

# Varying Metacognition Through Public Opinion Questions: How Language Can Affect Political Engagement

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## Abstract

Guided by feelings-as-information theory, this experiment examined whether the difficulty of language in public opinion questions would influence reports of political interest and political efficacy. Results ( $N = 235$ ) found that exposure to the easy language condition led to higher reports of political interest and efficacy than in the difficult language condition and that this effect was mediated by processing fluency. These findings proffer implications for the strategic use of language in political engagement and civic education initiatives.

## Keywords

language choice, metacognition, survey methods, political engagement, public opinion

In a representative democracy, it is troublesome when representation disproportionately favors certain demographics (Schlozman, Verba, & Brady, 1997). Although the reasons for disproportionate engagement are complex, the goal of more equal representation can be a catalyst that fuels researchers to come up with strategies to connect those who feel disconnected from the political process. Accordingly, this research explores a strategy, derived from social psychology, to influence reports of political interest and political efficacy. The thesis advanced in this article is straightforward: If political issues are communicated in a way that makes the arguments easier to understand, people should report being knowledgeable about, and interested in, politics. To

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test this claim, this experiment uses feelings-as-information theory (FIT; Schwarz, 2011) to examine whether language use within public opinion questions affects reports of political interest and efficacy.

## Political Interest and Political Efficacy

This research targets the outcomes of political interest and political efficacy due to the importance of these constructs. According to Prior (2010), “Political interest is typically the most powerful predictor of the political behaviors that make a democracy work” (p. 747). Political efficacy is similarly considered to be a positive indicator of the overall health of a democratic system (Nabatchi, 2010) and is defined as one’s confidence in their ability to understand and participate effectively in politics (Craig, Niemi, & Silver, 1990).<sup>1</sup> Interest and efficacy are key political cognitions because of their consistent and strong positive association with desirable political outcomes such as voting (Gastil & Xenos, 2010), political knowledge (Zaller, 1992), and political participation (McLeod, Scheufele, & Moy, 1999). Given that self-reports of interest and efficacy are robust predictors of desirable outcomes, the goal of this investigation is to examine whether language can be strategically employed to favorably influence these perceptions.

## Feelings-as-Information Theory

Metacognition is the cognitive operation predicted to affect judgments of political interest and efficacy. Metacognition, also known as accessible experiences, refers to “the subjective experience of ease or difficulty of recall” (Schwarz, 1998, p. 87), or “thinking about thinking.” Metacognition can be contrasted with the closely related availability heuristic (Tversky & Kahneman, 1973). The availability heuristic states that the declarative information readily available at a given time is more likely to be used in the formation of judgments than less available information. Though this heuristic has enjoyed robust scholarly support and attention, Schwarz et al. (1991) argue that the availability heuristic is confounded by two processes: the retrieval of information content and the experience associated with this retrieval. As Schwarz et al. (1991) evince, when information is experienced as difficult to retrieve, the value of this information is discounted, and thus less influential in subsequent judgments. Conversely, when the retrieval process is easy, the perceived value of the information is augmented (Schwarz, 2006) and people are more likely to use this information. Thus, accessible experiences moderate the influence of accessible content (Schwarz, 2011). As the name, feelings-as-information theory further implies, the experience of accessibility is accompanied by a host of feelings that impact judgments. Of interest here are the feelings of positive affect and familiarity (for a review, see Petty, Briñol, Tormala, & Wegener, 2007).

According to FIT, when accessibility is easy, the information accessed tends to *feel* right and when accessibility is difficult, the information accessed tends to *feel* wrong (Schwarz, 2006, 2011). When information feels right, the subject matter tends to be viewed in a positive light (Petty et al., 2007; Schwarz, 2006). These feelings of positivity

create a halo effect that affects subsequent judgments. One of these judgments is topic familiarity. Because people tend to feel favorably toward familiar topics, an easy experience is often conflated with topic familiarity (Petty et al., 2007; Thompson, 2009). This finding underscores the importance of considering how feelings, whether rational or not, affect judgments.

FIT also proposes that metacognition provides information about the state of one's knowledge (Schwarz, 2011). When accessibility feels easy, people believe, based on this feeling, that they are knowledgeable about the subject matter. Similarly, when accessibility feels difficult, people report being less knowledgeable about the topic. These findings are explained through the perceived value of information principle. When the perceived value of information is augmented, participants' confidence in their domain knowledge is increased (Petty et al., 2007). This principle provides an opportunity to extend FIT to the political context. It has been well documented that some believe that they do not know enough about politics to participate effectively (Nabatchi, 2010). What is troubling about this belief is that this feeling leads certain groups, such as Millennials, to disconnect from the political process altogether (Delli Carpini, 2000). If, however, engagement with political thought could be promoted through easing accessibility experiences, a strategy is implicated for future communication efforts. Given that one's perceived knowledge, the construct tested in metacognition research, shares conceptual similarities with political efficacy, the construct tested in political research, the opportunity to bridge these two important areas of research becomes possible and exciting.

## **Using Processing Fluency to Measure Metacognition**

Researchers often operationalize metacognition as processing fluency (Winkielman, Schwarz, Fazendeiro, & Reber, 2003). Processing fluency refers to the ease or difficulty with which new, external information can be processed. When processing fluency is impaired, accessibility is experienced as difficult and vice versa. One form of processing fluency is conceptual fluency, which refers to "high-level processing including the identification of stimulus and its relation to semantic knowledge structures" (Schwarz, 2010, p. 106; see also Whittlesea, 1993). Conceptual fluency is impaired by semantic unpredictability, inconsistencies between stimulus and context, and the lack of availability of appropriate mental concepts for stimulus classification (Schwarz, 2011; Schwarz, Sanna, Skurnik, & Yoon, 2007; Song & Schwarz, 2009). An important contribution of this work is to empirically test whether varying language in the ways discussed above affects metacognition, and whether differences in metacognition influence political perceptions. The next section lays out these predictions in further detail.

## **Hypotheses**

Guided by FIT and previous work that effectively manipulated processing fluency through language use (e.g., Song & Schwarz, 2009; Whittlesea, 1993), this experiment

examines how the complexity (herein referred to as difficult or easy language) of language use within public opinion questions affects metacognition, political interest, and efficacy. The first hypothesis, derived from FIT, contends that participants exposed to the easy language condition should experience more positive affect than those in the difficult condition (Schwarz, 2006). Extending this proposition to politics, it is expected that participants' reports of political interest will be affected in the following way:

**Hypothesis 1:** Participants exposed to the easy language condition should report (a) more interest in politics in general and (b) more interest in the issues in particular, than participants exposed to the difficult language condition.

It is also expected, based on FIT, that language condition should affect feelings of familiarity and perceived knowledge (Petty et al., 2007; Schwarz, 2006, 2011). Extending these ideas to politics, it is expected that participants' reports of political efficacy will be affected in the following way:

**Hypothesis 2:** Participants exposed to the easy language condition should report higher levels of political efficacy than participants exposed to the difficult condition.

Finally, it is important to account for the impact of metacognition on these relationships. It was argued that metacognition, operationalized as processing fluency, would be the mechanism that accounts for feelings of positivity, familiarity, and perceived knowledge. If this is the case, then processing fluency should mediate the aforementioned relationships.

**Hypothesis 3:** The relationship between language difficulty and (a) political interest and (b) political efficacy, should be mediated by self-reported processing fluency.

## Method

### *Participants and Procedures*

Participants in this online survey experiment were undergraduate students from Ohio State University ( $N = 235$ ). This sample was 49.4% female and ranged in age from 18 to 35 years ( $M = 21.86$ ,  $SD = 2.65$ ). Additionally, 74.6% of the sample identified as White/Caucasian, 3.1% Latino, 8.8% African American, 7.5% Asian. The remaining 6.1% identified as either Middle Eastern (0.9%), Pacific Islander (0.4%), mixed (2.2%), or preferred not to say (2.6%). All students were recruited using the communication department's online participant pool and received course credit for their participation. All data were collected in November and December of 2015.

Participants were randomly assigned to either the *easy language condition* ( $n = 118$ ) or *difficult language condition* ( $n = 117$ ). Each condition included five public opinion questions and three manipulation check items for three political issues, resulting in a total of 24 questions presented in the same order across conditions.<sup>2</sup> Participants responded using a 7-point Likert-type scale ranging from (1) *strongly disagree* to (7) *strongly agree*, accompanied by a “don’t know” option. Following opinion questions, participants were asked about their political interest, issue-specific interest, and efficacy. As evidence of successful random assignment to condition, there were no significant differences by condition for students’ age, gender, ethnicity, political ideology, or political participation.<sup>3</sup>

### Survey Language Design

Survey language was manipulated through semantic predictability, language complexity, and level of abstraction (indicators of conceptual fluency; see the appendix). In the easy language condition, sentence structure was straightforward (e.g., active voice used, fewer sentence components), language was simple, and specific exemplars or referents were used. For the difficult language condition, sentence structure was complicated (e.g., passive voice, more sentence components), language was sophisticated, and references were made to legislative or jurisprudential proceedings that are more abstract in nature and render mental representations difficult. To evidence the success of this induction, the easy condition (48.8 reading ease, 11.4 grade level) was rated as semantically easier than the difficult condition (12.7 reading ease, 15.3 grade level) using Microsoft Word’s readability software (Flesch, 1979; Kincaid, Fishburne, Rogers, & Chissom, 1975).

### Processing Fluency Manipulation Check

Three questions per issue measured processing fluency. These items assessed language difficulty (reverse-coded), difficulty with recall (reverse-coded), and topic familiarity. A general measure of fluency was calculated by averaging responses across issues resulting in a nine-item scale ( $M = 4.35$ ,  $SD = 1.21$ ,  $\alpha = .88$ ), with higher scores reflecting easier processing (range = 1-7). As expected, participants in the easy condition reported a significantly more fluent experience ( $M = 4.91$ ,  $SD = 1.08$ ) than those in the difficult condition ( $M = 3.79$ ,  $SD = 1.08$ ,  $t[226] = 7.87$ ,  $p < .001$ ,  $r^2 = .22$ ,  $d = 1.05$ ) evidencing a strong (Cohen, 1992) induction. Evidence of a successful induction was further obtained when issues were considered individually (Table 1).<sup>4</sup>

### Measures

**Political Interest and Political Efficacy.** Political interest was measured as a general and issue-specific construct. General interest was measured with four items ( $M = 4.40$ ,  $SD = 1.60$ ,  $\alpha = .93$ ). Issue-specific interest was measured with four items assessing participant interest, familiarity, confidence, and issue knowledge of voter ID laws ( $M = 3.85$ ,

**Table 1.** Processing Fluency Means by Condition and Across Issues.

	Language condition		<i>t</i>	<i>df</i>	<i>d</i>	<i>r</i> <sup>2</sup>
	Easy, <i>M</i> ( <i>SD</i> )	Difficult, <i>M</i> ( <i>SD</i> )				
Processing fluency (9 items)	4.91 (1.07)	3.78 (1.08)	7.87***	226	1.05	.22
Processing fluency (voter ID)	4.61 (1.36)	3.56 (1.24)	6.19***	230	0.81	.14
Processing fluency (immigration)	5.03 (1.12)	3.97 (1.29)	6.72***	229	0.88	.16
Processing fluency (campaign finance)	5.05 (1.24)	3.86 (1.41)	6.86***	226	0.90	.17

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

*SD* = 1.43,  $\alpha$  = .89), immigration policy (*M* = 4.15, *SD* = 1.46,  $\alpha$  = .83), and campaign finance (*M* = 3.65, *SD* = 1.57,  $\alpha$  = .91). Political efficacy was measured using Niemi, Craig, and Mattei's (1991) five-item efficacy scale. Participants responded using a 7-point Likert-type scale. The final scale included four-items after one item from the original efficacy scale was dropped due to low inter-item correlations (*M* = 3.74, *SD* = 1.31,  $\alpha$  = .82).

## Results

An independent samples *t* test provided strong support for the hypothesis stating that the easy condition (*M* = 4.68, *SD* = 1.47) would generate significantly higher reports of political interest than the difficult condition (*M* = 4.11, *SD* = 1.68,  $t[227] = 2.75$ ,  $p = .006$ ,  $d = 0.36$ ). Results were also supportive of hypothesis one when issue-specific interest was the outcome (voter ID laws,  $t[227] = 4.88$ ,  $p < .001$ ,  $d = 0.64$ ; immigration,  $t[228] = 3.83$ ,  $p < .001$ ,  $d = 0.51$ ; campaign finance issue,  $t[227] = 4.38$ ,  $p < .001$ ,  $d = 0.58$ ; see Table 2).

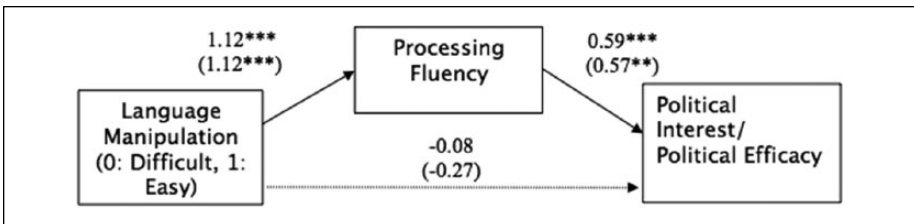
Hypothesis 2 predicted that condition would have a direct effect on political efficacy. Consistent with expectations, scores were significantly higher in the easy condition (*M* = 4.18, *SD* = 1.18) than in the difficult condition (*M* = 3.76, *SD* = 1.24,  $t[223] = 2.57$ ,  $p = .011$ ,  $d = 0.35$ ). Taken together, these findings support the direct effect of language on political interest and efficacy.

Hypothesis 3 predicted that the effects of language on political interest and efficacy would be mediated by processing fluency. This hypothesis was tested using the macro PROCESS (Model 4; Hayes, 2013).<sup>5</sup> For the model predicting political interest, significant indirect effects were obtained,  $B = 0.66$ ,  $SE = 0.13$ , 95% confidence interval (CI) [0.43, 0.96] (95% bias-corrected bootstrap CIs based on 10,000 resamples). Consistent with expectations, participants in the easy condition reported higher fluency than participants in the difficult condition ( $B = 1.12$ ,  $SE = 0.15$ ,  $t = 7.23$ ,  $p < .001$ ); in turn, participants who reported greater processing fluency reported higher levels of political interest ( $B = 0.59$ ,  $SE = 0.08$ ,  $t = 7.23$ ,  $p < .01$ ). As evidence of full mediation, the direct effect of the language manipulation on political interest was not

**Table 2.** Direct Effects of Manipulation on General and Issue-Specific Interest and Efficacy.

	Language condition		<i>t</i>	<i>df</i>	<i>d</i>	<i>r</i> <sup>2</sup>
	Easy, <i>M</i> ( <i>SD</i> )	Difficult, <i>M</i> ( <i>SD</i> )				
Political interest (all issues)	4.68 (1.47)	4.11 (1.68)	2.75**	227	0.36	.03
Political interest (voter ID)	4.28 (1.29)	3.40 (1.44)	4.88***	227	0.64	.10
Political interest (immigration)	4.51 (1.21)	3.79 (1.60)	3.83***	228	0.51	.06
Political interest (campaign finance)	4.08 (1.47)	3.21 (1.55)	4.38***	227	0.58	.08
Internal political efficacy (all issues)	4.18 (1.18)	3.76 (1.24)	2.57*	223	0.35	.03

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.



**Figure 1.** The results from the mediation model predicting political interest (and political efficacy).

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

significant ( $B = -0.08$ ,  $SE = 0.21$ ,  $t = -0.39$ ,  $p = .696$ ) when the mediator was included in the model. This analysis reveals that differences in political interest by condition can be attributed to processing fluency in the expected direction. In total, this model predicted a sizable 22% of the variance (Figure 1).

Hypothesis 3 received further support when the issues were individually considered. This was the case across all three issues: voter ID laws (indirect effect of  $X$  on  $Y$ :  $B = 0.53$ ,  $SE = 0.11$ ,  $R^2 = .30$ , 95% CI [0.34, 0.77]), immigration policy (indirect effect of  $X$  on  $Y$ :  $B = 0.76$ ,  $SE = 0.13$ ,  $R^2 = .40$ , 95% CI [0.52, 1.01]), and campaign finance (indirect effect of  $X$  on  $Y$ :  $B = 0.62$ ,  $SE = 0.13$ ,  $R^2 = .27$ , 95% CI [0.41, 0.89]). Notably, these mediation models explained a substantial 27% to 40% of the variance in political interest.

For the mediation model predicting political efficacy, significant indirect effects were obtained as hypothesized,  $B = 0.64$ ,  $SE = 0.12$ , 95% CI [0.44, 0.91]. Participants in the easy condition reported higher fluency than participants in the difficult condition ( $B = 1.12$ ,  $SE = 0.15$ ,  $t = 7.25$ ,  $p < .001$ ); in turn, participants who reported higher fluency reported higher perceptions of political efficacy ( $B = 0.57$ ,  $SE = 0.06$ ,  $t = 8.92$ ,  $p < .001$ ). As evidence of full mediation, the direct effect of the language manipulation on political efficacy was no longer significant ( $B = -0.27$ ,  $SE = 0.17$ ,  $t = -1.65$ ,  $p = .100$ ). This analysis demonstrates that the differences in political efficacy by condition

can be attributed to processing fluency in the expected direction. In total, this model predicted a substantial 28% of the variance (Figure 1).

## Discussion

This experiment examined whether language and metacognition affected reports of political interest and efficacy. Consistent with expectations derived from FIT (Schwarz, 2011), it was found that when easy language facilitated one's accessibility experience, participants reported higher levels of political interest and efficacy relative to the difficult language condition. Moreover, by using processing fluency as the model mediator, a causal process was supported, which functions to improve the explanatory utility of FIT (Slater & Gleason, 2012). It is important to emphasize that for all hypothesis tests, the effect sizes obtained were medium to large in size (Cohen, 1992). These large effects are particularly impressive given that political interest and efficacy are typically considered to be, or are typically used as, a stable individual difference (e.g., Prior, 2010). The ability to explain a substantial portion of the variance using processing fluency constitutes both an exciting and important finding.

The results of this study reveal that political interest and efficacy are strongly (Cohen, 1992) and positively correlated with metacognition ( $r[224] = .50, p < .001$ , and  $r[20] = .59, p < .001$ , respectively). Furthermore, this experiment evinced that metacognition could be strategically manipulated through language use. This was accomplished by varying sentence structure and language, and by varying whether question referents were abstract versus concrete in nature. These are exciting findings for scholars and practitioners interested in how to communicate complex ideas, such as public policy considerations, to audiences.

Despite these contributions, there are limitations within this study. First, the language manipulation used three strategies concurrently to affect processing fluency. Though this decision was made to facilitate a more potent manipulation, the effectiveness of each individual strategy cannot be isolated nor compared. For message-makers or language scholars, this ambiguity proffers an interesting direction for future work. A second limitation inherent in cross-sectional surveys is whether the effects discovered will persist over time. Although this question cannot be addressed here, the use of robust outcome measures such as political interest and efficacy situates this work within an established line of research that finds that self-reports of interest and efficacy lead to important, and positive political outcomes (Gastil & Xenos, 2010; McLeod et al., 1999; Prior, 2010; Zaller, 1992). Nevertheless, future work should use a longitudinal approach, or within-subjects design, to test whether similar language-based strategies can produce positive change over time.

The goal of this experiment was to establish an empirical relationship between language, metacognition, and outcomes. This aim required internal validity to support causal claims. Moving forward, however, the language strategy used here should not be bound to this methodology. Instead, language-based interventions should be considered a versatile tool for speechwriters, educators, or campaign designers who are interested in accommodating their messages toward audiences that may be unfamiliar with the topic at hand (Giles, 2016). As this work importantly showed, language complexity affects feelings that accompany accessibility. By understanding the relationship between word choice and



metacognition, future efforts could focus on the creation of messages that serve to better connect people to ideas, topics, or opportunities that they may not have been privy to otherwise (Schwarz et al., 2007). Moreover, within the context of politics, the opportunity to connect those who might feel otherwise disconnected through the language strategies used here constitutes both a theoretically promising, and democratically important, endeavor.

## Appendix

Difficult language	Easy language
<i>Voter ID laws</i>	
In an effort to increase voter turnout in elections, an automatic voter registration bill should be enacted.	In an effort to increase voter turnout, people should be automatically registered to vote when they go to the DMV to get their driver's license or ID card.
Local election boards should remove barriers to voting for citizens with proper documentation of eligibility.	So long as a person possesses the proper documentation of their U.S. citizenship, such as a driver's license, it should be easy for them to vote.
Current voting laws engender systemic discrimination in elections.	Current voting laws makes it difficult for certain groups of people to vote in elections.
The potential for voter fraud threatens the validity of the electoral process.	The possibility for voter fraud calls into question the honesty of elections.
State legislation that requires voters to be registered to vote for a certain period of time in advance of the election circumvents voter fraud.	State laws that require a person to register to vote well before an election are one way to prevent voter fraud.
<i>Immigration policy</i>	
Current federal laws providing birthright naturalization as a means for citizenship should be abolished.	If a non-U.S. citizen gives birth in the United States, that baby should <i>not</i> be considered an American citizen.
Immigration legislation should include a yearly quota stipulation that governs the citizenship application consideration process.	The United States should only consider a certain number of citizenship applications per year.
The number of undocumented immigrants is directly correlated with the security of the border between the United States and Mexico.	The United States would have less undocumented immigrants if the wall between the United States and Mexico were more secure.
A path to citizenship allowance should be enacted within immigration policy for undocumented immigrants with tenure and an acceptable record of prior behavior.	Immigration policy should create a path to citizenship for undocumented immigrants who have been in the United States since they were young and behaved well during that time.
The number of undocumented immigrants is directly correlated with whether business regulations impose strict citizenship verification standards.	The United States would have less undocumented immigrants if all businesses required proof of a person's citizenship status during the hiring process.

(continued)

## Appendix (continued)

Difficult language	Easy language
<i>Campaign finance reform</i>	
The Supreme Court decision of <i>Citizens United v. Federal Election Commission</i> improved the campaign fundraising process.	Corporations should be able to donate to political campaigns just like people do.
The Federal Election Commission should place limits on campaign contributions to limit the plutocratic nature of American politics.	There should be a limit on how much a person can donate to a political campaign so that people with more money don't have more influence in American politics.
Corporate donors to political campaigns, and the amount of their contribution, should not be disclosed.	The names of companies that donate to a politician's campaign and how much they donate should be kept private.
Super PAC's lead to corruption in politics.	Having independent organizations, like Super PAC's, that can raise unlimited money and create campaign advertisements for a politician leads to corruption in politics.
Limits should be imposed on campaign expenditures for individual politicians within an election cycle.	There should be a limit on how much money a politician can spend in an election.
<i>Total word count: 559</i>	<i>Total word count: 560</i>

### Processing Fluency

1. A lot of information presented in these questions was new to me. (Reverse coded)
2. Overall, I found the language used in these questions to be difficult. (Reverse coded)
3. It was easy for me to provide my opinions when answering these questions.

### Political Efficacy

1. I feel that I could do as good a job in public office as most other people.
2. I consider myself to be well qualified to participate in politics.
3. I think I am better informed about politics and government than most people.
4. I feel that I have a pretty good understanding of the important political issues facing the country.

### General Interest in Politics

1. I enjoy learning about politics.
2. I enjoy talking about politics with others.
3. I often seek out political information.
4. I find politics interesting.

### Issue-Specific Interest (Set Was Identical for All Three Issues)

1. How informed to you feel regarding the following political issues?
2. How familiar are you with the arguments surrounding the following issues?
3. How interested are you in learning about the following issues?
4. How confident are you in your understanding of the following issues?

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### Notes

1. The construct of political efficacy used here specifically references internal political efficacy. Internal political efficacy has been found to be distinct from external political efficacy (Craig et al., 1990). External efficacy refers to one's confidence in their political system and their perceptions regarding a government's ability to govern effectively (Craig et al., 1990). Because this study only looks at internal political efficacy (i.e., perceptions of one's own political abilities) and not external political efficacy, the more general term *political efficacy* was used.
2. Given that the order of topics was the same across both conditions, it was tested whether an order effect may have influenced results. Specifically, it was tested whether processing fluency got easier as participants answered more opinion questions, and whether this trend differed by language condition. Issues were presented in the following order: Voter ID laws, immigration, and campaign finance. A learning effect would be implicated if processing fluency became increasingly easier particularly in the difficult condition. A mixed-ANOVA suggested that although there were significant differences in fluency by issue,  $F(2, 452) = 17.22, p < .001$ , the interaction effect between wording condition and issue order was not significant,  $F(2, 452) = 0.67, p = .515$ . In sum, this suggests that the pattern of processing fluency by issue did not differ by language condition.
3. There were no significant differences between condition with regard to age ( $t[225] = 0.66, p = .510$ ), gender ( $\chi^2[3, N = 228] = 4.58, p = .206$ ), ethnicity ( $\chi^2[7, N = 228] = 7.00, p = .429$ ), political ideology, ( $t[228] = -0.09, p = .925$ ), or political participation ( $t[225] = 1.61, p = .109$ ).
4. Opinion giving also differed between language conditions. In the difficult language condition participants reported "don't know" to opinion items 208 times compared to the easy condition in which "don't know" was only selected 73 times (odds ratio = 3.13,  $Z = 8.11, p < .001$ ). This pattern provides further evidence that the language manipulation was successful in inducing varying levels of processing fluency.

5. The benefits of using Hayes (2009) mediation analysis was to reduce ambiguity surrounding the cause of the changes observed in the outcome measures. The benefit of mediation analysis wherein the manipulation check is the mediating variable is the ability to test and hopefully ascribe the hypothesized effects to the manipulation (independent variable) and the process (mediating variable; O'Keefe, 2003). Using Baron and Kenny's (1986) logic, the initial direct test of the independent variable ( $X$ ) on the dependent variable ( $Z$ ) leaves open the possibility that the relationship exists because of an alternative cause (e.g., spurious relationship). Hayes' (2009) model can test this possibility by including a measured third variable ( $Y$ ) in the regression model. If the original empirical relationship between  $X$  and  $Z$  becomes reduced or is diminished completely (as in the case here), Hayes (2009) argues that full mediation is supported because the variance initially accounted for between  $X$  and  $Z$  (the indirect effect referenced in the results) can now be more accurately attributed to the relationship between the mediator  $Z$  and the outcome  $Y$ . If the mediator (manipulation check) was not responsible for the direct relationship originally obtained, then the indirect path would remain statistically significant and an alternative explanation (not included in the model) is implicated. Moreover, as argued by O'Keefe (2003) and tested through Hayes PROCESS software (Hayes, 2013), the inclusion of the manipulation check as the mediator further ensures the message manipulation performed as intended. Hayes model considers the relationship between  $X$  (manipulation) and  $Y$  (manipulation check). This specification tests empirically whether the manipulation produced the changes intended. By measuring the  $X$ - $Y$  relationship, this procedure provides the added benefit of allowing individual variability in message induction "strength" to be accounted for by the model instead of assuming a uniform effect. In total, this mediation test proffers the advantages of making predictions more accurate and lending further credence to causal claims in experimental research.

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