

## ORIGINAL ARTICLE

# Advancing Framing Theory: Designing an Equivalency Frame to Improve Political Information Processing

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*This experiment tested whether a communication frame could be developed to improve undergraduates' understanding of contemporary political issues. Specifically, a meta-cognitive equivalency frame (easy vs. difficult) was designed to test whether framing and processing fluency affect constructs important to public opinion research. Consistent with expectations, those in the easy frame condition reported more confidence in their political knowledge, less ambivalent issue positions, and showed evidence of more ideological thinking than those in the difficult frame condition (N = 488). The results of this study imply that communication frames can be designed to improve people's ability to reason through complex ideas. Theoretical advancements to framing theory and feelings-as-information theory are offered and practical applications for this work are advanced.*

**Keywords:** Framing Effects, Cognitive Processing, Experimental Design, Public Opinion, Metacognition.

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A representative democracy is predicated on constituents' ability to make rational and efficient decisions about their representation (Althaus, 2012). Research spanning the disciplines, however, has questioned and even refuted citizens' ability to meet this basic requirement. This skepticism has arisen from public opinion data that is unreliable (Zaller & Feldman, 1992), lacking in predictive validity (Sears, Lau, Tyler, & Allen, 1980), unsophisticated (Converse, 1964; Luskin, 1987), and discordant with self-interests (e.g., Frank, 2005). Yet, despite these concerns, all theories of democracy maintain that constituents are better represented when they stay informed about the actions of their representatives and up to date on important political issues (Althaus, 2012). Although the deficiencies of American voters in these regards have been well documented (for a review see Caplan, 2011), one goal of this study, guided by framing theory (Chong & Druckman, 2007), is to test

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whether communication can rectify some of these concerns. Specifically, we tested whether framing can be used to improve political information processing by making political information feel more accessible and familiar. This conceit will be tested by integrating framing theory (Chong & Druckman, 2007) with feelings-as-information theory (FIT; Schwarz, 2011). This merger extends the scope of these theories by advancing an alternative strategy for creating an equivalency frame, testing whether this frame affects accessibility experiences (Schwarz, 1998), and examining how this cognitive process affects a range of political outcomes.

### Frames in communication: types and criticisms

There are two types of frames in communication: emphasis frames and equivalency frames (Caciatore, Scheufele, & Iyengar, 2016; Chong & Druckman, 2007; Scheufele & Iyengar, 2014; Scheufele & Tewksbury, 2007). Emphasis frames can be defined as, “a central organizing idea ... that provides meaning to an unfolding strip of events” (Gamson & Modigliani, 1987, p. 143). Scholars interested in emphasis frames examine how political issues are thematically portrayed, or in other words, the content being communicated (Caciatore et al., 2016; Scheufele & Iyengar, 2014). Equivalency frames “present different, but logically equivalent words or phrases” (Druckman, 2004, p. 671), and reflect an interest in the method of communication (Caciatore et al., 2016). Equivalency frames can be traced back to prospect theory (Kahneman & Tversky, 1979). In experiments guided by prospect theory, participants are asked to decide between two logically equivalent but valenced alternatives to solve a problem (Levin, Schneider, & Gaeth, 1998). Whereas, generally, research interested in emphasis framing falls under the purview of framing research, research interested in equivalency frames falls under the purview of framing effects research (Scheufele & Iyengar, 2014). This study is situated in the latter context.

Before introducing framing theory, it is important to acknowledge that framing research in the field of communication has been heavily criticized (e.g., Caciatore, et al., 2016; Price & Tewksbury, 1997; Scheufele, 2000; Scheufele & Iyengar, 2014). The crux of these concerns is twofold. The first cites a lack of distinction between emphasis and equivalency frames in the literature. This problem has led to conceptual confusion and a misrepresentation of the scope of framing research (Caciatore et al., 2016; Scheufele & Iyengar, 2014). The second criticism is the lack of empirical specification regarding the cognitive mechanisms that make a frame effective (Chong & Druckman, 2007; Price & Tewksbury, 1997; Scheufele, 2000). Without this specification, framing effects may be made redundant or conflated with other types of media effects (Price & Tewksbury, 1997; Scheufele & Iyengar, 2014). In light of these criticisms, this work was conceptually and operationally designed to obviate these concerns and move the field of framing effects forward. Discontinuing work on framing effects due to a lack of refinement discounts the valuable contributions of this work. Studies have shown that presentation effects matter. It is the aim

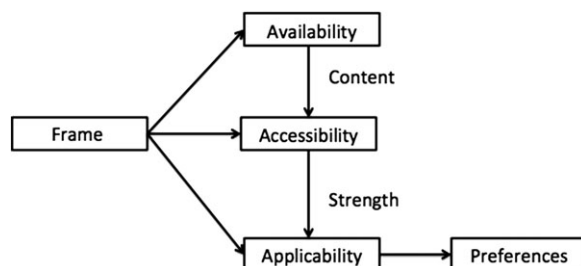
of this investigation to understand these effects, link these effects to message presentation, and increase the scope of framing theory in the process.

This work extends framing theory according to two criteria: 1) re-operationalizing key concepts, and 2) theorizing about causal processes by way of mediation (Berger & Chaffee, 1987; DeAndrea & Holbert, 2017; Slater & Gleason, 2012). To this end, this work creates and tests a new equivalency frame that intends to affect participants' metacognition. By linking framing to a novel cognitive process, a wider array of outcomes can be expected when FIT (Schwarz, 2011) is applied. This constitutes an exciting new direction for framing research, framing theory, and, more practically, political communication.

### Framing theory

Framing theory (Chong & Druckman, 2007) seeks to understand how the presentation of issues guides public opinion. Framing theory assumes that people have multiple pieces of information available, or stored in their memory. When an opinion is solicited, people search their memory for information. The content of the information retrieved during this search is said to be accessible. Moreover, so long as the information accessed is deemed applicable, or relevant to the situation at hand, it is likely to shape the preferences reported. As framing theory predicts, a frame will exert a stronger influence on preferences when the frame renders a belief available, readily accessible, and/or strongly applicable (Figure 1).

Framing effects, refer to “when (often small) changes to the presentation of an issue or event produce (sometimes large) changes of opinion” (Chong & Druckman, 2007, p. 104), and operate through the three aforementioned mediational processes. Within this line of research, accessibility has long been considered the critical mechanism underlying framing effects (Chong & Druckman, 2007; Druckman, 2004). Tversky and Kahneman (1973) define accessibility as “the ease with which instances or associations can be brought to mind” (p. 208). Accessibility is foundational in the memory, communication, and political science literatures because information that is more accessible exerts a stronger influence on judgments than information that is less accessible (e.g., Fazio, 1995; Price & Tewksbury, 1997). Framing theory argues that equivalency frames are effective because the frame renders certain networks of information more available and more accessible than others. Valence framing, for example, guides thinking towards the positives or negatives of alternatives (Druckman, 2004; Kahneman & Tversky, 1979). When favorable associations are easily accessed, people are more likely to endorse the position advocated in the frame. When unfavorable associations are evoked, the frame is more likely to be rejected (Levin et al., 1998). Another form of equivalency frames, attribute frames, operate in similar fashion. Rather than manipulating frame valence, attribute frames manipulate certain attributes, or characteristics, of an object or event (Levin et al., 1998). In the current experiment, our frame best qualifies as an equivalency attribute frame in which we



**Figure 1** The mediational processes at work in Chong and Druckman's (2007) framing theory.

manipulate the difficulty of language. This allows us to test whether language difficulty is an attribute that affects subsequent evaluations of the material presented.

Although from a communication perspective it is interesting to study how message presentation alters peoples' opinion, from a public opinion perspective the existence of framing effects is troubling. In Chong and Druckman's words (2007, p. 104), "Some have interpreted such dramatic fluctuations to indicate that opinions are too superficial to be indicative of public preferences. Either the public has no attitudes on many political issues, or it holds so many fragmentary and conflicting attitudes that it cannot reconcile or resolve them." Herein lies an exciting opportunity for communication researchers. On the one hand, framing influences preferences. On the other hand, this effect can be considered demonstrative of the irrationality and fluidity of public opinion (Zaller & Feldman, 1992). But what if framing could be used to improve political information processing instead? This idea reflects a shift away from using frames as a vehicle for persuasion, and instead towards testing whether frames can play a role in easing the burden of political information processing via accessibility experiences.

### Accessibility experiences and feelings-as-information theory

In the psychology literature, there are two types of accessibility: content accessibility and accessibility experiences (Schwarz, 1998). Although both types of accessibility refer generally to "the ease with which instances or associations can be brought to mind" (Tversky & Kahneman, 1973, p. 209), content accessibility refers to the declarative information recalled, whereas accessibility experiences "refer to the ease or difficulty with which [declarative] information can be recalled" (Schwarz, Sanna, Skurnik, & Yoon, 2007, p. 129). In order to clarify our labeling of terms as they relate to accessibility experiences, two related concepts merit introduction. The first is metacognition. Metacognition refers broadly to thinking about thinking, or "cognitive feelings, like surprise, boredom, or feelings of familiarity [that] provide information about the state of one's knowledge" (Schwarz, 2011, p. 8). Accessibility experiences are one form of metacognition. A closely related concept to accessibility experiences

is processing fluency, which refers to the ease of processing new, external information (for a review see [Alter & Oppenheimer, 2009](#)). Here, for clarity purposes, the link between these terms can be represented in the following way: metacognition is the superordinate construct, accessibility experiences are a form of metacognition, and processing fluency refers to an individual's accessibility experience.

To highlight the distinction between accessible content and accessibility experiences, imagine taking an exam. When a question is presented, an initial answer comes to mind. This answer is high in content accessibility. Research on content accessibility, guided by the availability heuristic ([Tversky & Kahneman, 1973](#)), has found that information retrieved first is more likely to be tagged as correct, relevant, or typical. This is because people heuristically infer applicability (i.e., this answer must be relevant) from accessibility (i.e., because I thought of it first). Accessibility experiences, however, refer to how easily this answer came to mind ([Schwarz, 1998](#)). This process shares similarities with response latency, which refers to how long it takes to retrieve a piece of information from memory ([Fazio, 1995](#)). However, whereas latency measures address objective accessibility, accessibility experiences address one's subjective experience with this process. Referring back to the exam example, when an answer is retrieved easily, this answer is more likely to be provided than when the same answer is difficult to retrieve. Thus, one's accessibility experience qualifies their final decision. This process is the cornerstone of FIT ([Schwarz, 2011](#)).

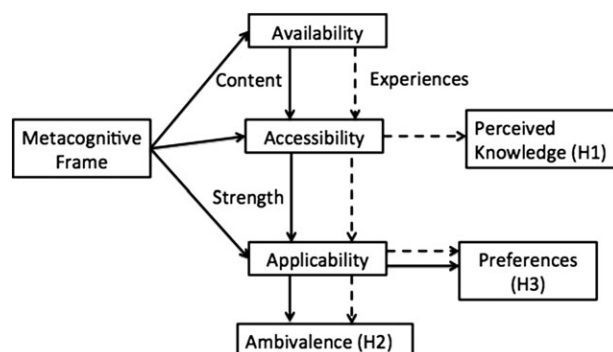
Feelings-as-information theory ([Schwarz, 2011](#)) posits that people "attend to their feelings as a source of information, with different types of feelings providing different types of information" ([Schwarz, 2010](#), p. 8). FIT argues that although attention is typically paid to the declarative content of information in the formation of opinions, experiential information is used as well. Accessibility experiences are one form of experiential information that provides data about the state of one's knowledge ([Petty, Briñol, Tormala, & Wegener, 2007](#); [Schwarz, 2010](#)). FIT postulates that an easy accessibility experience augments the perceived value of the information recalled, whereas a difficult experience discounts informational value ([Schwarz, 2011](#)). Thus, accessibility experiences affect how people feel about the quality of the information they retrieve. When information feels right, it is more likely to be used to inform preferences. When information feels wrong, uncertainty coupled with an extended information search is expected (for a review, see [Petty et al., 2007](#)). The augmentation and discounting effect have been linked to three outcomes important to the integration between framing theory and FIT. These outcomes include perceptions of knowledge, attitude ambivalence, and opinion formation. A discussion of how these outcomes can be incorporated within framing theory follows.

### Integrating framing theory with FIT

Despite the role of metacognition in preference formation, there is a paucity of research extending metacognition to framing theory. It stands to reason, however,

that framing should not only affect what people think about, but also how easily the retrieval process is experienced. FIT (Schwarz, 2011) predicts that when information processing is fluent, the information retrieved from memory tends to feel right and familiar, whereas when processing is difficult, the information feels wrong and foreign (Petty et al., 2007; Schwarz, 2011). This process explains why accessibility experiences are positively associated with feelings of knowing (Petty et al., 2007). An easy experience promotes feelings of expertise, whereas a difficult experience suggests a lack thereof (for a review, see Koriat & Levy-Sadot, 1999). These tenets can be applied to framing theory. If a frame produces variance in processing fluency, then people should report perceptions of knowledge consistent with their experience (see Figure 2).

In addition to perceptions of knowledge, metacognition has also been shown to impact attitude ambivalence (Petty et al., 2007; Song & Ewoldsen, 2015). According to FIT, as the perceived value of information is augmented, people feel more confident relying on this information when forming judgments (Schwarz, 2011). Song and Ewoldsen's (2015) metacognitive model of ambivalence further explains that this confidence functions to reduce the breadth and depth of one's information search. When an information search resolves quickly, the information accessed tends to be internally consistent. However, as the information search extends, the retrieval of inconsistent pieces of information is expected. The metacognitive model of ambivalence argues that ambivalence is produced by the retrieval of inconsistent information, whereas attitude certainty and extremity is produced by the retrieval of consistent information. These propositions can be incorporated into framing theory through the applicability mediator. The availability heuristic states that when opinions are arrived at easily, people are more likely to infer that the answer is applicable compared to when opinions are difficult to access (Tversky & Kahneman, 1973). As such, it will be examined whether framing, accessibility experiences, and applicability affect the ambivalence of the political opinions reported (Figure 2).



**Figure 2** Chong and Druckman's (2007) framing theory integrated with accessibility experiences and feelings-as-information theory (Schwarz, 2011).



It is also interesting to consider whether variability in accessibility experiences affect the substance of the political preferences reported. Although typically framing research examines whether preferences are consistent or inconsistent with frame contents, here the frame was designed to affect experiences while holding content constant. Therefore, traditional tests of framing theory cannot be performed. Instead what is tested is whether a metacognitive frame can make one's political values more available, accessible, and applicable. These ideas, along with an explanation for how the metacognitive equivalency frame was designed, are described below.

### Designing a metacognitive frame and study hypotheses

Accessibility experiences have been operationalized as processing fluency (for a review, see [Alter & Oppenheimer, 2009](#)). When accessibility is experienced as easy, then processing fluency is enhanced, and when difficult, fluency is impaired. Although processing fluency has been instantiated in a variety of ways, most pertinent to this research is manipulating the attribute of language complexity ([Oppenheimer, 2006](#); [Shockley & Fairdosi, 2015](#); [Shulman & Sweitzer, 2017](#)). According to [Oppenheimer \(2006\)](#) and historical research on language complexity and the readability of news stories (e.g., [Schramm, 1947](#)), “simpler writing is easier to process” ([Oppenheimer, 2006](#), p. 140). Therefore, to create this frame, words in public opinion questions were strategically replaced with either simpler words (herein referred to as the “easy frame”) or more complex words (“difficult frame”) using a thesaurus. Importantly, this manipulation is logically akin to an equivalency attribute frame in that both versions are denotatively identical. It is worth acknowledging, however, that a thesaurus cannot provide perfect equivalence between frames. However, the similarity in denotative meanings suggests that the declarative content presented across conditions is more similar than different.

In addition to language complexity, a second format manipulation was the presence or absence of an example. This approach was chosen because linking a political concept or issue to an example is a common strategy in political communication that likely affects processing fluency. This is because an example should render ideas less vague and more concrete. However, given that the inclusion of an example will always lead to more words (and perhaps a more complex syntax), we also teased out whether word count affects processing fluency. This was done by including a word count control condition. Taken together, these approaches allowed for the creation of a novel equivalency frame and a novel test of framing theory. Although prior research by [Shulman and Sweitzer \(2017\)](#) utilized these approaches concurrently to maximize experimental variance, here specificity is paramount. Therefore, the following research question is required to establish how these frame attributes affect the mediator of processing fluency:

RQ1: How do frame design attributes (language, examples, word count) influence processing fluency?

### Study hypotheses

The first hypothesis in this research examines the relationship between the metacognitive frame, processing fluency, and perceptions of political knowledge. As postulated by FIT (Schwarz, 2011), accessibility experiences are positively associated with feelings of knowing.

H1: Processing fluency will mediate the relationship between frame condition and perceived political knowledge.

The second hypothesis examines the relationship between the metacognitive frame, processing fluency, and attitude ambivalence. As predicted from FIT, an easy accessibility experience should augment the perceived value of information (Schwarz, 2011). When this is the case, confidence in the applicability of the information recalled should lead to less ambivalent opinions. Conversely, the opposite would be expected when accessibility is difficult, and informational value is discounted.

H2: Processing fluency should mediate the relationship between frame condition and attitude ambivalence.

The final two hypotheses expand upon our understanding of how frames guide preferences. Specifically of interest is whether a metacognitive frame can render pre-existing ideological preferences more available, accessible, and applicable. If accessibility is experienced as easy, informational value is augmented (Petty et al., 2007; Schwarz, 2011). When informational value is augmented, judgments of applicability should be strengthened as well. Although these ideas are relatively straightforward, the question remains as to what type of information will be made available in the first place. Typically in framing studies, the information made readily available is the information presented in the frame. But here neither content nor valence differences are being manipulated. Instead, it is argued here that when accessibility is more fluent, one's ideological preferences should be more available than when accessibility is difficult. This is because a frame that renders beliefs more accessible may serve to obviate some of the information-processing barriers that interfere with cogent political thought. Huckfeldt and colleagues (Huckfeldt, Levine, Morgan, & Sprague, 1999; Huckfeldt, Mondak, Crow, & Mendez, 2005, p. 12) found that ideology is "more likely to be useful to an individual if [one's ideology is] readily accessible in memory." This study extends this premise by examining whether easing accessibility experiences, instead of accessible content, can strengthen the association between political ideology and attitudes as well.

H3: The relationship between political ideology and attitudes will be moderated by processing fluency, such that this relationship will become stronger as fluency is increased.

The final hypothesis further explores the link between experiences, applicability, and preferences. In order to do this, variance in applicability needs to be induced. Here, applicability will be manipulated through the presence or absence of a partisan



cue within the opinion questions. It has been established that partisan cues are highly influential to political decision-making. Applying this notion to framing theory suggests that people will use a party cue, when available, to determine what opinions are applicable to their own preferences, particularly when issues are of low salience. This prediction, however, is not new (e.g., Arceneaux, 2008; Ciuk & Yost, 2016). What is new is how this well-established process compares to the processes we observe under conditions of easy or difficult processing fluency. When processing fluency and partisan cues are jointly considered, it is expected that the link between accessibility experiences and applicability would be strongest in the easy processing/cues present condition and weakest in the difficult processing/cues absent condition. When this link is strong, then ideology should be a stronger predictor of attitudes than when the accessibility-applicability link is weak.

H4: The strength of association between political ideology and attitudes will be moderated by processing fluency and partisan cues, such that those in the easy partisan-cue condition should report the strongest ideology-attitude relationship whereas those in the difficult cue-absent condition should report the weakest ideology-attitude relationship.

## Method

### Participants

Participants in this online experiment were students from Ohio State University ( $N = 488$ ). This sample was 64.3% female and ranged in age from 18 to 41 ( $M = 20.73$ ,  $SD = 2.55$ ). Additionally, 78.6% of the sample identified as White/Caucasian, 4.0% Latino, 4.2% African-American, 8.3% Asian, 0.8% Middle Eastern, 0.2% Pacific Islander, and 3.7% mixed, and 0.2% preferred not to say. All students received course credit in their communication course for their participation.

### Experimental design

Participants were randomly assigned to an experimental condition in a 2 (frame: easy, difficult)  $\times$  3 (attributes: example, no-example, word count control)  $\times$  2 (partisan cue: present, absent) between-subjects design. All participants were exposed to five public opinion questions and three manipulation check items each for three political issues, resulting in a total of 24 questions. All questions utilized a 7-point Likert scale ranging from (1) strongly disagree to (7) strongly agree, including a "don't know" option. Following these items, questions about political knowledge, ideology, and partisanship were presented. The three political issues were the economy, education, and infrastructure policy. All participants were exposed to all three issues, in the same order, regardless of frame condition. Because participants were exposed to all three issues in a block, the three issues were collapsed for hypothesis testing. Importantly, this approach minimized the influence of any particular set of questions or issues on the results.

## Equivalency frame attributes

### *Language complexity*

Two denotatively equivalent versions of the public opinion questions were designed to create the easy ( $n = 250$ ) and difficult ( $n = 238$ ) frame conditions (Appendix A). This was done by first writing public opinion questions and then using a thesaurus to replace words in an effort to make them either easier or more difficult (Oppenheimer, 2006; Shockley & Fairdosi, 2015; Shulman & Sweitzer, 2017). This strategy was utilized alongside the statistical package KoRpus in R, which includes the Flesch Reading Ease scale (“ease”) and Grade Level scale (“grade”; Michalke, 2017). These tests confirmed that the easy condition was semantically easier (ease:  $M = 59.51$ ,  $SD = 11.87$ ; grade:  $M = 9.38$ ,  $SD = 1.90$ ) than the difficult condition (ease:  $M = 20.97$ ,  $SD = 16.26$ ; grade:  $M = 14.75$ ,  $SD = 2.28$ ), indicating a strong manipulation (ease:  $t[178] = 18.16$ ,  $p < .01$ ,  $d = 2.71$ ; grade:  $t[178] = -17.14$ ,  $p < .01$ ,  $d = 2.56$ ).

### *Question format*

Questions were manipulated to include either the presence ( $n = 162$ ) or absence ( $n = 326$ ) of an example (Appendix A). These group sizes are unequal because people in the example condition were compared to both the no-example condition ( $n = 165$ ) and a no-example word count control ( $n = 161$ ). Importantly, the example remained the same across language complexity conditions so the presence of an example, rather than the content of these examples, could be analyzed independently for its influence on processing fluency.

### *Processing fluency*

After each set of opinion questions, processing fluency items were presented. This scale was used as the manipulation check and as the model mediator allowing for a subjective measure of processing fluency, which is more consistent with FIT than objective measures such as reading ease, grade level, or response latency. Fluency was operationalized from three items. A general measure (Shulman & Sweitzer, 2017) was then calculated by averaging responses across issues, resulting in a nine-item scale ( $M = 4.05$ ,  $SD = 1.10$ ,  $\alpha = .87$ , Appendix A) wherein higher scores reflect more fluent/easier processing (range: 1–7).

## Partisan cues

The third factor was the presence ( $n = 247$ ) or absence ( $n = 241$ ) of partisan cues. In the partisan cue condition, a phrase was added to the beginning of each question that referenced Republican or Democratic positions (Appendix A). For each set of five opinion items, two items were given a Republican referent, two a Democrat referent, and one item did not include a cue. These cues were identical across conditions and all of the politicians’ names were fabricated.

## Outcome measures

### *Perceived political knowledge*

Perceived political knowledge was measured in two ways. The first assessed perceived knowledge of the issues on the survey. This scale, referred to as “on-topic

knowledge,” was comprised of six items with higher scores reflecting more knowledge ( $M = 3.40$ ,  $SD = 1.22$ ,  $\alpha = .88$ , range: 1–7). For comparison’s sake, an off-topic knowledge scale was also created to provide a measure of political knowledge that was less susceptible to carry-over effects from exposure to the public opinion questions. This scale included four items, with one item soliciting general knowledge and the other three items referencing three political issues not on the survey ( $M = 4.24$ ,  $SD = 1.33$ ,  $\alpha = .87$ , Appendix A).

#### *Attitude ambivalence*

Ambivalence was derived from participants’ responses to the 15 public opinion questions. The response options ranged from 1 (strongly disagree) to 7 (strongly agree), with a 4 indicating “neither agree nor disagree.” A 4 was considered an ambivalent response on this scale. In order to create a measure of ambivalence, the absolute value of the difference between a participant’s average political attitude score and 4 was calculated ( $M = 0.45$ ,  $SD = 0.39$ ). Thus, ambivalence was operationalized along a continuum in which low values (0) indicate ambivalence and high values (3) indicate attitude extremity.

#### *Political ideology*

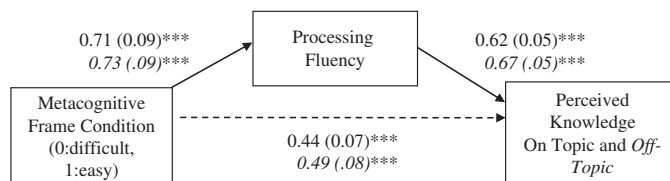
Political ideology was measured using the 7-point scale from the American National Election Studies panel that ranges from (1) very liberal to (7) very conservative ( $M = 3.52$ ,  $SD = 1.83$ ).

#### *Political attitudes*

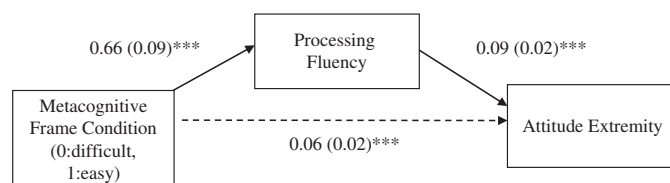
Responses to the public opinion questions were coded such that higher numbers reflect more conservative attitudes. In total, 6 of the 15 opinion items were recoded. Attitudes were measured by averaging participants’ agreement with each statement, excluding “don’t know” responses (economy:  $M = 3.70$ ,  $SD = 0.85$ ; education:  $M = 3.43$ ,  $SD = 0.90$ ; infrastructure:  $M = 4.23$ ,  $SD = 0.71$ ). A general measure was calculated by averaging these scales together ( $M = 3.76$ ,  $SD = 0.55$ ,  $\alpha = .53$ ). Given that a “don’t know” option was available, there was a significant amount of “missing” data. To address this, the above means reflect scores adjusted for missing data ( $n = 771$ , 11%). This was done by summing up participants’ responses for each issue and dividing by the number of questions answered.

## **Analyses**

All hypotheses were analyzed using Hayes’ (2013) macro PROCESS. This program allows users to test various statistical models, including tests of mediation (model 4) for H1 and H2, moderation (model 1) for H3, and multiple moderation (model 2) for H4 (for more information, see Hayes, 2009; Hayes, 2013). All of the results presented here are detailed in Figures 3 and 4 and Tables 1 and 2.



**Figure 3** Results for the mediation model predicting on-topic and off-topic perceived knowledge. *Note:* Model 4. 95% bias-corrected bootstrap CIs based on 10,000 resamples. \*\*\* $p < .001$



**Figure 4** Results for the mediation model predicting attitude extremity. *Note:* Model 4. 95% biascorrected bootstrap CIs based on 10,000 resamples. \*\*\* $p < .001$

**Table 1** Predicting Political Attitudes from Political Ideology and Processing Fluency

Predictors	<i>B</i> ( <i>SE</i> )	95% CI
		lower limit, upper limit
Intercept	3.85 (.21)***	3.45, 4.26
Processing fluency	−0.13 (.05)**	−0.22, −0.04
Political ideology	0.09 (.05)	−0.01, 0.19
Ideology × processing fluency	0.01 (.01)	−0.01, 0.03
Adjusted <i>R</i> <sup>2</sup>	0.26	
<i>F</i>	53.25***	
<i>Conditional effects</i>		
High fluency ( <i>M</i> = 5.21)	0.14 (.02)***	0.09, 0.16
Moderate fluency ( <i>M</i> = 4.14)	0.13 (.01)***	0.11, 0.16
Low fluency ( <i>M</i> = 3.08)	0.12 (.02)***	0.11, 0.18

*Note:* Results were produced using Hayes (2013) PROCESS software (Model 1). The mean scores are the conditional means produced in PROCESS for the three levels of processing fluency.

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

## Results

The first research question examined the effect of frame attributes on processing fluency. A 2×3 analysis of variance (ANOVA) was used to test the effect of language complexity (easy v. difficult) and question format (word count control, no

**Table 2** Predicting Political Attitudes from Ideology, Processing Fluency, and Partisan Cues

Predictors	<i>B</i> ( <i>SE</i> )	95% CI lower limit, upper limit
Intercept	4.05 (.22)***	3.62, 4.48
Processing fluency	−0.15 (.05)**	−0.24, −0.06
Political ideology	0.03 (.05)	−0.07, 0.14
Partisan cues	−0.25 (.10)*	−0.44, −0.06
Ideology x processing fluency	0.02 (.01)	−0.01, 0.04
Ideology x partisan cues	0.07 (.02)**	.02, .12
Adjusted <i>R</i> <sup>2</sup>	0.28	
<i>F</i>	33.99***	
<i>Conditional effects</i>		
High fluency/no cues	0.12 (.02)***	0.08, 0.15
Moderate fluency/no cues	0.10 (.02)***	0.07, 0.13
Low fluency/no cues	0.08 (.02)***	0.04, 0.13
High fluency/cues present	0.19 (.02)***	0.14, 0.23
Moderate fluency/cues present	0.17 (.02)***	0.13, 0.21
Low fluency/cues present	0.15 (.02)***	0.11, 0.19

*Note:* Results were produced using Hayes (2013) PROCESS software (Model 2). The conditional means were also produced through this software and were calculated at: high fluency, *M* = 5.21; moderate fluency, *M* = 4.14; and low fluency, *M* = 3.08.  
\**p* < .05, \*\**p* < .01, \*\*\**p* < .001

example, example) on processing fluency. Although the omnibus model was significant ( $F[5, 482] = 12.20, p < .01, \eta^2 = .11$ ), the only significant effect was for language ( $F[1, 482] = 57.26, p < .01, \eta^2 = .11$ ). Given that there was no main effect for format ( $F[2, 482] = 1.24, p = .29$ ), nor an interaction effect ( $F[2, 482] = 0.59, p = .55$ ), the three format conditions were collapsed for hypothesis testing. To further examine the effect of language complexity, an independent samples *t*-test revealed that those exposed to the easy frame reported significantly ( $t[486] = 7.57, p < .01, d = .69$ ) more fluent processing ( $M = 4.40, SD = 1.03$ ) than those exposed to the difficult frame ( $M = 3.68, SD = 1.06$ ). This is consistent with expectations and can be interpreted as a medium to large effect (Cohen, 1992).

H1 predicted that processing fluency would mediate the relationship between frame condition and perceived political knowledge. For on-topic knowledge, significant indirect effects were obtained as hypothesized ( $B = 0.44, SE = .07, 95\% \text{ CI } [0.31, 0.58]$ ). In sum, this model explained 28% of the variance, indicative of a large effect (Cohen, 1992). This hypothesis was also tested for off-topic knowledge. Consistent with the first test, significant indirect effects were obtained as hypothesized ( $B = 0.49, SE = .08, 95\% \text{ CI } [0.35, 0.65]$ ). This model explained 28% of the variance. Taken together, these tests (Figure 3) provide strong evidence in support of H1.

H2 predicted that processing fluency would mediate the relationship between frame condition and attitude ambivalence. Consistent with expectations, significant indirect effects were obtained as hypothesized ( $B = 0.06$ ,  $SE = .02$ , 95% CI [0.03, 0.10]), such that a more fluent processing experience was associated with more attitude extremity (less ambivalence). In total, this model (Figure 4) explained 7% of the variance, which can be characterized as a small- to medium-sized effect (Cohen, 1992) in support of H2.

H3 predicted that processing fluency would moderate the relationship between political ideology and political attitudes. Overall, the regression model predicting political attitudes from political ideology and fluency was significant ( $F[3, 449] = 53.25$ ,  $p < .01$ ,  $R^2 = .26$ ). Although processing fluency was a significant predictor of attitudes, counter to expectations, the interaction effect was not statistically significant (see Table 1).

H4 examined the impact of two moderators (processing fluency and partisan cues) on the strength of the relationship between ideology and attitudes. Overall, this regression model was significant ( $F[5, 447] = 33.99$ ,  $p < .01$ ,  $R^2 = .28$ ; see Table 2). In support of H4, ideology was a stronger predictor of political attitudes for participants in the easy frame, cues present condition, ( $B = 0.19$ ,  $SE = .02$ , 95% CI [0.14, 0.23]), compared to those in the difficult frame, cues absent condition ( $B = 0.08$ ,  $SE = .02$ , 95% CI [0.04, 0.13]).

## Discussion

There were two objectives driving this research. The first was to theoretically advance framing theory in ways that address recent criticisms of this research (e.g., Cacciatore et al., 2016) and proffer new ways to think about frames and framing effects. The second was to integrate framing theory with FIT in an effort to expand the range of outcomes affected by message presentation. Overall, the results were encouraging. Perhaps most importantly, the metacognitive frame operated as intended. Participants exposed to the easy frame reported a significantly easier experience than those exposed to the difficult frame. As expected, when variance in processing fluency was induced, outcomes predicted by both framing theory and FIT were apparent. These findings proffer exciting evidence in support of the continued use of the metacognitive frame and the continued integration between these theoretical approaches.

This investigation hinged on the successful design of a metacognitive equivalency frame. Rather than utilize just one strategy to create this frame, three approaches were taken. The first manipulated language complexity, the second was the presence of an example, and the third was word count. In total, these frame attributes explained 11% of the variance in processing fluency. What was interesting, however, was that the main effect of language complexity was exclusively accountable for this result ( $\eta^2 = .11$ ). Though this may have been a function of these questions in particular, it was surprising that the presence of an example did

not affect processing fluency, given the frequent use of anecdote in politics. An interesting avenue for future research would be to explore this relationship by ramping up the use of an example with guidance from the area of narrative communication (e.g., Slater & Rouner, 2002).

Moving on to a discussion of the hypothesis tests, it was exciting to see that the first two hypotheses were strongly supported by the data. H1 predicted that processing fluency would mediate the relationship between frame condition and perceptions of knowledge. This result was supported. Moreover, the data revealed that these perceptions were not isolated to the issues being addressed in the questions. This finding evinces the ability of metacognition to broadly influence feelings of knowing. In addition to theoretical gains, this relationship carries practical implications for communication practitioners. Framing theory proposes that a frame can render certain pieces of information accessible, but only if the consideration is already available in one's long-term memory (Chong & Druckman, 2007). However, in a political context, novel political events or issues arise all the time, and when this happens, people are expected to arrive at a judgment even if little available information exists. In these instances, using communication to promote confidence in the quality of one's existing beliefs becomes important. This is an exciting possibility for practitioners or educators interested in how communication can be used to enhance political learning and/or engagement.

H2 was also strongly supported by the data. When processing fluency was easy, participants reported more extreme positions, whereas when fluency was difficult, opinions were more ambivalent. This finding is demonstrative of the successful application of framing theory, FIT, and also the metacognitive model of ambivalence (Song & Ewoldsen, 2015). It is always exciting to find areas where theoretical predictions cohere. This result is an example of this instance and, when paired with framing theory, provides a robust explanation for how language complexity affects accessibility experiences, and how these processes affect ambivalence.

H3 and H4 were interested in how a metacognitive frame influences the substance of the political preferences reported. Although in the case of H3 it was expected that processing fluency would moderate the relationship between ideology and attitudes, this was not the case. One explanation for this null result is measurement error. The reliability of the political attitude scale was .53. Although this number is unacceptable for an established scale, here this value was less surprising. This value was unsurprising because the typical assumption of reliability—that people should respond similarly to questions measuring the same latent construct—cannot be assumed. Most people do not have perfectly liberal or conservative ideological preferences, and most issues contain non-partisan elements. Additionally, the topics presented were chosen because they are less familiar than the standard political fare (e.g., taxes, abortion, or civil rights). Given that the party platforms are not obvious for these issues, it is not surprising that reliability was low. Nevertheless, this error may have attenuated our ability to achieve statistical significance. Aside from this source of measurement error, there was also additional error introduced into the



design when the three format conditions were collapsed into language complexity. This decision, though statistically justifiable, also may have suppressed our estimates. Nevertheless, although findings were not statistically significant, a look at the conditional means (Table 1) reveals a pattern consistent with our theorizing. Specifically, as fluency improved, the relationship between ideology and attitudes strengthened. Given this pattern, we are hopeful that with more data, more potent manipulations, and further minimization of measurement error, this proposition could receive future support.

Another reason we are optimistic about the relationship between ideology, attitudes, and processing fluency is due to the findings obtained in support of H4. H4 used partisan cues as a proxy for applicability. To empirically illustrate our logic here in a post-hoc test, we examined whether partisan cue condition moderated the relationship between ideology and attitudes (Model 1; Hayes, 2013). This would be expected, because a partisan cue functions to make ideological opinions available, accessible, and applicable to the decision at hand. Consistent with this expectation, the overall model was significant ( $F[3, 449] = 47.54, p < .01, R^2 = .24$ ). A look at the conditional effects further reveals that the relationship between ideology and attitudes without the partisan cue was weaker ( $B = 0.11, SE = .02$ ) than when cues were present ( $B = 0.18, SE = .02$ ), as expected. H4 built upon this logic by adding processing fluency. When processing fluency was included, a few interesting trends emerged.

H4 compared the two most extreme conditions to one another: the easy, cues present and the difficult, cues absent condition. Though this relationship was supported, it may be more interesting to consider what conditions were not different from one another. As shown in Table 2, a partisan cue was not necessarily helpful in guiding ideological thinking when processing was difficult. Moreover, when processing was easy, a partisan cue was not necessarily needed to identify where one stands ideologically on an issue. These non-findings illustrate how the effects produced by processing fluency operate similarly to the effects produced from a partisan cue, such that processing fluency enhances perceptions of applicability. This suggests that if the induction were stronger, or if measurement error were further reduced, the results of H3 may have received empirical support.

Aside from theoretical pursuits, there are practical merits to this investigation as well. From an applied standpoint, our findings suggest that simpler language can be used as a device to improve people's perceptions of political knowledge. This is important because feeling as though one has the ability to understand political issues serves to obviate one known barrier to political participation: a lack of ability (Verba, Schlozman, & Brady, 1995). If a perceived lack of ability discourages people from participating, then confidence in political abilities should encourage participation (Shulman, 2015). This experiment revealed that language complexity can significantly affect this perception, and as such, an intervention strategy is implicated. In addition to perceptions of knowledge, reduced ambivalence and evidence of stronger ideological thinking was related to processing fluency. If one

believes that a democracy is strengthened when citizens are more aware of their values and preferences, then it becomes important to communicate about politics in ways that better ensure access to one's belief system. This study suggests that simplified language is one approach that leads to these desirable outcomes.

The ideas explored in this paper also seem resonant with the 2016–2017 political landscape. Although any associations between this study and American politics can only be made casually, what is clear is that President Trump speaks at a lower grade level than most politicians. Research by [Schumacher and Eskenazi \(2016\)](#) used readability metrics to assess campaign speeches of the five 2016 presidential candidates. They found that for grammatical complexity, Trump's speeches were at a 5<sup>th</sup> grade level, which was significantly lower than Hillary Clinton's (8<sup>th</sup> grade level). Notably, all other candidates spoke at an even higher level (10<sup>th</sup> through 11<sup>th</sup> grade). Although any empirical link between language complexity and candidate preference is conjecture, it is tempting to consider whether candidates who utilize simple language are reaping the benefits of processing fluency. Given that research on accessibility experiences has shown that an easier experience is associated with positive affect, efficacy, interest, perceptions of knowledge, confidence, and certainty (e.g., [Petty et al., 2007](#); [Shulman & Sweitzer, 2017](#)), perhaps the energy found in Trump's constituency is the latest example of the power of metacognition.

Despite the theoretical strides and provocative nature of this research, methodologically there were limitations that qualify the results obtained. One limitation was the inherent difficulty of the public opinion questions. These questions were not created with the intent of being easy. Instead, all questions were designed to solicit attitudes on complicated and novel political issues. The hope here was to raise the bar for political discourse and provide a strong test of metacognition. In the future, however, it is important to create wide-ranging manipulations that push the limits of language complexity in both directions so that boundary conditions for metacognition, and the optimal levels for language complexity, can be identified. Another limitation was the use of a student sample. When a sample is drawn from a singular population, questions remain as to whether findings are generalizable. Although the specificity of the sample was important for internal validity, the external validity suffered. As such, future work needs to examine whether these findings replicate more broadly. Relatedly, the findings presented here are contingent on the questions we constructed, the issues we chose, and the design we implemented. Once again, determining whether these findings replicate with different questions, different political topics, and different research designs is an area that will be pursued moving forward. Finally, the claims made in this paper, particularly for the tests of mediation, imply causality. Although this implication is warranted based on the experimental design, these analyses do not rule out all alternative explanations. Though care was taken to eliminate as many of these factors as possible, scientists should always have a healthy skepticism about the robustness of findings and causal claims.

In sum, the results from this experiment provide evidence that communication can have profound effects on important political cognitions, information processing, and political preferences. This research carries important implications not only for politicians, educators, and campaign designers, but also for journalists who strive to create news stories that are as comprehensible as possible to their audience (e.g., Schramm, 1947). Moreover, although this research is situated within the political context, the theoretical advancements tested here can be broadly applied to strategic communication across topics including health, risk, public relations, and marketing (Schwarz et al., 2007). In all of these domains, message designers are tasked with creating messages that will resonate with or be better understood by audiences. By more holistically understanding the cognitions people draw upon when interpreting messages and arriving at preferences, more effective messages can be produced (Schwarz et al., 2007). As such, it is hoped that future research in this vein continues to explore how communication can be used to enhance audiences' ability to effectively process messages across a variety of domains.

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## Supporting information

Supporting information is available at *Human Communication Research* online.

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