizens on divisive issues (Slater, 2007; Sunstein, 2009), evidence on its polarizing effects is inconsistent. Some studies have posited that exposure to political messages can polarize attitudes, regardless of whether people are exposed to one-sided or balanced

messages (Arceneaux & Johnson, 2015; Feldman, 2011; Taber et al., 2009); other research has suggested that balanced exposure may actually constrain polarization, more so than one-sided messages (Levendusky, 2013).

We argue that the extent to which information exposure leads to polarization depends on the interaction between message slant and motivated reasoning, in that people's reactions to balanced messages are influenced by their motivations. On the one hand, we expect that defensive motivated people will polarize in response to balanced exposure because these individuals will process these messages in biased fashion.

Defensive motivated people will be equally likely to polarize in reaction to balanced messages, compared to one-sided messages (Hypothesis 4a).

On the other hand, if individuals succeed in prioritizing accuracy over the validation of their prior opinions, they are more likely to consider diverse perspectives in an objective and open-minded manner, and therefore, polarization could be constrained.

Accuracy motivated people will be less likely to polarize in reaction to balanced or counter-attitudinal messages, compared to pro-attitudinal messages (Hypothesis 4b).

Method

Study Design

To test our hypotheses, we conducted an online experiment with a 3 between-subjects (control, defensive goal, accuracy goal) x 3 between-subjects (pro-attitudinal, counter-attitudinal, or balanced messages) x 2 within-subjects (climate change, Syrian refugees) design that examined participants' information processing and attitude polarization. To guard against the possibility that our results are due to some idiosyncrasies of a single socio-political topic, we chose two distinct issues: climate change, a scientific and complex issue, and admitting Syrian refugees to the U.S., an issue that is more affective and can be interpreted at the "gut" level.

Manipulations motivated reasoning

To manipulate accuracy motivation, we developed a priming text based on prior experiments (e.g., Druckman, 2012; Prior et al., 2013; Taber, et al., 2009). In turn, to prime defensive motivation, we designed our own text given that this motivation is rarely manipulated in extant studies. Furthermore, unlike most prior work, we included a

control group in which neither defensive nor accuracy motivations were primed. This was necessary to discern whether primed motivations were different from the motivational baseline that control participants pursued in the experimental situation (i.e., to address the contention that people are naturally driven by defensive goals, see Taber & Lodge, 2006).

Participants in the control condition read only the following text: *"In this section, we will ask you to read a set of arguments about (Syrian refugees coming to the U.S. or climate change) and you will tell us how WEAK or STRONG you believe each argument is."* In addition to the control text, participants in defensive goal condition were told: *"Imagine you will be participating in a debate that will decide whether or not to approve a policy about admitting Syrian refugees into the country / climate change. When rating each argument, consider how useful this argument would be to defend your own position on the issue. As a reminder, you said you (supported/opposed the issue in the pre-questionnaire). Think that you would like to win the debate and the arguments should help you make the best case for your own position."* Those in the accuracy condition read the following text: *"Imagine you will be participating in a debate as an unbiased judge that will decide whether or not to approve a policy about (admitting Syrian refugees or climate change). When rating each argument, consider how useful it would be to come to an objective decision. It is important that the decision carefully considers all sides in a neutral way. Think that you would like to thoroughly understand the policy and the arguments should help you come to an evenhanded decision."*

Manipulation Checks

In general, most studies on motivated reasoning do not have or do not report manipulation checks. Among the few that do, some are partially effective (Lundgren & Prislun, 1998) and others fail (e.g., Pelham & Neter, 1995). A few experiments use time spent on a task as a manipulation check (e.g., Prior et al., 2013). However, it is unclear whether this measure indicates increased defensive motivated reasoning (see Petersen, Skov, Serritzlew, & Ramsoy, 2013), or instead, processing depth without a specific reasoning style (Leeper & Slothuus, 2014).

We developed four self-report items as manipulation checks of accuracy motivation for information processing on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*), which were presented in a random order: *"When I was rating these arguments, I was able to set aside my own prior beliefs"*, *"I was able to be objective"*, *"I was able to be evenhanded"* and *"I was thinking about my own opinion"* (reverse coded). Higher scores on each item indicated a stronger accuracy motivation. A factor analysis with a maximum likelihood extraction loaded the four items in a single factor. The resulting accuracy motivation index had

good reliability (Cronbach's Alpha = .84). ANOVA models showed that our manipulations were effective. Participants in the accuracy condition scored significantly higher than the control ($\Delta M = .34, p < .01$) and defensive conditions ($\Delta M = .56, p < .001$). Moreover, control participants scored higher than the defensive motivated ($\Delta M = .22, p < .05$), $F_{(2, 676)} = 22.57, p < .001$).

Participants

In May 2016, we recruited a sample of 677 participants via *Amazon Mechanical Turk*.² Only *MTurkers* who expressed attitudes in support or against toward the two issues participated in the experiment (i.e., by design we excluded those who did not hold a directional attitude on these issues). Our sample was 55% female and 45% male, with an average age of 36.5 years ($SD = 11.84$). Across education attainment, 9% had a high school degree or less, 24% some college but no degree, 14% an Associate degree, 37% a Bachelor's degree, 12% a Master's degree, and 4% a Doctorate or professional degree.²

Stimulus material

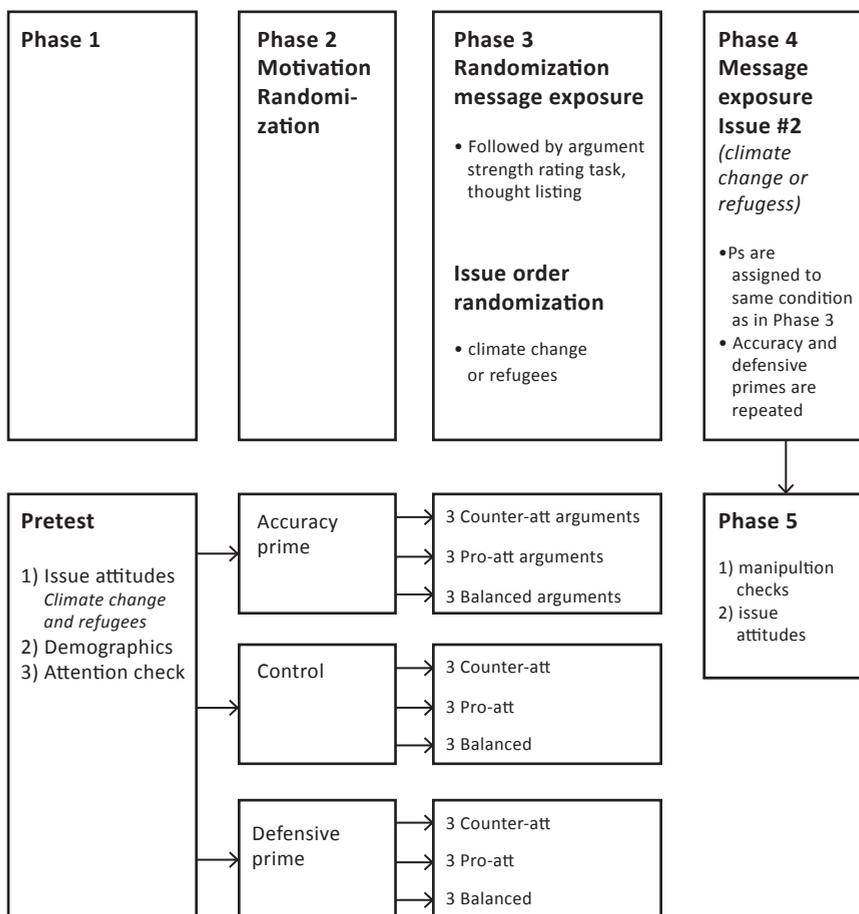
Relying on existing articles, we developed 18 short messages about climate change and Syrian refugees coming to the U.S. The messages varied between 75 and 86 words. We pretested the climate change messages on an independent sample of U.S. participants via *MTurk*, to ensure the messages were perceived as intended (i.e., balanced, pro- or con-issue).³ We developed the messages about Syrian refugees mirroring the structure of the climate change messages. For each issue, some messages supported the issue (pro-issue messages), some opposed the issue (con-issue messages), and some presented both pro- and con-issue arguments in an even-handed manner (balanced message; see Appendix F for an example of each message).

Procedure

First, participants answered a questionnaire that measured their attitudes about climate change mitigation policy and Syrian refugees coming to the U.S.; demographics; and an attention check question. Those who failed this question were excluded from participating in the rest of the experiment – and therefore are not part of the final sample of 677 participants. Then, participants were randomly assigned to one of three motivated reasoning conditions: control, defensive goal, or accuracy goal. Then, within each motivation condition, participants were randomly assigned to one of three message exposure conditions: 1) three pro-attitudinal, 2) three counter-attitudinal or 3) three balanced. We chose three message per conditions to obtain more precise measurements. If participants were exposed to either pro- or counter-attitudinal messages, the message they read depended on their previously reported issues attitudes (whether pro- or anti-

issue; for instance, a pro-refugee participant in the pro-attitudinal message condition read a message supportive of refugees). Within each message condition, participants read three messages about climate change and three about refugees (six messages in total; either balanced, pro- or counter-attitudinal). We randomized the order of issue exposure, which means that participants were randomly exposed to climate change messages, followed by refugee messages, or vice versa. Immediately after reading each message, participants rated the strength of its argument and listed their thoughts. Finally, participants answered the manipulation check items, and again reported their attitudes about both issues (see visualization of experimental design in Figure 1).

Figure 1. Experimental design ($N = 677$)



Measures

Climate change attitudes. Participants reported how strongly they opposed or supported a U.S. governmental policy that mitigates climate change by reducing carbon emissions on a 7-point scale (1 = *strongly oppose*, 7 = *strongly support*; $M = 5.63$, $SD = 1.6$). Climate change attitudes did not differ significantly between motivation conditions, $F(2, 677) = 1.03$, $p = .36$.

Refugees attitudes. Participants reported how strongly they opposed or supported that Syrian refugees came to the U.S., on a 7-point scale (1 = *strongly oppose*, 7 = *strongly support*; $M = 4.39$, $SD = 2.06$). Mean scores did not significantly differ between motivation conditions, $F(2, 677) = 2.8$, $p = .06$.

Biased processing. We operationalized biased information processing in the same way as prior research (see Taber, et al.; 2009; Taber & Lodge, 2006). First, we used an *argument rating task* to test an *attitude congruency bias*. After reading a message, participants reported how strong they believed the argument was on a 7-point scale (1 = *not at all strong*, 7 = *very strong*). Mean scores for climate change messages were 4.47 ($SD = 1.45$) and 4.52 ($SD = 1.60$) for refugee messages. Second, we used a *thought listing task* to test *disconfirmation bias*. Participants listed up to five thoughts *strictly* about each message they read – up to 15 thoughts for a set of three messages. On average, participants reported 7.16 thoughts ($SD = 4.35$) about climate change and 7.8 about refugees ($SD = 4.39$).⁴ The content of all listed thoughts was coded by three trained coders.⁵ For pro- and counter-attitudinal messages, each thought was coded for whether it opposed the argument in the message (e.g., *I do not want refugees here*; in a pro-refugee message) or supported the argument (e.g., *I agree they pose a threat to the country*; in a con-refugee message). Because balanced messages contained pro- and con-issue arguments, we coded each thought as 1) supports pro-issue argument, 2) supports con-issue argument, 3) opposes pro-issue argument, or 4) opposes con-issue argument. Finally, we used the coded data for balanced, pro- and counter-attitudinal messages, to compute two indexes of a disconfirmation bias for the entire sample: bolstering thoughts about pro-attitudinal arguments and denigrating thoughts about counter-attitudinal arguments.

Polarization. Participants reported again their issue attitudes about climate change ($M = 5.42$, $SD = 1.7$) and refugees ($M = 4.26$, $SD = 2.04$) at the end of the experiment. We operationalized polarization as the difference in issue attitudes between pre- and posttest measurements. This difference measure was computed as follows: First, we determined the closest endpoint on the 7-point attitude scale. Second, we calculated the difference between pre- and post-test attitudes. Third, we estimated the direction and degree of polarization by looking at attitudinal change away or towards the closest scale endpoint.

Finally, this results in an index in which a positive difference between pre- and post-test attitudes indicates polarization, a negative difference depolarization and zero for no attitude change (see Taber et al., 2009).

Data Analysis

We conducted a series of factorial ANOVAS to test hypotheses 1 through 4. First, we tested the effects of message type (i.e., pro-, counter-attitudinal or balanced) on each of the information processing variables (i.e., argument strength, bolstering thoughts about pro-attitudinal arguments, denigrating thoughts about counter-attitudinal arguments) (Hypothesis 1a, 1b). Second, we estimated the interaction effects of message type and motivation conditions (i.e., defensive, accuracy goal or control) on information processing (Hypotheses 2 through 3). Finally, we examined the extent to which message type and motivation predicted polarization (Hypotheses 4a, 4b).

Results

Effects of message type on information processing

We start by testing two competing hypotheses that compared biased processing of pro- and counter-attitudinal arguments in balanced messages, relative to one-sided messages. Results of the effects of message exposure on attitude congruence bias suggest that messages with pro-attitudinal arguments were rated as stronger than balanced messages about both issues: climate change ($\Delta M = 1.11, p < .001, F_{(3, 677)} = 148.05, p < .001$, and refugees ($\Delta M = 1.36, p < .001, F_{(3, 677)} = 178.38, p < .001$). In contrast, one-sided counter-attitudinal messages were perceived as weaker than balanced messages (climate change $\Delta M = -.84, p < .001$; refugees $\Delta M = -.92, p < .001$). This pattern supports *Hypothesis 1a* for both issues, suggesting that an attitude congruency bias is similar when people process pro- and counter-attitudinal arguments in balanced messages, compared to one-sided messages.

However, a disconfirmation bias was *weaker* in response to balanced messages compared to both pro-attitudinal and counter-attitudinal messages. Participants generated fewer supportive thoughts about pro-attitudinal arguments when these arguments were presented in balanced messages, compared to one-sided pro-attitudinal messages about climate change ($\Delta M = -4.0, p < .001, F_{(3, 677)} = 326.39, p < .001$, and refugees ($\Delta M = -3.9, p < .001, F_{(3, 677)} = 401.84, p < .001$). Also, relative to one-sided counter-attitudinal messages, participants were less likely to refute counter-attitudinal arguments when these were presented in balanced messages about climate change ($\Delta M = -5.0, p < .001, F_{(3, 677)} =$

340.47 $p < .001$, and refugees ($\Delta M = -5.36$, $p < .001$), $F(3, 677) = 354.72$, $p < .001$. This pattern offers strong support for *Hypothesis 1b*, namely that a disconfirmation bias is weaker when people process balanced messages, compared to one-sided messages.

The effect of motivation on information processing

The second goal of our study was to test whether different motivations lead people to process balanced information in similar or less biased ways, compared to one-sided messages. The interaction effect of motivation and argument type on attitude congruency bias was non-significant for both political issues (refugees $F(4, 677) = 1.73$, $p = .14$; climate change $F(4, 677) = 1.91$, $p = .11$). This was also the case for the interaction effect on bolstering thoughts about pro-attitudinal arguments (refugees $F(4, 677) = .90$, $p = .47$; climate change $F(4, 677) = 1.28$, $p = .28$). In contrast, we find an interaction effect of motivation and argument type on denigrating counter-attitudinal arguments about climate change ($F(4, 677) = 4.60$, $p < .01$), but not for refugees ($F(4, 677) = .1.22$, $p = .30$).

Although the interaction effects tell us that participants with different motivations process information in similar ways, we next looked at the simple effects analyses to directly test our hypotheses 2 and 3 within defensive and accuracy motivation groups. Among the participants motivated by a defensive goal, the results supported our expectation that balanced and counter-attitudinal messages would be evaluated as weaker than pro-attitudinal messages (*Hypothesis 2a*). Specifically, pro-attitudinal messages about climate change (see Figure 2) were judged as stronger than balanced ($\Delta M = 1.25$, $p < .001$) and counter-attitudinal messages ($\Delta M = 2.02$, $p < .001$). Similarly, participants rated pro-attitudinal messages about refugees (see Figure 3) as stronger than balanced ($\Delta M = 1.33$, $p < .001$) and counter-attitudinal ($\Delta M = 2.56$, $p < .001$).

However, we did not find support for *Hypothesis 2b*, which predicted that defensive motivated people would exhibit a similar disconfirmation bias in response to balanced messages, compared to one-sided messages. Defensive motivated participants were more likely to bolster pro-attitudinal arguments in pro-attitudinal messages about climate change (see Figure 4) and refugees (see Figure 5), than when exposed to balanced messages (climate change $\Delta M = 4.7$, $p < .001$; refugees $\Delta M = 4.04$, $p < .001$). Moreover, these participants were less likely to refute counter-attitudinal arguments about climate change (see Figure 6) and refugees (see Figure 7) when these arguments were embedded in balanced messages, compared to one-sided messages (climate change $\Delta M = -5.82$, $p < .001$; refugees $\Delta M = -5.84$, $p < .001$).

In the case of the accuracy motivated participants, perceptions about the strength of a message were biased in favor of pro-attitudinal messages about climate change (see Figure 2) and refugees (see Figure 3), compared to balanced (climate change $\Delta M = 1.31$, $p < .001$; refugees $\Delta M = 1.42$, $p < .001$) and counter-attitudinal messages (climate change $\Delta M = 1.85$, $p < .001$; refugees $\Delta M = 1.93$, $p < .001$). These results rejected *hypothesis 3a*, which predicted that accuracy motivated individuals would perceive balanced messages as stronger than one-sided messages.

Figure 2. Interaction effects of message type and motivation on strength of climate change arguments ($N = 677$)

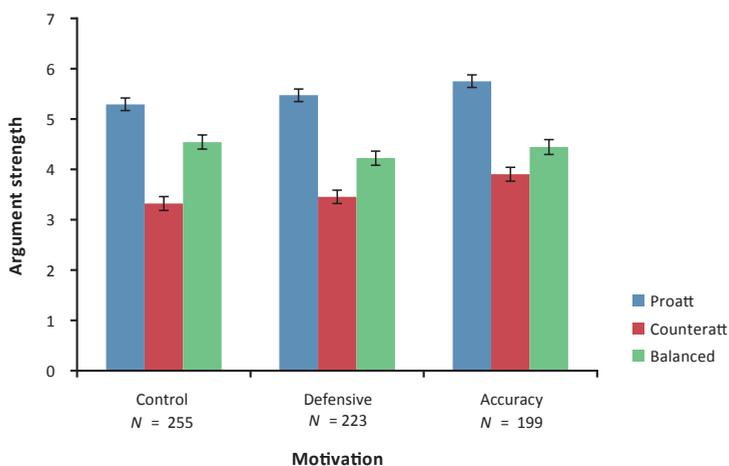


Figure 3. Interaction effects of message type and motivation on strength of refugee arguments ($N = 677$)

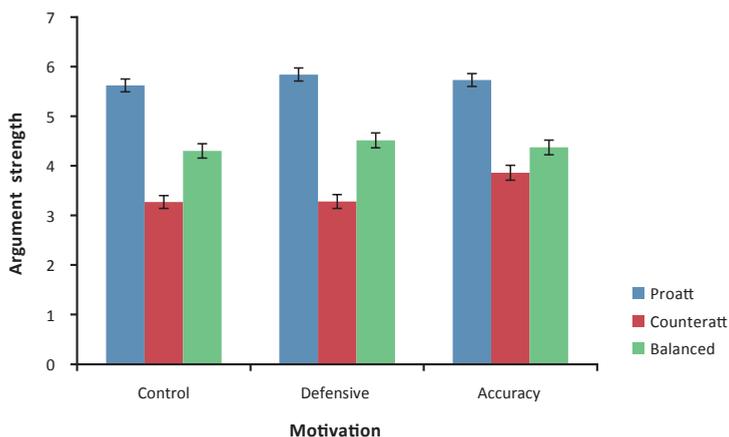


Figure 4. Interaction effects of message type and motivation on bolstering thoughts of climate change pro-attitudinal arguments ($N = 677$)

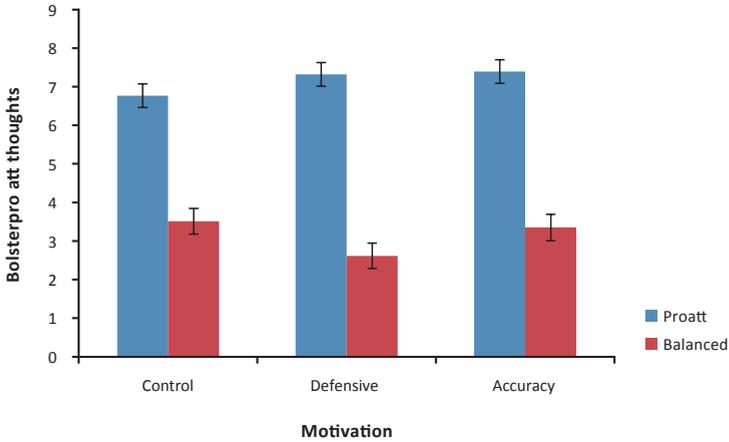
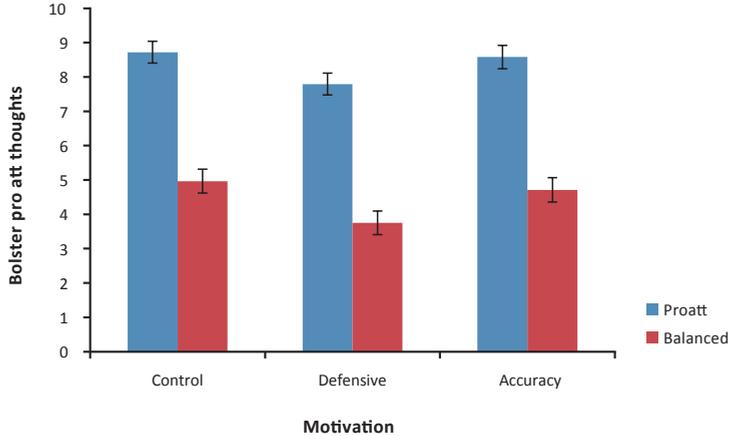


Figure 5. Interaction effects of message type and motivation on bolstering thoughts of refugee pro-attitudinal arguments ($N = 677$)



We also find that compared to one-sided messages, accuracy motivated participants generated fewer bolstering thoughts about pro-attitudinal arguments when confronted with balanced messages about climate change (see Figure 4, $\Delta M = -4.04$, $p < .001$) and refugees (see Figure 5, $\Delta M = -3.87$, $p < .001$). Also, these participants were less critical of counter-attitudinal arguments presented in balanced messages, compared to one-

sided messages about climate change (see Figure 6, $\Delta M = -3.57, p < .001$) and refugees (see Figure 7, $\Delta M = -4.54, p < .001$). This pattern supported *hypothesis 3b*, suggesting that accuracy motivated individuals exhibit a weaker disconfirmation bias in response to balanced messages, compared to one-sided messages.

Figure 6. Interaction effects of message type and motivation on denigrating thoughts of climate change counter-attitudinal arguments ($N = 677$)

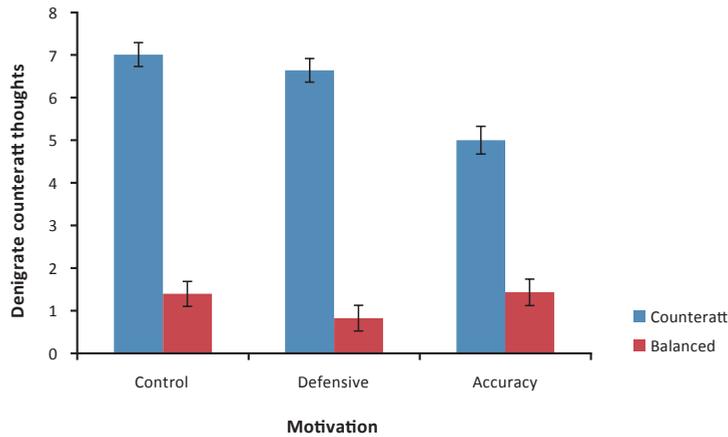
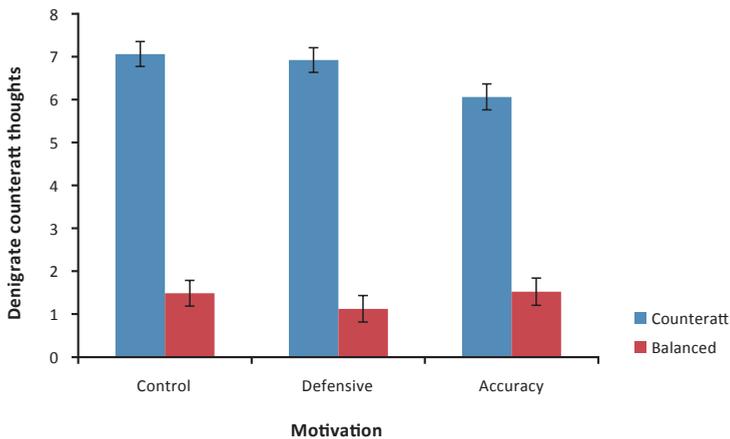


Figure 7. Interaction effects of message type and motivation on denigrating thoughts of refugee counter-attitudinal arguments ($N = 677$)



Effects of message exposure on polarization

Finally, we examined how exposure to balanced versus one-sided messages affected polarization and whether these effects were moderated by individual motivations. Results show a significant effect of message type on polarization for climate change, $F_{(2, 677)} = 3.34, p < .05$, and a marginally significant effect for refugees, $F_{(2, 677)} = 2.59, p = .07$. Simple effects analyses showed that participants polarized less on climate change in response to balanced, compared to pro-attitudinal exposure ($\Delta M = -.31, p < .05$). However, the results for the refugees issue differ. Counter-attitudinal, not balanced, exposure lead to less polarization relative to pro-attitudinal exposure ($\Delta M = -.28, p < .05$).

Next, we tested whether motivation moderated the effects of message type on polarization. Results supported *hypothesis 4a*, predicting that defensive motivated individuals were equally likely to polarize in reaction to balanced messages, compared to pro- and counter-attitudinal messages about climate change (see Figure 8). However, results did not support our expectation for the refugees issue (see Figure 9). Polarization on refugees was stronger when these participants were exposed to pro-attitudinal, compared to balanced ($\Delta M = .61, p < .001$) and counter-attitudinal information ($\Delta M = .53, p < .05$). Next, we did not find support for *hypothesis 4b* across both political issues. Among the accuracy motivated participants, exposure to pro-attitudinal, counter-attitudinal or balanced information did not lead to significant differences in polarization.

We also tested whether biased processing predicted attitude polarization. Regression results showed little evidence in support of this notion. First, an attitude congruency bias had a small and positive effect on polarization, but only for climate change ($b = .10, p < .05$). Second, results on both issues showed that bolstering thoughts about pro-attitudinal arguments and denigrating thoughts about counter-attitudinal arguments had null effects on polarization. Third, motivation did not moderate the relationship between biased processing and polarization.

Because extant research suggests that individual motivations and biased information processing should predict attitude polarization, we tested our predictions across several different models to guard against the possibility that these null results are due to the way we operationalized polarization. Around 25% of our sample reported extreme attitudes in the pretest, i.e., at the very end of the attitude scales. It is difficult to detect polarization among these extreme cases because attitude change is constricted by the upper and lower bounds of the scale and regression to the mean (see Taber & Lodge, 2006). Therefore, we retested all the models without the extreme cases.⁶ Furthermore, we also tested our predictions using the less nuanced, but more powerful, binary polarization index, which

assigns a value of 1 to those who – at the posttest – reported an attitude that was more extreme than their pretest attitude as well as to those at the extremes of the scales, and value 0 to those who did not change their attitudes or depolarized (see Wojcieszak, 2011). We also tested a trinary polarization index, which assigns value -1 to those who depolarized, value 0 to those who did not move their attitudes, including those at the extreme ends of the scales, and value 1 to those who moved toward their initial attitude.

Figure 8. Interaction effects of message type and motivation on polarization about climate change (N = 677)

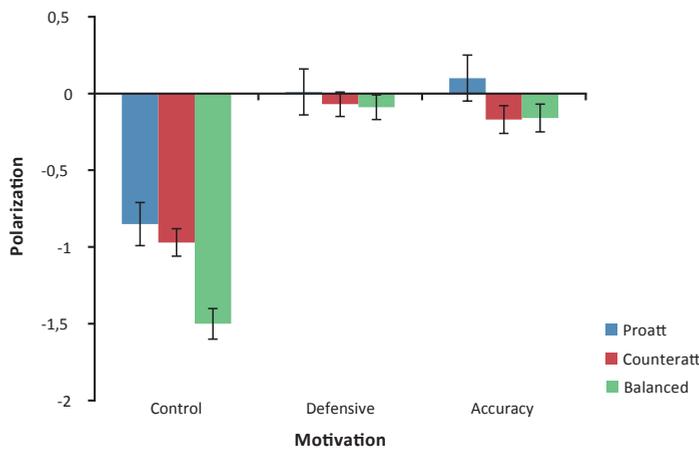
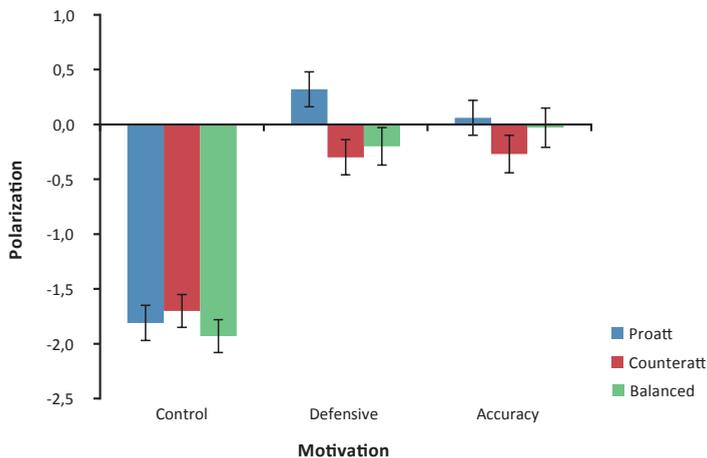


Figure 9. Interaction effects of message type and motivation on polarization about refugees (N = 677)



In all these cases, we find consistently no effects of biased processing and motivation on polarization, which suggests that the impact of message exposure on attitude polarization is not explained by these mechanisms. Testing our predictions across these different models and operationalizations assures that the way we measured polarization is not responsible for these effects. We discuss this finding in the discussion section.

Discussion

In this article, we used an experiment to compare the processing of balanced and one-sided messages about two contested-sociopolitical issues in the U.S., climate change and Syrian refugees. In addition, we tested whether information processing patterns were moderated by defensive and accuracy motivations. Finally, we examined the effects of information exposure on attitude polarization, and whether this relationship was moderated by motivations.

Our first notable finding concerns the processing of balanced messages, relative to one-sided messages. Consistent with most prior research (e.g., Hansen & Kim, 2011), we show that people perceive pro-attitudinal messages as stronger than balanced and counter-attitudinal messages. But in contrast, we also find that exposure to balanced political content, one that presents both pro- and counter-issue arguments, can reduce the extent to which people bolstered pro-attitudinal views and denigrated counter-attitudinal arguments.

These findings suggest that the extent to which individuals rely on attitude congruency and disconfirmation biases to process information depends on the type of information they encounter. The results on attitude congruency bias indicate that people perceive messages that only contain pro-attitudinal arguments as stronger than those which also present counter-attitudinal information. But, our findings on disconfirmation bias show that balanced exposure forces people to think about conflicting political perspectives in a more even-handed way.

Our second notable finding regards how individual motivations affect the processing of balanced and one-sided messages. In line with motivated reasoning theory (Kunda, 1990), we find that people motivated to reach a desired conclusion process one-sided messages in a biased manner. In contrast, those in search of accuracy denigrate counter-attitudinal messages less, even more so than control participants. Most notably, we show that participants who were motivated by accuracy or defensive goals, as well as those in the control condition, process balanced information in the same way.

To explain these similar processing patterns we can draw on motivated reasoning theory, and speculate that exposure to balanced messages imposes *reality constraints* that limit the influence of defensive and accuracy motivations on information processing (see Chaiken et al., 1996; Pyszczynski & Greenberg, 1987; Kruglanski, 1980). Defensive motivated individuals rely typically on biased processing to justify their desired conclusions. But, the extent to which these individuals are capable of being biased is limited by their need to also appear objective, a limit which could be triggered upon exposure to balanced information. In contrast, accuracy motivated individuals desire to reach correct conclusions, but they may fall short of this goal if pro-attitudinal views in balanced messages reminds them of their prior opinions, which in turn color their perceptions of what is to be unbiased.

Our third set of notable findings regards attitude polarization. Consistent with most prior work, we find that people exposed to pro-attitudinal messages polarized more, than those presented with balanced information about climate change or counter-attitudinal content about refugees. Mostly importantly, our findings reinforce prior research indicating that exposure to balanced political content prevents people's attitudes from becoming more extreme (e.g., Levendusky, 2013). However, we do not find a depolarizing effect of balanced messages, which contradicts the argument of some scholars that exposure to counter-attitudinal arguments, be it in one-sided (Garret et al., 2014) or balanced messages (Matthes & Valenzuela, 2012), moderates political opinions.

Our results also show that motivation did not moderate the effects of balanced exposure on attitude polarization. This may be because we looked for evidence on a wrong outcome variable. Some work suggests that message exposure among motivated reasoners does not lead to attitude change, but instead to increased certainty in prior opinions (see Leeper, 2014), and so – had we tested attitude certainty or importance as an outcome of message exposure and information processing – we would have detected some differences between the conditions. Alternatively, our manipulations of motivated reasoning may have made participants aware of their initial attitudes, and as a result, the participants may have become concerned with holding stable views and resisting persuasion from different messages. Perhaps, had we used an implicit measure of issue attitudes, or had we used a stronger measurement consisting of multiple items, we would have observed more attitude change. In contrast, the attitudes of control participants were more susceptible to message exposure, and these participants depolarized in reaction to different messages, a pattern which did not hold across our different models testing attitude polarization.

Last but not least, we did not find evidence to support the notion that biased processing and motivation explain the effects of content exposure on attitude polarization. This consistent

pattern of null effects emerged across different models (e.g., with and without extreme attitude cases) and using several different ways of computing attitude polarization, for example, whether a difference score or a binary or trinary index. These null effects were also parallel for the two very distinct sociopolitical issues tested, indicating that it is not the case that biased processing and one's motivation fail to polarize attitudes on some issues (e.g., the more complex scientific ones like the climate change) but lead to strong polarizing effects on others (e.g., more value laden and hot-button issues, such as the refugees). It may be the case that information processing does not lead to polarization, and instead, future research should systematically test other mechanisms that can better explain the relationship between exposure and polarization. However, before accepting such an overarching and arguably controversial conclusion, other studies should replicate our findings with different convenience or representative samples, on different issues, and with different polarization measures (see Taber & Lodge, 2006; Wojcieszak, 2011).

Relatedly, another limitation of our study is that our reliance on the Mechanical Turk sample restricts the generalizability of our findings. That said, in comparison with other convenience samples, *MTurk* samples are more representative of the general population, have more demographic diversity, and pay more attention to experimental tasks (Berinsky et al., 2012; Hauser & Schwarz, 2015; Paolacci et al., 2010). Furthermore, compared to nationally representative samples, the same results on identical studies have been found with *MTurk* samples (Mullinix et al., 2015).

Aside from these limitations, our findings suggest several fruitful avenues for future research. For example, the stimulus material we designed presented numbers and statistical evidence to argue a certain position. However, most news stories also contain other forms of evidence, such as personal stories. Research finds that exposure to such personal stories makes people more receptive to and less likely to argue against counter-attitudinal arguments (Stitt & Nabi, 2005; Wojcieszak & Kim, 2015). It is thus possible that the observed processing patterns in our study are not generalizable to other types of messages available in the media. Future studies should test whether different characteristics of news content, such as types of evidence or visuals moderate the processing and effects of balanced exposure.

In addition, future research can test whether the effects would be different with news stories that additionally contained some partisanship cues. In our study, we focused on the perspective through which a news story described the two political issues, whether supportive or oppositional. This approach aligns with some prior work (e.g., Knobloch-Westerwick & Meng, 2009; 2011) and is also more suitable for multi-party systems, in which

certain issues are not “owned” by one specific party, or for media systems, in which certain media outlets are automatically categorized as being from the left or the right. However, in the U.S. context, which we studied, including mentions of specific political parties or accompanying our messages with logos of some partisan media might have strengthened motivated reasoning (see Druckman, 2012) and affected processing patterns, for example, by increasing the likelihood that defensive motivated people would be more biased in response to balanced information.

As another suggestion for future research, we focused on defensive and accuracy goals, two often studied goals, finding that they did not shape the processing of balanced messages. However, we did not study the influence of other motivations, such as impression motivation, which can be particularly important given that online news contain diverse social cues that can be used by audiences to inform or endorse their own interpretations about a message (see Winter et al., 2016). Because our messages did not contain any social cues, this motivation was less relevant for our purposes. Yet future research should design social experiments that test how impression motivation interacts with balanced exposure in general, and especially in the context of news exposure on social media.

What implications do our findings have for research on political information processing, motivate reasoning and attitude polarization? First, our results support the argument that people are biased reasoners when it comes to interpreting political information. But we also offer an important caveat to this argument, showing that reasoning is also shaped by the information environment, and that balanced messages have the potential to promote some form of unbiased processing. Second, we show that individuals with different motivations respond to balanced messages in the same way, regardless of whether they are motivated to reinforce desired opinions, or to reach accurate conclusions about a political issue. Third, although our results do not support the expectation that exposure to diverse and balanced political views promotes understanding across various partisan divides, we demonstrate that this type of exposure can mitigate attitude polarization among different groups of citizens. Fourth, our findings reinforce the argument that political communication research should expand their traditional focus on studying exposure to pro- and counter-attitudinal messages, and instead devote more attention to balanced exposure.

To conclude, our study demonstrates the value of balanced information exposure in democratic systems, as it encourages citizens to be more open-minded about different issues, even among individuals motivated to protect their prior opinions. Because of this, balanced news coverage can help citizens develop well-informed opinions, which is ultimately indispensable for the proper functioning of any democracy.

Footnotes

¹We adopt a classical definition of motivated reasoning, which assumes that defensive and accuracy goals influence different reasoning styles (see Kunda, 1990). Furthermore, human reasoning is guided by both goals, and the applicability and strength of each will vary across individuals and situations (see Leeper & Slothuus, 2014).

²Compared with the data of the U.S. Census Bureau (2010a), our sample is substantially similar in terms of gender (females= 51%, males = 49%) and age ($M = 37.2$). But, our samples was more educated than the general population (U.S. Census Bureau, 2010b). The U.S. census reported 43% of people with high school or less, 17% with incomplete college, 9% had an Associate degree, 20% a Bachelor's degree, 8% a Master's degree, and 3% a Doctorate or professional degree. We have addressed this issue in the "Discussion Section."

³On a scale from 1 to 5, participants rated messages about the extent they contained con-issue arguments (values of 1 and 2), balanced arguments (value of 3), or pro-issue arguments (values of 4 and 5). The ANOVA results were significant, $F_{(6, 704)} = 2114.40, p < .001$. Pro-issue messages were rated more as having supporting arguments, compared to balanced and con-issue messages (all $p < .001$). Similarly, con-issue messages were perceived more as having opposing arguments (all $p < .001$), and balanced messages were perceived more as containing both pro- and con-issue arguments (all $p < .001$).

⁴Number of thoughts about climate change differed significantly between argument type conditions, $F_{(3, 898)} = 5.76, p < .001$. Participants exposed to only balanced arguments generated less thoughts than those exposed to only pro or counter-attitudinal arguments (all $p < .001$). Regarding refugees, exposure to only pro-attitudinal arguments resulted in more thoughts than the other two conditions, $F_{(3, 898)} = 9.73, p < .001$, (all $p < .001$). Across motivation conditions, number of thoughts differed significantly regarding climate change, $F_{(3, 898)} = 4.29, p < .01$, and refugees, $F_{(3, 898)} = 5.93, p < .001$. On both issues, control participants generated more thoughts than defensive motivated participants (all $p < .01$), but not compared to those accuracy motivated.

⁵Approximately 15% of all thoughts were initially coded by all three coders. Overall, the average inter-coder reliability for all thought variables was .75 (Krippendorff's Alpha). Afterwards, the rest of the thought-listing data was divided randomly into three subsamples, and each subsample was coded by one coder.

⁶The effects of message exposure on climate change polarization were the same in direction and magnitude when we excluded extreme cases from the analysis. However for the refugees issue, balanced content, not counter-attitudinal exposure, lead to less polarization compared to pro-attitudinal exposure ($\Delta M = -.29, p < .01$). The results of hypotheses 4a and 4b were the same without extreme cases. Finally, attitude polarization was not predicted by information processing or by its interaction with motivation.