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MOTIVATED REASONING AND COGNITIVE EFFORT IN POLITICAL NEWS INFORMATION PROCESSING

A DISSERTATION APPROVED FOR THE

DEPARTMENT OF COMMUNICATION

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Abstract

Political misinformation is endemic and threatens rational democratic decision making. The theories accounting for this widespread failure of rational information processing remain contested. Drawing from established information processing theories such as the elaboration likelihood model, irrational information processing is explained by this classical account as a failure to apply sufficient cognitive effort to the discernment of true and false political information. On the other hand, a central prediction of motivated reasoning theories in the context of political information processing is that cognitive effort is motivated by goals other than accuracy such as identify maintenance. According to the motivated reasoning account, information incongruent with identity maintenance goals should elicit motivational threat, which is the motivation to defend one's prior beliefs. Therefore, greater cognitive effort should not predict greater discernment of true political information from false. In the classical reasoning account, reasoning motivations other than accuracy are considered less influential, and cognitive effort is thought to be more directly predictive of veracity discernment. To test these contrasting accounts, I conducted two studies (N_1 = 88, N_2 = 591) using mixed effects modeling with a stimulus sample size of 72 news stories in the main study. The congruence of these news stories, focusing on three societal institutions (federal agencies, public education, and the mainstream media), with political identification was an experimentally manipulated factor, and cognitive effort was measured with both an implicit measure, response latency, as well as an explicit measure, self-report. Across two studies, a few consistent patterns emerged. Diverging from the predictions of the classical account, cognitive effort, in terms of response latency and self-report, was not associated with the discernment of news veracity. The experimentally manipulated variable was associated with cognitive effort. However, contradicting the predictions of the

theory of motivated skepticism, incongruent news information was associated with *less* cognitive effort. Examining motivational processes more directly, I found that motivational threat was associated with greater anger, greater self-reported cognitive effort, as well as an amplification of positive attitudes toward institutions. Together, these findings suggest that a reconsideration of both the classical and motivational accounts in the context of news veracity discernment.

Keywords: cognitive effort, dual-process theory, misinformation, motivated reasoning, reasoning, trust in institutions

Chapter 1: Introduction

False belief on political topics is endemic. In a 2016 poll, 25% believed that the U.S. government probably or definitely helped plan the terrorist attacks of September 11, 2001, 36% of Americans believed that Hillary Clinton's campaign staffers were probably or definitely communicating in coded language about human trafficking and satanic abuse, and 36% of Americans believed that former president Barack Obama was probably or definitely born in Kenya (YouGov, 2016). This issue still persists. In a more recent YouGov poll, 42% of Americans believed that a purported news article declaring that some vaccines are "loaded with dangerous chemicals and toxins" was true (Sanders, 2023). False political information threatens societal institutions, as being properly informed is a critical element in democratic decision making (Berelson et al., 1954; Kuklinski et al., 2000). It increases political cynicism (Lee & Jones-Jang, 2024), polarizes belief about the fairness of elections (Mauk & Grömping, 2024), and contributes to misguided risk perceptions on policy-relevant issues such as climate change (Nurse & Grant, 2020), nuclear terror attacks (Li et al., 2012), and renewable energy (Simon, 2022).

Research on political information processing has revealed some of the conditions under which false perceptions are endorsed. There is an abundance of evidence to suggest that the endorsement of political misperceptions is greater when these misperceptions are congruent with a person's political orientation (Enders & Uscinski, 2021; Kahan, Hoffman, et al., 2012; Pennycook & Rand, 2021a; Rutjens et al., 2018; Swire et al., 2017; Schwalbe et al., 2024). Scientific information likewise tends to be interpreted in ways that support partisan beliefs (Washburn & Skitka, 2018a). On many issues, such as vaccination and GMO acceptance, cognitive sophistication—indicated by level of formal education, domain-specific knowledge,

and predispositions such as open-minded thinking (Tappin et al., 2020b) —is associated with greater general agreement with scientific consensus among Democrats and Republicans. However, on other polarizing issues, such as climate change, among partisans, greater cognitive sophistication—here, cognitive reflection, open-minded thinking, and non-receptivity to bullshit—is associated with greater disagreement with scientific consensus (Pennycook et al., 2023). In a study, in which the purported results of scientific research were either hidden or revealed to participants, when results were inconsistent with readers' political affiliations, the methods in the purported research were evaluated as weaker than when the purported results were consistent with readers' political affiliations (Celinker & Ditto, 2024). Political affiliation, then, appears as a clear determinant of belief in politically relevant information.

Despite repeated documentation of the political congruence of messages and misperceptions, accounts of the cognitive mechanisms of faulty reasoning are widely divergent. Some advocate for what can be called the classical account of reasoning (Pennycook & Rand, 2019), according to which differences in beliefs about political information are accounted for by insufficiently motivated accuracy-oriented processes. This account of veracity discernment, in which more effortful thinking increases accuracy, is endorsed in some dual-process theorizing (Kahneman, 2011; Petty & Cacioppo, 1986; Pennycook, 2023). According to this account, slower and more effortful thinking promotes more accurate, less biased, less heuristically-driven beliefs. Likewise, rapid and low-effort thinking leads to less accurate, more biased beliefs. This account appears to be supported by evidence that cognitive effort and reflection increase the accurate discernment of true and false news (Bago et al., 2020, 2022; Pennycook & Rand, 2019). However, other research, in which increased cognitive effort appears not to lead to greater accuracy (De Neys, 2020; Lin et al., 2023), indicates ambiguity in interpreting these findings.

Methodologically, researchers in this area manipulate effort experimentally using two techniques: a cognitive load task, in which participants are charged to remember a visual pattern, and a dual-response paradigm, in which participants are instructed to provide an intuitive response with time constraints or a thoughtful response without time constraints (e.g., Bago et al., 2020, 2022). In this way, researchers test the role of cognitive effort in veracity discernment. Experimentally manipulating effort has the advantage of control through random assignment (Campbell & Stanley, 1966), such that high-effort and low-effort conditions are clearly differentiated. However, the disadvantage to this approach is that it does not account for how levels of cognitive effort may vary in authentic contexts when there are motivations for effort other than accuracy. Taken with the finding that accuracy prompts do not increase cognitive effort (Lin et al., 2023), this may suggest that non-accuracy motivated reasoning is not significantly less effortful than accuracy motivated reasoning.

In contrast to this classical account of veracity discernment, other scholars favor a motivated reasoning account, according to which, rather than insufficient effort, motives aside from accuracy drive differences in attitudes about politically relevant messages (Kahan, 2010). In this view, cognitive effort—operationalized as response latency (reading time)—increases in response to information that is incongruent with one's political views. This effort is employed in the justification and rationalization of prior beliefs and biases, increasing polarization. The process of applying greater cognitive effort to politically incongruent arguments in order to find flaws and reject them is known as motivated skepticism (Taber & Lodge, 2006). This account also has some support, as motivated reasoning research indicates that politically incongruent information increases cognitive effort as well as reinforcing bias (K. Edwards & Smith, 1996; Lord et al., 1979; Taber & Lodge, 2006). In contrast to the research on veracity discernment, in

which cognitive effort is experimentally manipulated, in motivated reasoning research, cognitive effort is measured in response to different messages (e.g., K. Edwards & Smith, 1996; Taber & Lodge, 2006). In this way, the effects of motivations on cognitive processing can be tested. Using this approach, in contrast to the classical account, evidence from the motivational account on cognitive processing suggests that non-accuracy motivations should bias veracity discernment.

The lack of consensus on the mechanisms of reasoning in the context of politicized information indicates a fundamental lack of theoretical clarity. Taking these contrasting findings together with the contrasting methods used in these different lines of research, it seems plausible that different findings may be attributable to the different methods. To attempt to resolve these discrepancies, in this dissertation, I address the unresolved problems with veracity discernment methodologically, using an approach more common in motivational research. Whereas in veracity discernment research, cognitive effort is typically manipulated with restricted response time and cognitive load (e.g., Bago et al., 2020), I test the role of cognitive effort in veracity discernment with two less artificial measures of cognitive effort: response latency and self-reported cognitive effort. As a measure of effortful thinking over time, response latency is consistent with a default-interventionist framework (Evans & Stanovich, 2013; Kahneman, 2011; Petty & Cacioppo, 1986), according to which a slow and deliberative response can intervene upon a rapid, intuitive default response. Measuring response latency is advantageous compared to experimentally manipulated cognitive effort techniques in that, following a methodological approach more common in motivational research, it is able to capture differences in cognitive effort in response to messages with differing effects on motivations to reason, such as accuracy or identity protection. Self-reported cognitive effort, an explicit measure, is a well-validated approach in communication research (Jennings et al., 2019; Shen & Seung, 2018), yet it has seen

relatively less use in veracity discernment work. Allowing cognitive effort to covary with different message types is also advantageous in the potential to determine if an experimentally manipulated variable—in this case, political congruence—affects cognitive effort in this context. That is, unlike methods for experimentally controlling cognitive effort, measuring effort as a dependent variable allows the researcher to take into account the motivational effects of different messages. For example, politically incongruent messages may activate identity-protective cognition, increasing cognitive effort. By applying a motivated reasoning methodological paradigm from to veracity discernment research, in which cognitive effort is measured in response to polarizing messages, this approach accounts for the potential effect of message effects on motivated cognitive effort, effects which may in turn in veracity discernment.

This dissertation makes several contributions to the debate on the role of motivation in the discernment of true and false information. First, it integrates a methodological approach from motivated reasoning research on attitudinal differences to the context of beliefs about factual information, measuring effortful thinking as a dependent variable (Taber et al., 2009; Taber & Lodge, 2006). In contrast to most veracity discernment research, in which cognitive effort is experimentally manipulated (Bago et al., 2020, 2022), my approach considers the effect that motivated reasoning may have on cognitive effort, influencing the discernment of politicized true and false information.

Second, this dissertation also integrates motivational threat—a construct recently developed in social influence communication science that captures the motivation to defend one's beliefs (Banas & Richards, 2017)—to further demonstrate how motivational processes play a role in political reasoning. By measuring motivational threat directly, the motivational

processes that may be activated with politically congruent and incongruent messages may be revealed.

Third, applying motivated reasoning techniques to the study of veracity discernment, this dissertation considers how politicized news information potentially amplifies and attenuates motivated cognitive effort. Motivated reasoning research typically considers how messages containing arguments, such as about gun control or affirmative action, affect cognitive effort. After this, participants are asked to consider the level of their endorsement of a position (Taber et al., 2009). Borrowing this technique, my approach here is to consider how cognitive effort may vary in the process of the discernment of politically charged information. Thus, this dissertation approaches the problem of veracity discernment and motivated reasoning by considering how cognitive effort may be influenced by the veracity discernment process. In doing so, this dissertation contributes to an integration of research on veracity discernment and motivated reasoning research.

Chapter 2: Literature Review

The Classical Reasoning Account: Cognitive Effort Leads to Accuracy

According to what can be called the classical reasoning account (Pennycook, 2023; Pennycook & Rand, 2019, 2021b), belief in false news information results from a failure to apply cognitive effort and reasoning reflectively to override prepotent intuitive responses. As the name implies, this account is also consistent with many standard accounts of reasoning, such as effort-accuracy tradeoff account, in which greater effort is thought to be associated with more accuracy (H. E. Garrett, 1922; Payne et al., 1993). Likewise, a central premise of the elaboration likelihood model (ELM) is a classic formulation of sequential processing in the default-interventionist position: with high effort (the central route), the substantive content of a message

is carefully considered when forming attitudes, whereas with low effort (the peripheral route), cues in the message are used to form rapid, automatic judgements (Briñol & Petty, 2015; Petty & Cacioppo, 1986). As a corollary to the ELM, according the flexible correction model, corrections in judgement are thought to be generally more effortful (Wegener & Petty, 1997). It should be noted, however, that not all classical reasoning theories suppose that cognitive effort predicts accuracy. The heuristic-systematic model of persuasion (Chaiken, 1980; Eagly & Chaiken, 1984) appears to be agnostic about the role of effort in accuracy, as motives for systematic processing comprise both accuracy as well as ego-defensive and impression motivations (Chaiken & Ledgerwood, 2012; Maheswaran & Chaiken, 1991).

Rather than taking the parallel processing (Pacini & Epstein, 1999; Sloman, 1996) or default interventionist positions (Evans, 2008), according to some recent advancements in dual-process theorizing, cognitive effort occurs when conflict is detected among multiple intuitive responses (De Neys, 2023; Pennycook, 2023). However, the issue of the normative, or accuracy-oriented, influence of cognitive effort remains a divided one among contemporary scholars. For Pennycook (2023), the direction of cognitive effort toward the rationalization of an initially prepotent intuition (i.e., a response that tends to predominate, such as due to motivated reasoning) is less prevalent than effort directed to overcome a non-normative (i.e., not accuracy-oriented) intuition, as directionally motivated cognitive effort is considered an inefficient use of resources. Rather, it is thought that cognitive effort "generally facilitates accuracy" (Pennycook, 2023, p. 149). Others disagree. De Neys (2020, 2023) rejects the premise that cognitive effort generally promotes accuracy, noting that in some cases, lower cognitive capacity can yield more correct responding. For example, for some math questions, a simple heuristic can yield a correct

response, and lower cognitive sophistication predicts greater accuracy (Beilock & DeCaro, 2007). However, this specific case may be an exception rather than a general rule.

Despite these theoretical disagreements, there is an abundance of evidence suggesting a link between cognitive effort and accurate beliefs. Support for this account has been found with experimentally manipulated cognitive effort, as inducing an analytic mode of thinking has been found to mitigate belief in misinformation (Ludwig & Sommer, 2024; Swami et al., 2014). Also, a study with prompts to either provide an initial reactions or to stop and reflect found significantly more accurate discernment in the reflection condition (Gawronski et al., 2023, Experiment 2).

In addition, drift-diffusion modeling (DDM; Busemeyer & Townsend, 1993; Ratcliff, 1978; Ratcliff et al., 2016) has been productive in helping to untangle the role of cognitive effort in decision making. Electroencephalogram (EEG) evidence validates sequential sampling models such as DDM. In a perceptual discrimination task, EEG data fit a drift-diffusion model of evidence accumulation over time (van Vugt et al., 2012). Specifically to the point of the present research, results with DDMs are consistent with the speed-accuracy tradeoff account, according to which longer response time is associated with greater accuracy, as noise in information processing averages out over time, such that interrupting the process demonstrably results in lower accuracy rates (Caplin & Martin, 2016; Ratcliff, 2002; Ratcliff et al., 2015).

The effect of response latencies on accuracy has also been demonstrated in two-response paradigm research. In this method, participants complete a task—such as evaluating the veracity of conspiracy theories (Bago et al., 2022), or true and false news headlines (Bago et al., 2020)—randomly assigned to a condition of either reduced response time (i.e., cognitive load) or a condition without such constraints. The results of these studies indicate that participants in the

constrained condition perform worse on tasks than in the unconstrained conditions, regardless of the political concordance of the news stories. This research supports the classical reasoning view that at least in some contexts, cognitive effort leads to greater accuracy. From this perspective, a hypothesis follows.

H1: The greater the cognitive effort, the greater the veracity discernment of politically relevant information.

Despite this support, however, different approaches potentially undermine the classical reasoning account. Some research indicates that responses to reasoning tasks typically do not change over time (Bago & De Neys, 2017). Specifically, although cognitive load research suggests that greater cognitive effort predicts greater accuracy, in contrast to the default-interventionist position (Evans, 2008), time-sequenced reflection overcoming initial intuitions appears to be rare. More specifically, although other research demonstrated that constraining cognitive effort with response deadlines and cognitive load reduced accuracy, when given the opportunity to provide an initial response, reflect, and provide a more considered response, overall accuracy did not improve from Time 1 to Time 2. This evidence challenges the default-interventionist position that accurate responding is slow and effortful.

Similarly, a drift-diffusion model analysis indicated that accuracy prompts did not increase the amount of thinking in terms of response latency but rather increased the weight on accuracy (Lin et al., 2023). In Lin et al.'s study, accuracy prompts did not increase cognitive effort in terms of increasing the threshold for evidence accumulation, which influences response latency. Rather, accuracy prompts encouraged a greater weight on accuracy in the decision-making process. Specifically, with accuracy prompts, headline accuracy had a greater effect on

the decision to share compared to without accuracy prompting. These results suggest that focus on accuracy is unrelated to the amount of deliberation.

For other research on cognitive effort and accuracy, the implications of the results are a matter of interpretation. Bago et al. (2023) found that when presented with arguments against anthropogenic climate change, cognitive effort was associated a stronger endorsement of prior belief regarding a general statement of human causes of climate change for both climate change believers and deniers. Bago and colleagues argue that this is a demonstration of unbiased Bayesian belief updating, in that when considering sources that disagree with one's prior beliefs, stronger weight should be placed on one's prior beliefs. However, although the influence of prior beliefs in political reasoning is rational (Druckman & McGrath, 2019), an intensification of prior belief from contradictory evidence does not suggest accuracy-oriented reasoning. Altogether, the evidence is still unclear.

Motivated Reasoning

In contrast to the classical reasoning account, according to which insufficient effort and cognitive ability are responsible for biased attitudes and inaccurate beliefs, motivated reasoning theories (e.g., Hornsey, 2020; Kahan et al., 2011; Van Bavel et al., 2024; Van Bavel & Pereira, 2018) suggest that rather than accuracy, motivations such as political identity maintenance predominate in perceptions on politicized topics (Meirick, 2013, 2022a; Washburn & Skitka, 2018b) and endorsement of political policies (Bolsen et al., 2014; Lind et al., 2022). According to the motivated reasoning account (Kunda, 1990), thinking is not necessarily primarily motivated by accuracy goals. Rather, the thinking process is directed to conclusions that serve other goals, such as one's political and ideological beliefs (Haidt, 2001; Kruglanski et al., 2010). Early research in this area found that when presented with mixed information that is both

supportive of and critical of the deterrence of the death penalty, the net effect of this apparently biased assimilation of information among strong supporters and opposers was the amplification of one's prior attitudes (Lord et al., 1979). The mechanisms for this may be that incongruent information provokes an aversive dissonant state (Batson, 1975; Festinger, 1957; Gawronski & Brannon, 2019; Heider, 1958) threatening to the self-concept (Cooper et al., 1984; Thibodeau & Aronson, 1992).

Although this sort of directionally motivated reasoning can be motivated by prior belief (Taber & Lodge, 2006) or moral intuitions (Clifford et al., 2015; Feinberg & Willer, 2013; Skitka et al., 2015), one of the most well-supported accounts is identity-motivated reasoning. According to identity-based theories of political reasoning (Kahan, 2013; Kahan & Carpenter, 2017; Pereira et al., 2023; Van Bavel et al., 2024; Van Bavel & Pereira, 2018), cognitive sophistication and cognitive effort direct the reasoning process toward conclusions that preserve in-group commitments and affiliations.

Evidence for identity-based political reasoning is wide-ranging. Generally speaking, it should not be surprising that similarity in terms of political party predicts preference toward a hypothetical political candidate (Jennings et al., 2024). However, this may not necessarily indicate motivated reasoning. To address this concern, much of this research has examined results of the manipulation of the purported source of information. Belief in brief headline-style claims is higher when the purported source is politically aligned with the reader (Traberg & van der Linden, 2022). Similarly, to the extent that the avowed risks of politically charged issues, such as climate change and gun possession, by a purported subject-relevant scholar on claims aligns with political identity, the stronger the identity, the stronger the belief that the scholar is, or is not, an expert (Kahan et al., 2011). For example, if a purported scholar minimizes the threat of

climate change, to the extent that a reader identifies as a conservative, the scholar will be seen as a credible expert.

Although its effects are subtle and difficult to capture, research on priming is able to make stronger causal claims for identity-motivated reasoning, however. With priming, rather than inferring motivations indirectly, when identity is made more or less salient in different experimental conditions, its effects on reasoning can be more confidently inferred. Wojcieszak and Garrett (2018) found that when national identity was primed among opponents of immigration, reading time of articles on immigration increased, which amplified attitudes against immigration. Theoretically, by making national identity salient, this induction increased the salience of threats against that identity among those with negative attitudes toward outgroups. This evidence provides stronger support for the idea that although motivated reasoning cannot explain all partisan differences in attitudes, it does have some effect.

Motivated Skepticism

One process through which motivated reasoning is thought to occur is through the use of cognitive effort toward a desired end other than accuracy, a process called motivated System 2 reasoning (Pennycook & Rand, 2019) or simply rationalization (Evans & Wason, 1976; Pennycook, 2023). As a more specific case of the motivated reasoning process, the application of cognitive effort to refute information that is incongruent with one's attitudes or identity has been called disconfirmation bias (K. Edwards & Smith, 1996), or, perhaps more intuitively, motivated skepticism (Taber & Lodge, 2006). By motivated skepticism, then, I refer to the process through which cognitive effort is applied to the refutation of information incongruent with moral intuitions, prior beliefs or, in the case of this research, partisan identity.

Spontaneous cognitive effort appears to be most prevalent with attitudinally incongruent information, and this effortful thinking tends to promote polarized attitudes. Attitudinally incongruent messages provoke cognitive effort in terms of both processing time and thought-listing (Burdein et al., 2006; Taber & Lodge, 2006) as well as reading time and argument recall (K. Edwards & Smith, 1996; Maheswaran & Chaiken, 1991). When presented with partisan-cued evidence regarding an educational policy proposal, cognitive effort about agreement with the policy in terms of response latency was greater when the policy was purportedly endorsed by one's opposed political party In addition, during a period of low unemployment under a Democratic U.S. president, Republicans took longer to provide their estimate of unemployment rates (Schaffner & Roche, 2016), suggesting that this inconsistency between the facts and desired conclusions provoked cognitive effort.

Performance on cognitively demanding tasks corroborates the association between cognitive effort and attitudinally incongruent messages. In a task in which, through numeric reasoning, it could be logically inferred that proportions of refugee intake and crime were either positively or negatively associated, stronger identification with nationality was associated with better performance on the task when the purported evidence supported the association of immigration and crime and worse performance when purported evidence refuted this association (Lind et al., 2022). Likewise, when presented with a similar numeric task on gun possession and crime, not only did participants tend to evaluate the information in a way biased toward their political identities, but this tendency was exacerbated by numeracy ability, such that bias increased at higher levels of numeracy (Kahan et al., 2017). Together, this suggests that when conclusions may threaten one's identity, cognitive sophistication is selectively applied to arrive at desired beliefs.

However, some evidence suggests that rather than politically incongruent information provoking more cognitive effort, it may be congruent information that provokes more cognitive effort, as an eye-tracking study found that when presented with graphical evidence, liberals paid more attention to evidence for climate change than conservatives (Luo & Zhao, 2019). Thus, in some contexts, more attention is given to information that is congruent with one's political identity than incongruent. However, political congruence should be moderated by issue involvement, an established predictor of cognitive effort (B. T. Johnson & Eagly, 1989; Petty & Cacioppo, 1979). In motivated reasoning research, the relationship between message congruence and cognitive effort appears to be moderated by issue involvement, as in this line of research, motivated skepticism appears to be more pronounced for those who are strongly invested in political affairs. Taber and Lodge (2006) found that although those with weaker prior attitudes on controversial topics such as gun control and affirmative action spent more time reading attitudinally congruent messages, those with strong prior attitudes spent more time reading incongruent messages. Likewise, Clark et al. (2008) found that greater ambivalence on the topics of consumption tax and nuclear energy was associated with greater cognitive effort in terms of thought listing when the message was congruent, and that less ambivalence (strong prior attitudes) was associated with more cognitive effort with incongruent messages. Thus, greater issue involvement, such as when issue involvement is high, should be associated with greater cognitive effort. From this rationale, a hypothesis follows.

H2: For politically incongruent news stories, the greater the issue involvement, the greater the cognitive effort.

Cognitive Effort: Definition and Measurement

In recent years, the motivated reasoning claim that cognitive effort predicts greater bias (K. Edwards & Smith, 1996; Kahan, 2013; Taber & Lodge, 2006) has been contested. In a test of the motivated reasoning and classical reasoning accounts, Pennycook and Rand (2019) considered the association between cognitive reflection and the discernment of false information. Using politically polarizing fake news headlines, they found that regardless of congruence of between political identification and the favorability of a news headline to political party, greater cognitive reflection, as measured by performance on the Cognitive Reflection Test (CRT; Frederick, 2005), was associated with greater accuracy.

From this, the authors concluded that "more analytic individuals" (Pennycook & Rand, 2019, p. 47)—or, to adapt wording from the paper's title, those who were less lazy—were better able to discern true news information from false. Putting it differently, they remark that "individuals who are more willing to think analytically … are less likely to erroneously think that fake news is accurate" (Pennycook & Rand, 2019, pp. 46–47). Despite the advances made from this paper in provoking a greater depth in how cognitive effort relates to bias, the construct of cognitive reflection used in this analysis unfortunately conflates the ability to think effortfully with the willingness to do so.

The distinction between the ability to think logically and rationally, or cognitive sophistication, and the willingness to think effortfully, or cognitive effort, matters. If, based on Pennycook and Rand (2019), cognitive effort, rather than cognitive sophistication, is the main factor in the discernment of true and false news information, the problem of the spread of false news may be more tractable. By designing interventions that increase cognitive effort and implementing them on social media platforms and elsewhere, social science researchers and practitioners may be able to greatly mitigate the belief in and spread of false news information,

improving the decision-making capabilities of individuals and societies. However, if cognitive sophistication, rather than cognitive effort, greatly or wholly predicts belief in false news, the situation is more challenging. In this case, the implied solution would be critical thinking skills development, a resource-demanding undertaking that would need to be addressed through public education institutions. While both of these solutions are probably needed to address the issue of the spread of false information, if a lack of cognitive effort is to blame, a more straightforward solution could be within reach.

Cognitive effort, also known as deliberation (Bago et al., 2020; Hutmacher et al., 2025) or elaboration (Petty & Briñol, 2012; Petty & Cacioppo, 1986), has been a difficult construct to conceptualize and measure. In their discussion of this issue, Thomson and Oppenheimer (2022) suggest an integrated framework of effort, comprising resource allocation, task difficulty, executive control, and physiological systems such as brain anatomy and neurotransmitter activity. Although Thomson and Oppenheimer's framework is descriptive of the multifaceted nature of cognitive effort, a simple description is offered by Shenhav et al. (2017): Cognitive effort is that which mediates task difficulty—including both task characteristics and a subject's cognitive capacity—and task performance. This definition is agnostic regarding the cognitive mechanisms that make effort an apparently limited resource, such as working memory capacity (Oberauer et al., 2016).

Although the nature of cognitive effort is still not fully understood, a more specific definition of cognitive effort, describing its mechanisms, is that it tracks the regulation of deliberate mental control. Aligning with classical reasoning models, cognitive effort is thought to exist on a continuum from processing that is more controlled to more automatic (Botvinick &

Cohen, 2014; Shiffrin & Schneider, 1977). Taking these definitions together, I define *cognitive effort* as deliberate, controlled processing mediating task difficulty and task performance.

Having provided a working definition of cognitive effort, I will now consider ways that it has been measured, starting with the Cognitive Reflection Test. I will then discuss response latency, an implicit measure of effort, followed by self-report, an explicit measure.

The Cognitive Reflection Test (CRT)

One commonly used measure of cognitive effort is the Cognitive Reflection Test (CRT). As a standard measure of cognitive reflection, Fredrick's (2005) test comprises three items:

> (1) A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost? _____ cents
>
> (2) If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets? _____ minutes
>
> (3) In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake? _____ days
>
> (For correct responses, see Appendix A.)

In research on false information discernment (Pennycook & Rand, 2020) and motivated belief about climate change (Kahan, 2013), the CRT has been conceptualized as an index of the disposition to engage in cognitive effort. Similarly, it is also sometimes described as measuring the propensity to think analytically (Ross et al., 2021; Tappin et al., 2020a; Yan & Pan, 2023). In much research using the CRT, then, the understanding of what it is supposed to measure varies. At times, it is thought to measure cognitive ability, as originally suggested by Frederick (2005).

At other times, it is thought to measure effort. It is also sometimes thought to measure some other construct blending the two.

Given this range of conceptual functions to which the CRT has been enlisted to serve, it follows that empirically as well, it has been found that the CRT does not strictly measure cognitive effort. At a basic level, the CRT tests for insight, or the cognitive restructuring that allows a problem to be perceived differently than upon initial interpretation (Patel et al., 2018; Sinayev & Peters, 2015). At an individual-differences level, the CRT appears to measure both the inhibition of an intuitive (System 1) response as well as numeric ability (Campitelli & Gerrans, 2014; Del Missier et al., 2012). Although response inhibition should be linked to effort, numeracy is a competence at least not entirely predicated on effort, as numeric ability, along with other individual differences, is determined by both heritable and environmental factors (Hart et al., 2009). Previously, I defined effort as cognitive control, which mediates between task difficulty, including cognitive capacity, and task performance (Botvinick & Cohen, 2014; Shenhav et al., 2017). As the CRT appears to measure ability in addition to (perhaps) effort, it cannot be considered purely a measure of cognitive effort. Resolving this ambiguity is beyond the scope of the present research. Rather, I will simply refer to that which the CRT measures, which appears to include both cognitive ability and perhaps also cognitive effort, as cognitive reflection. As a simple, three-item measure, the CRT is a low-cost index of the construct of cognitive reflection. By including it in this research, I am able to determine if previous findings (Pennycook & Rand, 2019) replicate. If the relationship between CRT and veracity discernment replicates, this research can provide further validity regarding my approach to previous research on news veracity discernment.

Response Latency

Response latency operates on a simple premise: Effort is a function of exertion over time. Intuitively, this idea makes sense. All else being equal, a math problem that takes five minutes to solve requires more effort than a math problem with a solution requiring only five seconds. Dual-process theories describe two processes involved in reasoning such as this: an automatic, intuitive, effortless process (System 1), which is often considered the faster process, and a deliberative, effortful process (System 2), which is often considered the slower process (Cacioppo et al., 1986; Chaiken, 1980; Evans & Stanovich, 2013; Kahneman, 2011). This time-course assumption accords with the default-interventionist account of reasoning (Evans, 2017, 2019), according to which a rapid, intuitive process provides a default response, or set of responses (De Neys, 2023; Pennycook, 2023), that can be intervened upon by a slow, effortful process.

Given the definition of cognitive effort as that which, in addition to cognitive ability, improves task performance, we would expect to see a clear link between veracity discernment and cognitive effort in terms of response latency. However, evidence on the association between response latency and task performance is mixed. In support of this association, performance on a visual attention task has been found to decrease over time (Faber et al., 2012), suggesting that sustained attention over time is effortful. In addition, choosing between similar options takes more time (Oud et al., 2016). Since the more difficult task took more time, this suggests that response latency is a measure of cognitive effort. However, other findings support a classic study (Arai, 1912) suggesting no such association between time and task performance. Such research suggests that response time is not significantly affected by more challenging or less challenging decision-making tasks (Janssen et al., 2021). Likewise, performance on standardized testing does not decrease over time (Ackerman & Kanfer, 2009), meaning that, if we assume cognitive effort

is a limited resource, time does not deplete it. Stepping back to consider a more fundamental measurement issue, Thomson and Oppenheimer (2022) discuss the face validity of response latency, arguing that greater duration is not always more effortful, as tasks such as listening to an entertaining podcast are not necessarily more effortful with greater duration. Likewise, others have found that response time and self-reported cognitive effort correlate only weakly (DeLeeuw & Mayer, 2008), implying that these two measures track different constructs. Together, this implies that, although in some constrained contexts, such as a visual attention task, time tracks effort, in more open-ended tasks, such as taking an exam, it may not.

Aside from these issues with response latency and task performance as an indication of cognitive effort, there are difficulties with explicit measures of cognitive effort generally, as they do not tend to correlate strongly with each other. In six studies, Mækelæ et al. (2023) tested the validity of three implicit measures of cognitive effort, as follows: an 18-item rational reasoning battery (Toplak et al., 2011), which, among other items, includes two gambler's fallacy items, a base rate problems, a conjunction fallacy item, and the three CRT items; the Demand Selection Task (Kool et al., 2010), in which participants were free to choose to engage in a relatively cognitively less demanding or more demanding task; and the Cognitive Effort Discounting Paradigm (Westbrook et al., 2013), which quantifies cognitive effort by providing a larger monetary reward for more effortful choices. They found that although the Cognitive Effort Discounting Paradigm score and rational reasoning battery were associated with cognitive ability in terms of working memory capacity, the associations among these measures of cognitive effort were weak ($r < .10$ for all, $p > .10$ for all). Cognitive effort, then, appears to be a multidimensional construct, such that effort applied to one type of task may have fundamental differences from the kind of effort applied to a different type of task.

Despite these limitations, as a low-cost explicit measure of effort frequently used in news veracity discernment research (Bago et al., 2020, 2022; Bago & De Neys, 2017; Lin et al., 2023; Schubert et al., 2021), it is worth exploring the predictive power of response latency in veracity discernment research.

Self-Reported Cognitive Effort

Human beings are aware of a richness in their inner experiences (Robbins et al., 1999). Just as a doctor may simply ask a patient to describe their experiences of discomfort, so too can social science researchers access a great deal of information through self-report. One of the strongest conceptual points in favor of self-report as a measure of cognitive effort is the phenomenological accessibility of effort, which can be defined in terms of its subjective intensity (Eisenberger, 1992; Inzlicht et al., 2018; Kool & Botvinick, 2018).

Included among these experiential states is the strain of focused attention. Direct self-rating may then be a straightforward means to tap into this construct and avoid the challenges of capturing cognitive effort with implicit measures. Indeed, actual effort and experienced effort are arguably identical, in that the neural activity associated with actual effort is indistinct from the neural activity of perceived effort (Shepherd, 2016).

In some ways, at least, effort is a subjectively accessible state. Effort can be defined in terms of deliberate intention within cognitive control (Kool & Botvinick, 2014). Likewise, in dual-process theories, effort is considered deliberate as opposed to automatic (Kahneman, 2011; Petty & Cacioppo, 1986). Insofar as effort is deliberate, it is necessarily within conscious awareness. Moreover, according to the cognitive miser account, cognitive effort is an aversive state which people generally try to avoid (Taylor, 1981). If effort is aversive, there must be some phenomenological aspect of effort that people report finding aversive. Together, these points

suggest that because cognitive effort has an experiential, intentional quality, self-reports capture at least a meaningful facet of it, if not the entire construct.

A meta-analysis of subjective measures of cognitive load demonstrates satisfactory internal consistency as well as construct and criterion validity (Krieglstein et al., 2022). More specific to communication research, prompting and message type have been found to increase self-reported cognitive effort. For example, in a study of learning through social media, participants were prompted to follow and read posts from a science learning account. When participants saw thought-prompting questions to activate prior knowledge about an environmental topic (such as "What do you already know about the deep sea?"), compared to the control condition, self-reported cognitive effort was greater (Frauhammer & Dreston, 2025). Thus, an experimental stimulus designed to improve cognitive effort yielded an increase in self-reported cognitive effort. Likewise, compared to a control condition, a treatment to instill skepticism against an epistemically suspect persuasive message was positively associated with a self-reported analytic thinking mode and subsequent resistance to persuasion by that message (Bessarabova, Banas, et al., 2024). Regarding message type, in a study of political communication, more sophisticated and accessible messages activated more self-reported reflective thought (Turkenburg, 2025). Together, this means that increased cognitive effort generated by prompts or message type can be captured through self-report.

Of particular relevance and use to communication research is Reynolds' (1997) measure of cognitive effort. This measure directly targets the construct of subjective effort in message processing. Specifically, after an initial stem prompt ("While reading the message were you"), participants rate their agreement with items such as "attempting to analyze the issues in the message," "deep in thought about the message," and "extending a good deal of cognitive effort."

In addition to significant and positive correlations with issue involvement, issue familiarity, and counterarguing, Reynolds (1997) found experimental evidence validating this measure. In this validation study, half of the participants were instructed to read a political message studiously, as if it were academic work, and the other half were instructed to imagine they were simply reading the message to pass the time before a fun event. Compared to the low-effort (passing the time) induction condition, self-reported cognitive effort was significantly higher with the prompt to think effortfully.

Other communication research validates Reynolds' measure. In a study of cognitive effort and narrative processing, Shen and Seung (2018) concluded that compared to a thought-listing task, the greater number of significant associations between Reynolds' self-report index and narrative transportation outcomes, such as transportation, identification, and parasocial interaction, demonstrated its greater convergent validity. Similarly, in a study using an episode from a comedic long-form political entertainment television program, cognitive effort as captured by Reynolds' measure was associated with greater information recall as well as greater endorsement of the opinions expressed in the video, suggesting more elaborative message processing (Jennings et al., 2019). Together, these findings support the validity of self-reported measures of cognitive effort generally, as well as Reynolds' measure in particular.

Despite these advantages, self-reported measures are not without issues. The most apparent issue with self-reported measures is response bias. Social desirability, an individual difference in the extent to which a person tends to portray themselves favorably to others (A. L. Edwards, 1957; Paulhus, 2017), is a potential bias. In the context of the present research, a tendency to report cognitive effort in an exaggerated way could be associated with other variables of interest, such as veracity discernment. However, as Chan (2009) argues, although in

some situations, such as in the selection of personnel or other high-stakes situations, self-report may be greatly biased, and although faking can potentially distort effects, in practice, there is little reason or evidence to assume that widespread faking substantially biases results (Chan, 2004; Lance & Vandenberg, 2009).

Moreover, many validated measures in social scientific research use self-report, such as the Moral Foundations Questionnaire (J. Graham et al., 2009; Zakharin & Bates, 2023), as well as measures of the Big-Five personality traits (Gosling et al., 2003; John & Srivastava, 1999; Soto & John, 2017) and those used in testing reactance (Dillard & Shen, 2005; Miron & Brehm, 2006). Conversely, there are validity and reliability issues with implicit measures. Response latency is a noisy measure (Alekseev, 2019) sensitive to task-irrelevant processing (DeLeeuw & Mayer, 2008). Together, this suggests that implicit measures should not be assumed to be necessary superior to explicit self-report measures.

Causal Inference of Motivated Reasoning

As suggested in the previous section, there are challenges in the causal inference of motivation in motivated reasoning research. Tappin et al. (2020c) argue that two types of experimental design in motivated reasoning research suffer from violations of excludability, meaning that randomly assigned treatments condition may not affect the outcome variable exclusively via the theorized causal paths (Kimmel et al., 2021). The first design type to suffer from this confound is *party cuing*. Ostensibly, party cues activate identity-protective (as opposed to accuracy-oriented) motivations in the rejection of information seemingly incongruent with one's party identification and acceptance of congruent information (Carnahan et al., 2022; Kahan, 2017; Petersen et al., 2013). However, Tappin and colleagues argue that instead, party cuing may activate trust heuristics, which are arguably accuracy oriented. When in-group partisan sources

are more trusted (Tappin et al., 2020c), greater persuasion would not necessarily indicate non-accuracy motivated reasoning. This is in contrast to research on priming (Wojcieszak & Garrett, 2018), in which an individual's salience of their own partisan identity, not the identity and trustworthiness of the message, is relevant.

Tappin et al. (2020c, 2020b) also discuss outcome-switching designs. In these types of experiments on motivated reasoning, the purported effect of a policy is manipulated to be more favorable to one side of the political aisle or the other. In their discussion, they logically demonstrate that these designs suffer from the violation of excludability, in that it may be prior beliefs, rather than motivated reasoning toward congruent and incongruent information, that influences results. This reasoning would be consistent with accuracy-oriented updating in a Bayesian model of learning, according to which, when presented with new information, priors influence beliefs (Druckman & McGrath, 2019; Gerber & Green, 1999; Hill, 2017). To help address these concerns about the presence of non-accuracy-oriented motivations in motivated reasoning research, I now turn to the discussion of how motivations could be measured directly.

Motivational Threat

To more directly test motivations of cognitive effort, it may be helpful to consider the concept of threat. In the context of research on resistance to persuasion, threat is the perception of the vulnerability of an attitude to change (Compton, 2013; McGuire, 1964). Though threat in this research tradition has traditionally been understood as a fear response (e.g., Compton & Ivanov, 2012), recent developments have suggested that the resistance process appears to be activated by *motivational threat* (Banas & Richards, 2017), where threat is a perceived challenge to one's beliefs. Research on motivational threat has helped illuminate the processes of resistance to persuasion (Bessarabova, Banas, et al., 2024). Extending this, motivational threat may also

shed light on motivated resistance to political news information. As motivational threat is thought to capture the extent to which belief defenses are activated in message processing (Banas & Richards, 2017) by generating counterarguing (Pfau et al., 2010), observing the role of motivational threat in the reasoning process could help demonstrate the circumstances in which resistance is generated in response to counter-attitudinal information.

In social influence research, threat is theorized to promote resistance to counter-attitudinal messages. Accordingly, given presumed motivations to defend one's beliefs, motivational threat should be higher for politically incongruent news than for politically congruent news. Moreover, considering the role of issue involvement in amplifying message processing (B. T. Johnson & Eagly, 1989; Petty & Cacioppo, 1979), this should be particularly pronounced among when issue involvement is high. In motivated skepticism research, a proxy for issue involvement has been political interest, which has been found to have an amplifying effected on polarization in message processing (Zhou, 2016). From this, a hypothesis follows:

> H3: As issue involvement increases, motivational threat is greater for politically incongruent news stories than for politically congruent news stories.

As it is theorized to be indispensable to inoculation in generating resistance to persuasion (Banas & Richards, 2017; Compton & Pfau, 2005; McGuire & Papageorgis, 1962), motivational threat should also be associated with less belief in counter-attitudinal messages. This principle should not be limited to inoculation, as the motivation to defend one's beliefs should generate resistance to belief in attitudinally threatening information.

Evidence about the relationship between apprehensive threat and resistance is mixed, with some studies finding that apprehensive threat is associated with resistance (Compton & Ivanov, 2012) whereas other research has found no association between apprehensive threat and

resistance (Ivanov et al., 2022). Accordingly, a meta-analysis on inoculation found no significant influence of apprehensive threat on resistance to persuasion (Banas & Rains, 2010).

However, in contrast to these null findings on apprehensive threat, there is gathering evidence that motivational threat is associated with greater resistance to persuasion (Banas & Richards, 2017; Bessarabova, Banas, et al., 2024; Bessarabova & Banas, 2024), such as through enhancing memory of inoculation messages (Maertens et al., 2025). As motivational threat is a mechanism through which resistance to counter-attitudinal messages is generated, it stands to reason that when motivational threat is greater, belief in incongruent news items will be less. Given this theoretical and empirical support, a hypothesis is made:

H4: For politically incongruent news stories, as motivational threat increases, the belief in politically incongruent news stories decreases.

Motivational threat may also help explain the link between attitudinally incongruent information and cognitive effort. Although not typically referred to as such, counterarguing, commonly operationalized as thought listing (e.g., Ivanov et al., 2022), represents cognitive effort in response to threatening messages. Counterarguing, which accompanies apprehensive threat (Ivanov et al., 2022; Wigley & Pfau, 2010) and motivational threat (Banas & Bessarabova, 2026), is theorized to be the mechanism through which threat generates attitudinal resistance (Compton & Pfau, 2005; Janis & Lumsdaine, 1953; Papageorgis & McGuire, 1961). As Pfau (2010) remarks, threat “unleashes the counterarguing process” (p. 3).

Cognitive effort, as evident by the number, length, or complexity of counterarguing in the context of disbelief or skepticism, is generated by motivational threat. In a study in which counterarguing was computed as the number of arguments contrary to the attack message multiplied by argument strength, Pfau et al. (2001) found that apprehensive threat was predicted

by counterarguing. Weaker evidence suggesting an association between these two constructs is also somewhat illustrative. In a study measuring of counterarguing with a check-off of statements that accorded with participants' opinions and feelings, compared to the control condition, both threat and counterarguing were greater in the inoculation conditions (Wigley & Pfau, 2010), although this was not a tested hypothesis. Likewise, in a study measuring counterarguing with thought-listing, in which each thought was then counted and threat was measured as traditional threat, although the association was not tested, both threat and counterarguing were significantly higher in the inoculation conditions compared to control (Ivanov et al., 2022). Aside from these findings on counterarguing, research on thinking modes has demonstrated that greater motivational threat is associated with greater self-reported analytic thinking (Bessarabova, Banas, et al., 2024). Based on this theoretical and empirical support, a hypothesis follows:

H5: The greater the motivational threat, the greater the cognitive effort.

Motivational threat may not only manifest cognitively in terms of cognitive effort but also affectively in terms of increased levels of anger. Broadly, greater threat is thought to be associated with more intense negative affect (Lazarus & Folkman, 1984). As an approach emotion (Carver & Harmon-Jones, 2009), anger should be associated with greater motivation to process information, including counter-attitudinal messages. This aligns with the anger activism model, according to which anger is associated with cognitive effort as determined by an increase in analytic processing (Bessarabova, Turner, et al., 2024; Turner, 2007). However, as Compton (2021) remarked, aside from research examining the emotions not involved in threat, such as fear (Banas & Richards, 2017), little work has been done to directly consider the emotions that are involved in threat and messages.

Despite this lack of direct support, there is some evidence that motivational threat may be associated with anger, as both apprehensive threat and anger were found to increase with inoculation messages compared to control (Pfau et al., 2009). Likewise, other research also found that inoculation increases both threat as well as anger (Ivanov et al., 2020; Miller et al., 2013). Accounting for issue involvement, self-efficacy, and counterarguing, Pfau et al. (2001) found that traditional threat was positively associated with anger.

Aside from this indirect connection between threat and anger, message processing research more generally indicates an association between attitudinally incongruent messages and anger. Along with negative cognitions, anger is a component of reactance (Miron & Brehm, 2006), which increases resistance to persuasion (Dillard & Shen, 2005). Anger is also associated with perceived message bias, in that a greater perception of bias has been found to be associated with greater anger (Arpan & Nabi, 2011). Insofar as motivational threat predicts resistance to counter-attitudinal messages, anger may be the affective component in this resistance manifest. Anger about a news story that, contemporaneously, was politically charged—the impeachment trial of the U.S. president—was associated with a greater tendency to rely on politically congruent media (Carnahan et al., 2023). This suggests that when anger was high, motivational threat that encouraged resistance to these news stories may also be high. Thus, greater anger may reflect a greater perceived threat of counter-attitudinal information. Together, this indirect support for the relationship between motivational threat and anger suggests the following hypothesis:

H6: The greater the motivational threat, the greater the anger.

Trust in Institutions and Attitude Polarization

The effects of cognitive effort and motivated reasoning in political communication are important not only for the sake of a greater theoretical understanding of influential cognitive processes but also for their potential influence on trust in institutions. Trust in institutions matters not only for increasingly precarious democratic institutions but also for an increasingly fractured and isolated society.

Trust in public institutions is necessary for a functioning democracy (Lipset, 1959). This has been recently documented in research on democratic backsliding, which refers to the deterioration of democratic governance (Waldner & Lust, 2018). When people lose faith in democratic institutions, the legitimacy of these institutions is undermined in favor of anti-establishment authoritarian alternatives (Foa & Mounk, 2017). An analysis of survey data from 46 countries in Europe and Latin America found that as young people trust institutions less, the quality of democracy, in terms of a balanced political system with limited executive power and governed by the rule of law, diminishes (Kwak et al., 2020).

Aside from this concern, declining trust in political institutions diminishes social trust, or optimism about human goodness (Mewes et al., 2021). Social trust is associated with personal resilience to challenges such as discrimination, unemployment, and poor health (Helliwell et al., 2016). As trust in institutions and therefore social trust diminishes, isolated members of fractured communities suffer more. In addition, in a survey of 33 European nations, low levels of trust in political institutions were associated with increased attitudes of permissiveness toward individual financial misconduct, such as tax fraud (Marien & Hooghe, 2011).

Together, these findings suggest the importance of examining the determinants of trust in institutions. Here, I focus on the role of cognitive effort and motivational threat in attitude polarization, or the intensification of prior attitudes, both positive and negative, toward three

broad social institutions: federal agencies, public education, and the mainstream media. As I will go on to discuss, the causes and implications of the decline in trust in these three broad social institutions, and therefore the relevance of focusing on this topic, are wide ranging.

I begin with federal agencies. Federal agencies are defined as federal government organizations that manage resources, create regulations, and enforce the law, such as the Environmental Protection Agency and the Federal Bureau of Investigations. Globally, dissatisfaction with democratic governance has risen to nearly unprecedented levels (Citrin & Stoker, 2018; Foa et al., 2020). In Europe, Africa, and Latin America, trust in government has declined since the mid-2000s (Perry, 2021). In particular, trust in governing institutions has been on the decline (Perry, 2021). Aside from a few institutions such as the military, over the past fifty years, trust institutions has fallen in U.S. (Brady & Kent, 2022).

Recent global events have accelerated this decline in trust. Exposure to polarizing and unverified COVID-19 information was associated with lower trust in public health experts (Kim et al., 2023). Likewise, trust in governments in the United States and Europe fell during the 2008 financial crisis (Armingeon & Guthmann, 2014; Arpino & Obydenkova, 2020)

Trust in federal agencies is especially important in times of crisis, such as COVID-19 (Geisterfer-Black et al., 2022), as trust in relevant government decision-making bodies was positively associated with COVID vaccination (Van Oost et al., 2022). It stands to reason that when federal agencies lose the support of the electorate, attacks on these agencies will be met with less resistance. Thus, trust in these agencies is essential for their effective functioning.

Another broad social institution under threat is public education, which I define as those educational institutions funded by taxpayers, including public elementary schools, high schools, and universities. Universities, in particular, have been viewed with increasing public skepticism.

In 2010, 75% of U.S. adults responded that a college education was very important. However, by 2025, the percentage dropped to a record low of 35%, a decline that is apparent among all age groups, ethnicities, and political identifications (Saad, 2025). Also, despite a recent uptick, the percentage of U.S. adults responding that they have a great deal of confidence in higher education has fallen from 57% in 2015 to 42% in 2025, with the most commonly cited reasons being politicization and a lack emphasis on teaching important skills (J. M. Jones, 2025).

Universities not only need the trust of their employees and students to properly function, but also for collaborations with other institutions such as industry and to maintain public trust in science (Law & Le, 2023). When institutions that produce reliable knowledge are trusted less, members of the public will be less able to make informed decisions, such as regarding vaccination (Bargain & Aminjonov, 2020; Sturgis et al., 2021; Van Oost et al., 2022) as well as belief about anthropogenic climate change (Alvarez et al., 2023).

The third societal institution considered here is the mainstream news media, a term that, like "news media" (J. Strömbäck et al., 2020), is ambiguous. In their study on the association between media consumption and trust, Tsfati and Capella (2003) defined mainstream media as popular legacy media sources, such as CNN, MSNBC, PBS, and NPR, but not including less popular sources, such as political talk radio and Internet sources. This accords with the sources that Americans consider mainstream sources, as most, or at least 60%, consider ABC, CNN, NYT, MSNBC, Fox, WSJ, and NY Post mainstream, whereas Internet sources such as Vox, Newsmax, and Breitbart are considered mainstream by only 12% or fewer Americans (Shearer & Mitchell, 2021). Trust in the mainstream media has declined steadily since the 1970s and is currently at an all-time low. A Gallup poll has indicated that 70% of U.S. adults responded that

their confidence in mass media is “not very much” or “none at all,” with only 28% with “a great deal” or even “a fair amount” of trust (Brenan, 2025).

The causes of this decline in trust are complex (Fawzi et al., 2021), but online misinformation (Hwang, 2025), populist attitudes (Hameleers, 2022), political polarization (Ladd & Podkul, 2018), and criticism from elite partisans (Ladd, 2012) play a role. When the mainstream media is trusted less, people tend to consume more alternative and social media (Andersen et al., 2023; Fletcher & Park, 2017; Park et al., 2020; J. Strömbäck et al., 2020). Although overall, social media use for news consumption is generally steady, in 2025, 20% of U.S. adults—43% of those 18 to 29—got their news from TikTok, up from 3% (9% of 18 to 29 year olds) in 2020 (Matsa & Tomasik, 2025). In 2025, 53% of U.S. adults got news via social media ‘sometimes’ or ‘often’ (St. Aubin & Liedke, 2025). Globally, the use of social media is associated with diminished trust in news media (Ognyanova et al., 2020; Park et al., 2020), perpetuating the cycle. As these alternative sources tend to be less reliable, this promotes the spread of misperceptions.

Cognitive Effort and Attitude Polarization

To better understand why positive attitudes toward institutions have declined, within the context of information processing in terms of cognitive effort and motivational threat, it may be useful to consider how these constructs may lead to attitude polarization according to a motivated reasoning framework. First, I consider that attitudes toward societal institutions may be polarized by cognitive effort. One of the central propositions of the elaboration likelihood model is that increased cognitive effort is associated with increased attitude strength (Barden & Tormala, 2014; Petty & Briñol, 2012; Wan et al., 2010). In the context of motivated reasoning, as cognitive effort increases, attitudes become intensified.

Taber and Lodge (2006) found that, when prompted to read articles both supporting and opposing politically-charged policies and allowed to freely choose the time spent reading, not only were strong prior partisan attitudes and greater political sophistication associated with greater response latencies and more thoughts listed with attitudinally incongruent messages, but participants' initial attitudes became more entrenched. Specifically, to the extent that greater cognitive effort (top versus bottom terciles) directed toward politically incongruent arguments was associated with argument strength, attitudes were more extreme (Taber & Lodge, 2006). Likewise, Taber et al. (2009) found that across three argument types, cognitive effort directed at politically incongruent arguments (which they called disconfirmation bias) was associated with greater attitude polarization toward the endpoints of the attitude scales in terms of the absolute value of the different in pre-message and post-message attitudes. As attitudes toward federal agencies, media institutions, and knowledge-producing entities can be conceptualized as trust in them (Citrin & Stoker, 2018; Hendriks et al., 2016; Prochazka & Schweiger, 2019), effects on attitudes toward these institutions are likely to be very similar to effects on trust. Based on this support, the following hypothesis is made:

H7: The greater the cognitive effort, the greater polarization of the post-treatment trust in institutions.

Motivational Threat and Attitude Polarization

In addition to this role of cognitive effort in trust in institutions, an exploratory analysis of the potential role of motivational threat is also worth considering, in that attitudes toward institutions could be amplified by motivational processes. Early persuasion researchers noted that, when presented with "belief-threatening material," attitudinal defenses are rallied against persuasion attempts (McGuire & Papageorgis, 1962, p. 25). Among strong believers for or

against the death penalty, initial belief intensified after reading contradictory support for these beliefs (Lord et al., 1979). Stronger initial beliefs could amplify motivational threat. Insofar as this process of motivational threat and resistance reflects motivated reasoning, trust attitudes toward institutions may become polarized with motivational threat. Given this limited theoretical support, the following hypothesis is made:

H8: The greater the motivational threat, the greater the polarization of post-message trust.

Chapter 3: Pilot Study

In order to ensure the proper functioning of the survey logic, quality measurement, and as a preliminary test of hypotheses, I conducted a small pilot study using a convenience sample.

Method

Transparency and Openness

Recruitment forms, stimulus materials, power calculations, and analytic code for both studies, as well as the survey for the main study, are available via the Open Science Framework (OSF) at https://osf.io/rfxtg. The study's hypotheses were preregistered prior to the collection of any data.

Participants

A preregistered pilot study was conducted with participants enlisted from a student participant pool at a large university in the South-Central part of the United States. Most participants were in their early 20s (age $M = 20.0$, $SD = 1.6$, $Mdn = 20.0$, range 18–29), 90.9% of whom stated that they were registered to vote. Median family income was in the $65,000 to $75,000 range. Participants with incorrect responses to any attention checks were excluded from the analysis ($n = 58$). See Table 1 for sample demographics.

Design and Procedure

The pilot study used a 2 congruence (congruent vs. incongruent) × 3 institution (federal agencies vs. public education vs. the mainstream media) design. In order to increase generalizability about trust in various institutions, news stories about three institutions—federal agencies, public education, or the mainstream media—were also manipulated factors. Using a mixed-effects approach in my analysis accounted for variation among items by allowing each news story stimulus item to have its own baseline effect (intercept), obviating the need to demonstrate that stimuli did not differ in their influence on dependent variables (Baayen et al., 2008). Issue involvement, trust in institutions, and the magnitude of trust in institutions were measured quasi-experimental factors.

After providing consent, participants responded to randomly ordered measures of political interest, political self-identification, populism, trust in a randomly assigned institution, and ambivalence about trust in the institution, a measure distinct from trust in the institutions, and only included in the pilot study data collection. After this, participants completed a quality commitment task. Compared to control, using quality commitment requests has been show to improve survey data quality (Geisen, 2022). The task involved reading a message prompting participants to "commit to doing the survey without using outside sources" for the news veracity discernment task. Non-commitment responses ("No, I do not commit to providing quality responses," or "I can't promise either way") were excluded from the analyses (n = 2).

After the quality commitment task, participants read six randomly assigned news stories, with three true stories and three false stories presented in random order. In the pilot, these were brief stories, each ten words long to ensure similar reading time. Each set of news stories corresponded to one of the three randomly assigned induction topics: federal agencies, public education, the mainstream media. Therefore, participants evaluated the veracity of six stories out

of a stimulus sample pool of 6 × 3 = 18 stories. To maintain adequate power with a limited sample, only news stories expressing a conservative point of view were included (e.g., "EPA Watchdog Warns About Supervision for Billions in Climate Spending"). For full text of all news stories for the pilot study, see Appendix B.

For each of these six news stories, participants first evaluated the items' veracity, completed a thought-listing task, and self-reported their cognitive effort. Following this, participants responded to questions measuring their perceptions of the news stories' political leanings (i.e., whether they corresponded to a left- versus right-wing point of view), the favorability of the item to an institution (i.e., whether the news story portrayed the institution in a positive or negative way), and their familiarity with the news story.

To increase the total number of news stories that participants would evaluate and therefore ensure generalizability as well as adequate power for hypotheses testing in the mixed-effects models, I used a within-subjects stimuli-within-blocks design to present the news item materials (Westfall et al., 2014; also known as matrix sampling, J. W. Graham et al., 2006). As noted by Westfall and colleagues, this design is suitable for experiments for which presenting participants with a large number of materials would introduce survey fatigue. The stimuli-within-blocks design allowed me to randomly assign 6 of 18 unique news stories in the pilot study to each participant, who evaluated three true items and three false items, randomly ordered. This also allowed me to pilot test the Qualtrics setup of the stimulus-within-blocks design for the main study. The main study used a much larger pool of news stories (72 items), and presenting the entire pool to each participant would have not been feasible as it would likely result in experimental fatigue. Although in the main study, both liberal and conservative news stories were included, in the pilot study, participants were presented only with conservative news stories.

After reporting their anger and motivational threat, participants once again responded to the same measure of trust in the randomly assigned institutions. After this, participants took the Cognitive Reflection Test followed by responding to demographic items. Finally, they were able to provide feedback about the pilot study and presented with a short debriefing message notifying them that the true answers to the news item evaluation task would be emailed to them after the participation period ended. Accordingly, I emailed the correct responses to pilot participants after the survey closed.

Materials

Some scholars recommend that news stories in veracity discernment research be taken from false news aggregator websites, such as Snopes or Politifact (Pennycook et al., 2021). This is generally good practice, as a verifiable distinction between true and false news stories is essential to the validity of the research. The present study sought to test perceptions of news about three institutions: federal agencies, educational institutions, and the mainstream media. Because of the insufficient number of false news stories about these institutions on false news aggregator websites, false news stories were artificially generated by prompting Perplexity, a generative language model. Prompts to the language model include instructions to use inflammatory language and conspiratorial themes, which characterize misinformation online (Carrasco-Farré, 2022). For each artificially generated false story in both studies, I checked online to determine if there were a similar true news story resembling them. If a purportedly false item generated by the language model was similar to a news item reported by a credible source in the media, to maintain validity, that story was not included in the study. Instead, it was excluded and replaced with a story that was more unequivocally false. This additional step helped ensure that items labelled as false in the study were verifiably baseless.

The true news stories were adapted from news stories published mostly by outlets, such as *National Public Radio* and *The Associated Press*. All source information for the true and false news stories was omitted to avoid confounding the effects of the news stories with their source effects (Gawronski et al., 2023).

Because reading news stories of varying lengths would likely affect response latency in the evaluation task (i.e., create a potential confound), all news stories in the pilot were between 10 to 12 words. In the pilot, to limit the number of factors and increase power, all news stories were designed to be not only critical of institutions but also to be consistent with a conservative perspective. To maintain adequate power by reducing the number of factors in the analysis, I included only news stories from this political perspective. Given some indication that conservatives are more prone to bias and misperceptions (R. K. Garrett & Bond, 2021; Jost et al., 2003; Rutjens et al., 2018; although see Ditto et al., 2019; Washburn & Skitka, 2018b), and because the sample of participants was drawn from a region of the United States that is predominantly conservative, the news stories in the pilot study were only from the conservative perspective.

Instrumentation

Unless otherwise specified, all questionnaire items were on seven-point semantic-differential scales and presented to participants in random order within the survey blocks corresponding to each instrument. Testing for variance inflation factor with the car package (Fox & Weisberg, 2019) indicated no multicollinearity, with variance inflation factor for all models below the recommended cutoff of 2.5 (Osemeke et al., 2024). All analyses reported in this dissertation were conducted in R (R Core Team, 2025).

Response quality. Including attention checks in surveys improves response quality (M. S. Jones et al., 2015). Using both self-reported quality and a multi-trait-multi-method approach (e.g., open answer format, Likert-type, endpoint-anchored scales), compared to a survey without attention checks, response quality was higher with attention checks. Specifically, it was both higher in a survey in which attention checks were used (with two instructed response items, e.g., "In this line, we ask you to mark the right option 'applies completely' on the answer scale," and one implausible bogus item, i.e., "I was born before 1920") and higher still when the attention checks were used as exclusion criteria in the data analysis (Shamon & Berning, 2020).

Therefore, to ensure quality responses, in the pilot study, I added eight attention check items throughout the survey. Near the beginning of the survey, I used a conventional instructed response ("I am paying attention. Select strongly agree."). In addition, to reduce false negatives due to strategic scanning for cue words such as "attention," which could clue in experienced survey takers, I used two bogus-type items: "While reading the message, you were … swimming to the bottom of the ocean," which was repeated for each news evaluation item, and "I fly to the moon every day after work." (In the main study, I reduced the repetition of this item through Qualtrics item settings, lowering the total number of attention checks.) In contrast to the standard instructed response items, bogus-type items such as this are designed to screen out experienced survey takers scanning for cue words such as "attention." Participants with incorrect responses to any of these attention checks, which I deemed at or below the midpoint for the individual truth items and any response other than "strongly agree" for the instructed response item, were excluded. In addition, any participant who did not affirmatively commit to provided quality responses was also excluded. An examination of missing data indicated six missing values in the third political interest measure ("How often do you want to talk about politics?"). To avoid

discarding any responses and allow for the greatest power, I used the impute_EM function of the missMethods package (Rockel, 2022) to impute missing values via expectation maximization, which entails parameter estimation based on observed data distribution; the estimated means and covariance matrix are then used to generate expected values of missing data (Gomer & Yuan, 2023; Peugh & Enders, 2004).

Dimensionality. Measurement dimensionality was assessed with exploratory factor analysis and parallel analysis. In response to the recognition that even uncorrelated items are likely to yield a number of eigenvalues greater than one, Horn (1965) developed parallel analysis, a method by which the number of factors underlying a set of items is determined to be the number of eigenvalues derived from observed data that exceed the eigenvalues in a Monte Carlo simulation (Crawford et al., 2010; Lim & Jahng, 2019). A 95th percentile parallel analysis further refines this approach to determining the number of factors (Crawford et al., 2010; Glorfeld, 1995). Using the fa.parallel function of the psych package (Revelle, 2022), I conducted a 95th percentile parallel analysis using maximum likelihood estimation, finding that all multi-item measures in my pilot data shared a single common factor and a single common component, indicating that all measures were unidimensional.

Reliability. Cronbach's (1951) α is widely used as a standard indicator of internal reliability (Peterson, 1994; Rodriguez & Maeda, 2006), with 93% of the articles that provided measurement reliability in communication journals such as *Human Communication Research* and the *Journal of Communication* in 2017 and 2018 reporting Cronbach's α (Hayes & Coutts, 2020). However, McDonald's (1999) ω has several advantages for communication research. Although Cronbach's α may be assumed to be a test of unidimensionality, unidimensionality is, in fact, an assumption of Cronbach's α (Goodboy & Martin, 2020; Sijtsma, 2009). Cronbach's α

is also influenced by the number of items (Vaske et al., 2017) and correlated error variances, suggesting the influence of other factors, such as item-wording issues (S. B. Green & Hershberger, 2000). Cronbach's α also assumes tau equivalence, or equal factor loadings (J. M. Graham, 2006).

McDonald's ω does not require the assumptions of uncorrelated error variances and tau equivalence. If factor loadings are equivalent and error variances are uncorrelated, though, McDonald's ω, as a more general equation to which Cronbach's α is a specific case, reduces to Cronbach's α (Goodboy & Martin, 2020; Hayes & Coutts, 2020). In this research, the refined factor scoring method I used likewise accounts for the weights of item coefficients in their contribution to the factor score.

As an indicator of internal reliability and measurement, I used the MBESS package (Kelley, 2007) to calculate McDonald's ω. More specifically, I report composite ω, as this result is suitable for empirically unidimensional measures with roughly continuous scale points (Flora, 2020). Kalkbrenner (2024) cautiously suggests a threshold of ≥ .80 for Cronbach's α and ≥ .65 or ≥ .70 for McDonald's ω.

Refined Factor Scoring. Although taking the sum or mean of items to arrive at a composite is a straightforward approach, this relies on the assumption that each item contributes equally to the latent factor (McNeish & Wolf, 2020). As such, simulation research indicates that this method can introduce substantial bias, potentially leading to erroneous conclusions (Bhaktha & Lechner, 2021). To address this, I used Bartlett's (1937) refined factor scoring approach, an approach which entails the use of maximum likelihood estimation and weighted least squares to minimize the influence of uncorrelated error. This approach not only retains the loading of each

item onto the latent factor in the resultant composite item but also produces unbiased estimates of the latent factor (DiStefano et al., 2009; Hershberger, 2005).

The following descriptions of measured variables are listed in the order in which they were presented to participants in the survey.

Issue Involvement. Issue involvement was operationalized as interest in politics, measured with three items, for example, "How interested are you in politics?" and "How often do you seek information about politics?" and scaled from 1 (*Not at all* / *Never*) to 7 (*Extremely so* / *Extremely often*; $M = 3.9$, $SD = 1.7$, $\omega = .93$; Bode, 2017; Piumatti et al., 2018; Rapeli, 2022).

Political Identification. Three semantic differential scales were used to capture political self-identification, from 1 (e.g., *Strongly liberal*) to 7 (e.g., *Strongly conservative*; $M = 3.7$, $SD = 1.5$, $\omega = .95$; Huber & Inglehart, 1995; S. D. Johnson & Tamney, 2001; Levitin & Miller, 1979; Podkul & Kamarck, 2018).

Trust in Institutions. To capture trust in the federal agencies, educational institutions, and media institutions, before and after participants read the news stories, participants evaluated six items ("competent," "qualified," "responsible," "honest," "just," and "benevolent") on seven-point scales (1 = *Strongly disagree*, 7 = *Strongly agree*; Van Oost et al., 2022). An exploratory factor analysis revealed that in both the pre-task and post-task measures, one item, "benevolent," loaded weakly onto the latent factor (pre-task $\lambda = .59$, post-task $\lambda = .44$). As such, it was dropped, with five of the six items included in the analyses (pre-task $M = 3.7$, $SD = 1.3$, $\omega = .90$; post-task $M = 3.1$, $SD = 1.3$, $\omega = .90$).

Perceived Accuracy of News Stories. When participants were presented with each news item, they were asked to respond to a single item, adapted from a guide to misinformation research (Pennycook et al., 2021): "What is the likelihood that the above news headline is true?"

(1 = *Extremely unlikely*, 7 = *Extremely likely*; *M* = 4.2, *SD* = 1.4). Using this item, I created the veracity discernment index by combining the perceived accuracy of true items with the reverse-scored perceived accuracy of false items.

Cognitive Effort, Response Latency. As a measure of cognitive effort, I logged the total time participants spent evaluating news stories, from the time the page loaded, through the time participants marked their responses to evaluation items, until the time participants clicked to advance to the next page, thereby confirming their responses. Response latency was justified in this online survey experiment, as response times for data collected in lab and from online crowdsourced participants are not substantially different (Armitage & Eerola, 2020; Sauter et al., 2022). Research on cognitive effort and veracity discernment using response latency as a manipulated or measured variable is typically conducted via online panels (e.g., Bago et al., 2022, 2023; Bago & De Neys, 2017; Janssen et al., 2021; Lin et al., 2023; C. Strömbäck et al., 2024).

Whereas for research in which experimental materials are used to induce a reaction in participants, it is appropriate to separate the stimulus from the response measurement items, in this research, veracity evaluation processing occurs during the reading of news stories. Therefore, to preserve external validity, and in line with previous research using where time in response to readings was measured or experimentally manipulated (e.g., De Neys & Franssens, 2009; Frey et al., 2018; Janssen et al., 2021), response items were paired with experimental reading materials, and time measured comprised the total time to read items and respond to veracity items (*M* = 17.8 seconds, *SD* = 14.9 seconds).

In line with previous research on response latency as a measure of cognitive effort (Bago & De Neys, 2017) as well as methodological recommendations for analyzing response latency (Baayen & Milin, 2010; Mayerl, 2013), and in order to increase statistical power, I registered two

data preparation steps. After removing responses where response latency was greater than 2.5 standard deviations from the mean and conducting a natural log transformation, skewness was reduced from 3.70 to 0.81.

Cognitive Effort, Self-Reported. Because of the high reliability of explicit measurement of cognitive effort compared to implicit measurement (Corneille & Gawronski, 2024), in addition to the implicit measure of cognitive effort (i.e., response latency), I also measured self-reported cognitive effort. Given that participants were asked to respond to this and other measures in six news evaluation tasks, I conducted an exploratory factor analysis to reduce the number of items in a twelve-item measure (Reynolds, 1997) that could be used to account for the latent factor. Analyses of these twelve randomly ordered items from Reynolds' measure indicated that the first three items had consistently high factor loadings across the six news item evaluation attempts. Therefore, these items were retained for subsequent analysis (e.g., "While reading the message, you were … attempting to analyze the issues in the message;" 1 = *Strongly disagree*, 7 = *Strongly agree*; $M = 4.9$, $SD = 1.5$, $\omega = .92$).

I operationalized veracity as agreement with the three true news stories and the disagreement (reverse coded score) of the false items, subtracting each seven-point scale for the false items from eight. In this way, higher scores indicate greater veracity discernment between true and false stories, with a perfect score being maximum perceived likelihood of truth of the true items and maximum perceived unlikelihood of truth of the false items. In line with recommendations on triangulation in studies of cognitive effort (Thomson & Oppenheimer, 2022), hypotheses testing of cognitive effort were conducted with both the response latency item as well as the index of self-reported cognitive effort. These variables were computed separately for hypothesis testing.

Political Favorability of News Stories. One item was included to measure the perceived congruence of each new items to a left-wing point of view versus a right-wing point of view (1 = *Much more consistent with a left-wing perspective*, 7 = *Much more consistent with a right-wing perspective*; $M = 4.5$, $SD = 2.0$).

Favorability of News Stories to Institutions. One item was included to measure the perceived favorability of each new items to the randomly assigned institution (1 = *Extremely unfavorable to federal agencies / public education institutions / the mainstream media*, 7 = *Extremely favorable to federal agencies / public education institutions / the mainstream media*; $M = 3.2$, $SD = 1.9$).

News Story Familiarity. Familiarity with the news stories was measured with a single item ("Are you familiar with this news story?"; 1 = *Definitely not*, 7 = *Definitely so; M* = 1.8, *SD* = 1.4).

Anger. To measure anger, participants responded to the following question: "When you were reading the stories, how much of each emotion did you feel?" Responses included four items that were used in the anger index ("angry," "aggravated," "irritated," and "annoyed") as well as three distractor items intended to conceal the intent of measuring anger ("sad," "fearful," and "happy"). Each items was measured on a seven-point scale (1 = *Not at all*, 7 = *Extremely so*; $M = 3.6$, $SD = 1.9$, $\omega = .93$; Bessarabova & Massey, 2020; Dillard & Shen, 2005).

Motivational Threat. Motivational threat was measured with four previously validated items (Banas & Richards, 2017), for example, "I wanted to defend my current attitudes from attack" (1 = *Strongly disagree*, 7 = *Strongly agree; M* = 4.2, *SD* = 1.8, $\omega = .84$).

Cognitive Reflection Propensity. The sum of the number of correct responses to the three items comprising the Cognitive Reflection Test (Frederick, 2005) was used to capture the

tendency to think reflectively. The items in this test are simple mathematical reasoning problems with written numeric (not multiple choice) responses, such as "If it takes 5 machines 5 min to make 5 widgets, how long would it take 100 machines to make 100 widgets?" Although the correct response is 5 minutes, a common intuitive response is 100 minutes. Thus, the test is intended to capture the ability pause and reflect before responding. To create an index, the number of correct responses were added together, with a minimum of zero and a maximum of three (M = 1.4, SD = 1.2). As item scoring was binary (true or false), the computation of scale reliability was not appropriate here[1].

Results

Analytic Strategy

For both studies, H1, H2, H4, H5, H7, and H8 hypotheses were tested with linear mixed-effects models, an approach described in the next section. H3 and H6 were tested with the lm function in base R. For bivariate correlations, see Table 2.

Mixed-Effects Modeling: Overview

[1] In addition, an eight-item measure of populism (adapted from Castanho Silva et al., 2018)**,** and an ad hoc three-item measure of ambivalence about trust in institutions were included in the pilot survey as well as an open-response thought-listing item. Although I included the ambivalence of trust measure in accordance with previous research on motivated reasoning (Taber & Lodge, 2006) and the populism measure as an alternative to political identification, after further consideration, I decided that these non-preregistered, exploratory measures would were not necessary for hypothesis testing. The ambivalence of trust measure overcomplicated the model and thus was not included in the preregistered hypothesis. Therefore, these measures were not included in the analysis.

Mixed-effects models include both fixed effects and random effects. Whereas the measurement levels of fixed effects exhaust all theoretical levels of the factor, such as the measurement of response time or cognitive reflection propensity, levels of random effects are sampled from a larger population (such as participants or stimulus materials; B. F. Green & Tukey, 1960). Mixed-effects models account for differences in the intercepts, and, in more complex models, the slopes, of these random effects (Baayen et al., 2008).

V. Brown (2021) describes the advantages of mixed-effects modeling. A standard regression using multiple responses from the same participant, or using multiple responses to a given stimulus, violates the assumption of independence of observations. This can inflate Type 1 error. Repeated-measures ANOVAs can address this, but in repeated-measures ANOVAs, only one source of variability can be considered, such as at the participant level or the item level, but not both. Mixed-effects models can simultaneously account for both forms of variability. Also, unlike ANOVA, the predictors in a mixed-effects model may be continuous rather than constrained to categorical variables, an approach which would reduce variance.

Given these advantages, mixed-effects modeling can help mitigate erroneous conclusions. In a re-analysis of data collected to investigate the extra-sensory perception of retroactive priming using mixed models, in which both stimulus and participant were set as random effects, no extra-sensory effect was detected (Judd et al., 2012). This demonstrates that mixed-effects modeling can mitigate false-positives (Type I error).

For these reasons, mixed-effects models have adopted in research on cognitive effort using response latency and multiple stimuli (Bago et al., 2020, 2022; Lin et al., 2023) as well as in other experimental work, such as research on inoculation (Spiridonova et al., 2025) and the spread of misinformation (Coronel et al., 2020).

Reporting Mixed-Effects Models

I present results according to recommendations for best practices for reporting mixed-effects models (Meteyard & Davies, 2020). I report fit with marginal R^2, which is calculated with Nakagawa and Schielzeth's (2013) method. Marginal R^2 is the variance explained by the fixed effects, and conditional R^2 is the variance explained by both fixed and random effects. Reporting *p*-values for mixed-effects models has some ambiguity, as the denominator degrees of freedom could be specified as the number of observations, the number of subjects or stimulus items, or the number of random effects grouping factors. To estimate denominator degrees of freedom and yield *p*-values, I chose Satterthwaite's (1941) method (Luke, 2017).

In addition to statistics reported in standard regression, Meteyard and Davies (2020) recommend reporting residual variance in mixed-effects modeling. Residual variance not explained by fixed factors is reported in the regression tables as σ^2. In addition, variance between group intercepts for each random factor is reported as τ_{00}. For τ_{00}, 0 represents no variance between group intercepts and 1 represents maximal difference between group intercepts. Inter-class correlation (ICC) is an index of variance explained by grouping structure, which ranges from 0, no resemblance within groups, to 1, identical effects for each grouping item (Gelman & Hill, 2006). I tested the linear mixed-effects models using the lmer function of the lme4 package (Bates et al., 2015), and I generated tables with the tab_model function of sjPlot (Lüdecke, 2025).[2] For an introductory guide to mixed-effects modeling, see Field and Wright (2011) or Winter (2014).

[2] Following recommendations for maximal modeling (Barr et al., 2013), I initially attempted to fit the model with random slopes in addition to random intercepts. However, due to model convergence issues common in complex models (Matuschek et al., 2017), this approach was not feasible in either study.

Manipulation Checks

True news stories (M = 4.5, SD = 1.7) were rated as truer than false news stories (M = 3.5, SD = 1.8; $t(528.8) = -6.8$, $p < .001$, Cohen's $d = .58$). True news stories were generally rated as unfamiliar (M = 2.1, SD = 1.6, Mdn = 1.0). Both true and false news stories were also rated as generally not favorable to institutions (M = 3.2, SD = 1.9, range: 1 – 7). The finding that participants generally perceived the true stories to be more accurate than false stories provides an additional indication of their validity. Likewise, the familiarity results suggest that prior knowledge of these stories did not contaminate their evaluations.

Hypothesis Testing

All models were tested as preregistered, with dependent variables, independent variables, covariates, and sample inclusion criteria, based on attention checks and veracity discernment task completion time, as pre-specified (see the OSF preregistration at https://osf.io/p5sx4). Wording for hypotheses is also taken directly from the preregistration. Intraclass correlation, which represents the variance explained by random effects, ranged from .06 to .72 for models in the main study.

For H1, I predicted that the greater the cognitive effort, the greater the veracity discernment of politically relevant information. For the two models testing H1, the dependent variable was news story veracity discernment, which was the perceived likelihood of true items and the reverse-scored perceived likelihood of false items. In one model, response latency was entered as cognitive effort, the independent variable, and in the other, self-reported cognitive effort was entered as the independent variable. In both models, to account for individual differences in cognitive reflection propensity and news item familiarity, CRT score and news story familiarity were entered as covariates. To account for random factors in the mixed-effects

models, participant identification number and individual news story identification code were entered as random variables. For full R scripts of all hypothesis models, refer to the supplementary materials on OSF at https://osf.io/p5sx4.

For both H1 model tests in the pilot study, neither response latency, $b = 0.10$, $t(525) = 0.96$, $p = .336$, marginal $R^2 = 0.004$ (Table 3), nor self-reported cognitive effort, $b = 0.07$, $t(525) = 1.18$, $p = .240$, marginal $R^2 = 0.005$ (Table 4), were significantly associated with the veracity discernment of true and false news stories. I conducted these hypothesis tests with the veracity discernment for true news stories only as well as for false news stories only, testing both response latency and self-reported cognitive effort. However, there was no significant association between veracity discernment with either indicator of cognitive effort for any of these isolated tests. Therefore, H1 was not supported.

For H2, I predicted that for politically incongruent news stories, the greater the issue involvement, the greater the cognitive effort. As with H1, two models were tested for the two measures of cognitive effort. In the first model, response latency was entered as the dependent variable. In the second model, self-reported cognitive effort was the dependent variable. The independent variable of interest was the interaction term of issue involvement and political identification. Because in the pilot, only conservative news stories were included, political identification alone was included as a proxy for the consistency of news stories with political identification for this and other tests of the political consistency of news stories. Because all news stories were conservative, the news stories were incongruent to the extent that a participant was liberal. Participants were not screened for political identification. Therefore, the more conservative a participant was, the more politically congruent was the news story.

In addition to these variables, as in H1, CRT score and news story familiarity were included as fixed covariates, and participant identification number and news story code were included as random effects. The main effects of interest and politics were also included in these models.

When response latency was entered as the dependent variable, H2 was not supported, b = 0.00, $t(523) = -0.01$, $p = .990$, marginal $R^2 = 0.016$ (Table 5). However, the interaction of issue involvement and news congruence was marginally associated with self-reported cognitive effort, $b = 0.18$, $t(523) = 1.96$, $p = 0.050$, marginal $R^2 = 0.136$ (Table 6). As there were only conservative news items but both liberals and conservatives in the sample, political identification was a proxy for the political congruence of news items, such that greater conservatism indicated greater congruence. Despite this marginal significance, the results do not support H2. All news stories were consistent with a conservative perspective, and political identification was scaled from 1 (*strong liberal*) to 6 (*strongly conservative*). Therefore, the higher the political identification, the greater the consistency of news stories with political identification. The positive coefficient here indicates that when both political identification was more conservative (consistent with the news stories) and issue involvement was high, self-reported cognitive effort was marginally higher. Examination of a plot generated with the interactions package (Long, 2024) confirmed the nature of the interaction: When political identification was more conservative (+1 SD) and therefore more congruent with the conservative news stories, the greater the issue involvement, the greater the self-reported cognitive effort (see Figure 1). As H2 predicted an association in the reverse direction, it is therefore unsupported.

For H3, I predicted that as issue involvement increases, motivational threat is greater for politically incongruent news stories than for politically congruent news stories. Because in the

pilot, only conservative news stories were included, political identification alone was included as a proxy for the consistency of news stories with political identification. To test this model, then, I specified motivational threat as the dependent variable and the interaction term of issue involvement and political identification as the independent variable, with the main effects of the variables in this term. However, in accordance with the hypothesis, which specified that the association between motivational threat and perceived accuracy would be greater with incongruent news stories, the interaction term of issue involvement and political identification was not significantly associated with motivational threat, $b = 0.00$, $t(85) = -0.01$, $p = .996$, marginal $R^2 = 0.043$ (Table 7).

For H4, I predicted that for politically incongruent news stories, as motivational threat increases, the belief in politically incongruent news stories decreases. To test this relationship, I specified a model in which belief in news stories was the dependent variable and the interaction term of motivational threat and political identification was the independent variable, with the main effects as covariates. As the interaction term of motivational threat and political identification was not significantly associated with overall belief, $b = 0.08$, $t(525) = 1.18$, $p = .239$, marginal $R^2 = 0.025$ (Table 8), H5 was not supported.

For H5, I predicted that the greater the motivational threat, the greater the cognitive effort. To investigate this, I tested two models, one in which response latency was the dependent variable and one in which self-reported cognitive effort was the dependent variable. For both models, motivational threat was the independent variable. Response latency was not significantly associated with motivation threat, $b = -0.02$, $t(527) = -0.50$, $p = .618$, marginal $R^2 = 0.001$ (Table 9). However, self-reported cognitive effort was significantly associated with motivational threat,

$b = 0.38$, $t(527) = 4.63$, $p < .001$, marginal $R^2 = 0.153$ (Table 10). Therefore, H5 was partially supported.

For H6, I predicted that the greater the motivational threat, the greater the anger. Testing this with a standard regression model with anger as the dependent variable and motivational threat as the independent variable, I found a significant associated between motivational threat and anger, $b = 0.44$, $t(87) = 5.26$, $p < .001$ (Table 11). Therefore, H7 was supported.

For H7 and H8, I tested two models in which the polarization of trust in institutions, described below, was the dependent variable. In both models, motivational threat, the independent variable of H8, was an independent variable, and news story identification code was a random effect covariate.

To test H7, the independent variable of cognitive effort for one model was response latency. For the other model, this independent variable was self-reported cognitive effort. For H7, I predicted that the greater the cognitive effort, the greater polarization of trust in institutions. For all hypothesis testing, in accordance with the preregistration, I computed the polarization of trust as the absolute value of the difference between pre-message trust and post-message trust. Taking the absolute value of the difference here eliminates directionality bias, as it is the magnitude of change in trust, rather than a shift toward more trust or less trust, that should be associated with greater cognitive effort.

There was no significant association between cognitive effort and the polarization of trust in institutions with response latency, $b = -0.01$, $t(527) = -0.28$, $p = .777$, marginal $R^2 = 0.020$ (Tables 12 and 13). However, greater self-reported cognitive effort was associated with greater

polarization, $b = 0.09$, $t(527) = 4.88$, $p < .001$, marginal $R^2 = 0.061$[3]. Therefore, H7 was partially supported.

For H8, I predicted that the greater the motivational threat, the greater the polarization of post-message attitudes, such that the absolute value of these attitudes would be greater as motivational threat increases. Results indicated that as motivational threat increased, polarization of trust in institutions also increased, $b = 0.06$, $t(527) = 3.31$, $p = .001$ (Tables 12 and 13). Therefore, H8 was supported.

Discussion

This pilot study used a small student sample to examine the role of cognitive effort and motivational processes in the discernment of true and false news messages. Support for the hypothesis considering the role of cognitive effort was limited and mixed. Based on the classical reasoning premise of the role of cognitive effort in veracity discernment (Pennycook, 2023; Petty & Cacioppo, 1986) according to H1, greater cognitive effort was hypothesized to predict greater accuracy in the discernment of true and false news. With cognitive effort measured through both self-report and response latency, the data did not support this hypothesis. This finding is counter to previous evidence using a two-response approach in which greater response time was associated with greater accuracy in the discernment of false political and conspiratorial information (Bago et al., 2020, 2022).

[3] As an additional, non-preregistered check, I also ran models in which post-message trust was the dependent variable and pre-message trust was entered as a covariate. In this model, cognitive effort was not associated with response time both for response latency, $b = 0.01$, $t(527) = 0.21$, $p = .883$, as well as self-reported cognitive effort, $b = 0.00$, $t(527) = -0.10$, $p = .917$. In addition, there was no association between motivational threat and post-message trust when pre-message trust was a covariate, $b = 0.02$, $t(527) = 0.61$, $p = .544$.

Based on the motivated skepticism account, incongruent messages activate more thought than congruent messages (Taber & Lodge, 2006). However, contrary to H2, there was no significant relationship between news item congruence and response latency. Curiously, however, for self-report, cognitive effort was *greater* (not less, as predicted) when news headlines were congruent compared to the incongruent condition. This result is surprising given research on motivated reasoning, which has found that processing time increases with incongruent information (K. Edwards & Smith, 1996; Petersen et al., 2013; Taber et al., 2009; Taber & Lodge, 2006).

Another relationship I examined with cognitive effort was the polarization of trust in institutions. According to the motivated skepticism proposition, greater cognitive effort should be associated with a polarization of negative attitudes (Taber & Lodge, 2006). The data did not support this prediction, as the association between cognitive effort and change in trust in institutions was significant for self-reported effort but not response latency. Therefore, H7 was partially supported.

Likewise, the pilot data did not provide much support for the hypotheses concerning motivational threat. Theoretically, as motivational threat is a defensive response to perceived threats against one's beliefs (Banas & Richards, 2017), it was predicted that incongruent political information would elicit more motivational threat than congruent political information. Inconsistent with predictions, this association was not observed here, as political identification did not predict motivational threat, with or without the moderator of interest in politics. Therefore, H3 was unsupported.

Motivational threat is also theoretically a mechanism in the process of resistance to persuasion (Banas & Richards, 2017). Although, expectedly, political identification was

associated with belief in these conservative news items, this was not significantly moderated by motivational threat. Therefore, the results did not support H4.

As predicted in H6, however, motivational threat was significantly associated with anger. Given that anger is an approach emotion (Carver & Harmon-Jones, 2009) and that threat is an aversive affective experience (Lazarus & Folkman, 1984), this makes sense, as motivational threat should be associated in part with an aversive emotional state that moves toward a problem to be solved. Confirming H8, I also found that as motivational threat increased, the polarization of trust in institutions also increased. As threat is associated with resistance to persuasion (Banas & Richards, 2017; McGuire & Papageorgis, 1962), this makes sense.

Finally, in H5, I predicted that motivational threat would be related to cognitive effort. I did not observe this association with response latency. However, supporting the prediction, motivational threat was significantly and positively associated with self-reported effortful thinking. This is a logical extension of the role of threat in resistance to persuasion, as threat is theorized to be the mechanism that prompts counterarguing, and by extension cognitive effort (Pfau et al., 2010).

Although there are a few significant theoretically relevant relationships here, there are several limitations to this study that warrant further investigation. Statistical power was limited by the small participant sample size, suggesting that the null results here may be due to insufficient power to detect significant effects. The sample of stimulus materials was also small ($N = 18$), limiting the generalizability of the mixed-effects model. These stimulus materials were short headlines from a conservative perspective targeted to elicit motivational processes among conservatives only, so not only was the cognitive effort required to read them perhaps negligible, but their generalizability was limited. Also, student participants completed this study online in

exchange for course credit rather than cash payment, so the incentives to provide quality responses may have been weak. Also, there were no quality controls for the response latency measure, potentially limiting the ability to detect effects.

To address these limitations, I followed this study up with a data collection through Prolific, an online panel provider with a larger sample of participants as well as stimulus materials. These stimulus materials were extended news excerpts, and they were divided evenly among conservative-serving stories and liberal-serving stories. To address the null findings with response latency, which may have been due to statistical noise, I also implemented an integrated web application to monitor participant distractedness. With these revisions to the method, I conducted the main study.

Chapter 4: Main Study

Method

Sampling and Participants

Power Analysis. Before collecting data, I conducted a preregistered power analysis with simr (P. Green & MacLeod, 2016). This package uses Monte Carlo simulation, which draws randomly from a statistical distribution based on input parameters (Raychaudhuri, 2008). Power is equal to the percentage of these draws that yield significant effects for the first fixed effect in the model syntax (DeBruine & Barr, 2021). In this case, the effect size used in the simulation was based on the projected effect size and standard deviation in H2, the first term of which was the interaction of issue involvement and the consistency of news stories with political identification, a randomly manipulated factor. This hypothesis was selected as an important experimental test of motivated skepticism as well as due to the subtleness of its anticipated effect.

I estimated a small effect size for this effect in terms of a coefficient of 0.08. As the data were to be collected through an online panel and not in the controlled environment of a laboratory, I also assumed that as the implicit measure of response latency would be noisy, the standard deviation would be large relative to the coefficient (*SD* = 2.0). Given these inputs, a sample size of 500 was estimated to provide the desired power of 80% (α = .05; 95% CI [70.82, 87.33]). Given the unpredictability of response time as an outcome variable, I increased the sample size in the preregistration to 600.

Sample Collection. To secure a sufficiently large sample of high-quality data, I collected the sample for this study via Prolific, an online survey panel platform of high quality in terms of participant honesty, attention, and response time (Douglas et al., 2023; Peer et al., 2021). As the study materials focused on US-related news, in order to ensure that the news stories were relevant and involvement was high, I restricted access to participants living in the United States. In addition, half of participants were randomly selected from a pool of conservatives on the Prolific platform, and half were selected from a pool of liberals. Excluding participants who provided invalid responses to the political identification pre-screen and participants who did not finish the survey, in anticipation that some responses would need to be excluded due to insufficient attention, I collected an initial sample of 663 participants. Using the quality checks below, I arrived at a usable sample of 591 participants.

Data Quality. I took several measures to ensure data quality.

Sample Screening. To ensure proper sampling, I added a prescreening question about political identification at the start of the survey. To help screen out bots, I also included a captcha item to the start of the survey.

Attention Checks. In the main study, I included standard instructed response items early in the survey flow to make participants aware that attention checks were included: For example, "Select strongly agree." Near the end of the survey, I also included a bogus item. Based on feedback provided by participants in Study 1, in which several participants noted confusion at the bogus items, I changed the bogus item in Study 2 to a relatively unambiguous statement: "I have been to every country in the world." In Curran and Hauser's (2019) evaluation of bogus attention check items, this item performed well, receiving zero false positive responses and a 2% false-negative rate. To mitigate any potential ambiguity in responding to this statement, I marked agreement higher than the midpoint as incorrect.

Quality Commitment. I included a quality commitment statement before the news evaluation task. In this commitment, participants read that their responses would be monitored for distractions and that their compensation could be affected if distraction was detected. All participants responded affirmatively that they would avoid distractions and provide quality responses. Ensuring that participants know that their response quality is being monitored in this way can mitigate careless responding (Ward & Meade, 2023; Ward & Pond, 2015).

Distraction Detection. Because of the susceptibility of response latency measures in the processing of verbal message to internal noise (Diependaele et al., 2012), I used TaskMaster, a JavaScript application for integration with Qualtrics to detect multitasking (Permut et al., 2019). In the Qualtrics data export, TaskMaster provides additional information about response quality. After processing the data export, for each page of a survey and for each survey attempt, TaskMaster provides the time spent on the survey window and the time spent off the survey window, such as in another browser window or application. I tested this application in Chrome, Edge, and Safari, finding that in each case, the application indicated no false positives. That is,

there were no responses in which a page response attempt was marked as off page when it was not off page.

After some investigation, I found that the page times in TaskMaster did not align with the randomization in Qualtrics. Specifically, whereas the page times in the Qualtrics output were ordered according to the survey flow without randomization, output of the TaskMaster times included randomization. Thus, it was a challenge to determine which responses should be marked as invalid in terms of plausible item completion time. To address this issue, using a detailed prompt, I requested code from Claude AI (Sonnet 4.5) to align the TaskMaster output with Qualtrics. I then verified that the responses were aligned properly by computing the times from both Qualtrics and TaskMaster. This testing indicated that the code functioned properly and that the times were aligned.

Sample Characteristics. Compared to the pilot, participants included in the analysis (N = 591) were older (M = 42.8, SD = 13.4, Mdn = 41.0, range 19–80) and more balanced in terms of gender (see Table 1 for demographics). Median income was in the $45,000 to $55,000 range, lower than in the pilot study, the median level of education completed was a bachelor's degree, higher than in the pilot study, and 96.3% were registered to vote, also higher than in the pilot study. As preregistered, I excluded participants with any incorrect responses to any attention check items from the analysis (n = 72).

A check of random assignments indicated that in the conservative subsample, there was no significant difference in the demographic characteristics of age, anger, education level, or income for news story topic (federal agencies, public education, and the mainstream media), Pillai's Trace = 0.02, $F(8, 478) = 0.49$, $p = .865$, news story congruence with political identification Pillai's Trace = 0.01, $F(4, 238) = 0.64$, $p = .637$, nor the interaction term of these

random assignments, Pillai's Trace = 0.01, $F(8, 478) = 0.919$, $p = .919$. A check of the liberal subsample indicated that neither news story congruence, Pillai's Trace = 0.02, $F(4, 335) = 1.40$, $p = .232$, nor the interaction of news story congruence and topic, Pillai's Trace = 0.02, $F(8, 762) = 1.17$, $p = .314$, were significantly different for the demographic characteristics. However, topic was significantly different for demographic characteristics. Probing this with separate ANOVAs indicated that topic assignment was significantly different only for age, $F(2, 341) = 3.92$, $p = .021$. With a test of Tukey's HSD, I found that liberal participants assigned to the topic of public education ($M = 44.2$, $SD = 14.4$) were significantly older than participants assigned to the topic of federal agencies ($M = 39.3$, $SD = 13.5$; $p = .014$). However, assigning each participant to a random intercept in the mixed-effects modelling approach I used accounts for individual differences in participants' tendencies to respond with high or low values. This mitigates differences that may appear across demographic groups. In addition, this pattern of difference in assigned topic by age did not emerge for the random assignment of news story congruence with political identification, and this was the substantive experimentally assigned variable of interest in these studies. Therefore, excluding participants did not create an issue for random assignment in this study.

Design and Procedure

As with the pilot study, this study was a between-subjects pretest-posttest design. The main study followed the same procedures as the pilot study with the following changes. This study used a two-way (congruent versus incongruent) between-participants design, wherein the congruence of news stories with political identification (consistent or inconsistent) was a manipulated factor. Online panels tend to be more liberal in political orientation. Therefore, to ensure an approximately equal number of liberals and conservatives in the sample, first, I

included a political identification prescreening question at the start of the survey, with those who provided incorrect responses directed away from the survey. Second, because the TaskMaster application only functions on desktop devices, I added a prescreening verification question to exclude those on tablets and mobile devices.

Third, in addition to expanding the length of news stories from the pilot headlines to story excerpts, described below, I also made some changes to the news story evaluation task section of the survey. In the main study, each participant was randomly assigned to see only news stories that were either consistent or inconsistent with their political identification. Thus, participants saw either six liberal news stories, three true and three false, or six conservative stories, three true and three false. In the survey flow, congruence was determined based on participants' political identification provided in their response to a prescreening item ("Where would you place yourself along the political spectrum?" with the options of *Conservative*, *Moderate*, *Liberal*, *Other*, and *NA*). This was presented to participants both in the Prolific platform before enrollment in the study, and, as an extra verification, at the start of the survey.

Thus, data from two surveys were collected: one survey for liberals and one for conservatives. In both studies, each participant was randomly assigned to either the congruent or incongruent condition. In the incongruent condition, self-avowed liberals were asked to assess six conservative news stories (three true and three false). A similar approach was used for self-avowed conservatives. This differs from the pilot study, where, because only conservative news stories were included, incongruence was measured by political identification, with greater self-avowed liberal political identification meaning more incongruence with the conservative items.

Immediately after the evaluation task, participants reported their anger (along with other emotions) and motivational threat in response to the items (measured once, with items randomly

ordered within their respective measure blocks). This approach allowed me to test if news item congruence affected anger and motivational threat overall rather than specific to each separate news story. If anger and motivational threat were presented after each news item, this would have substantially increased survey time and fatigue.

At the end of each set of measures for the news story evaluation task, to improve survey flow and mitigate distraction during the evaluation task, I added a page indicating that participants could take a break before moving on to the next headline evaluation task. Also, to reduce survey time and fatigue, I moved the questions about the consistency of news stories with a left-wing versus right-wing perspective to after the news item evaluation block.

Some changes were also made to the end of the survey. To reduce total survey response time, and because it was not necessary for the main study, I removed the open-response box eliciting feedback. Also, whereas in the pilot study, the veracity of news stories was emailed to participants after the survey closed, in the main study, this information was provided in the debrief at the end of the survey. To affirm the importance of participants' role and sense of ownership in the research process and improve trust within the research community between participants and researchers (Hintz & Dean, 2020; Purvis et al., 2017), at the end of the survey, I gave participants the option to provide an email address. To ensure confidentiality, in addition to potentially identifying demographic information such as ethnicity, these email addresses are removed from the data uploaded to the Open Science Foundation. Upon publication, a copy of any resultant article from this dissertation will be shared with the 44 participants who provided their email addresses.

Materials

As with the pilot study, I used a within-subjects stimuli-within-blocks design to present the news stories. To increase generalizability, however, I made several adjustments to the news stories. First, whereas in the pilot, participants evaluated 6 of 18 news stories, in the main study, participants evaluated the veracity of 6 of 72 news stories. These 72 total items comprised a set of 6 items (3 true and 3 false) × 3 topics (federal agencies, education, and media) × 2 political slant (liberal and conservative) × 2 additional random conditions. Materials between these two additional random conditions were designed to be the same in terms of topic and political slant. This condition was added to increase the total number of materials in order to increase statistical power and generalizability. All news stories were selected and designed to be critical of these three institutions. In addition, whereas in the pilot study, news stories were short headline-style phrases, in the main study, I extended items to between 40 to 50 words long, including a headline and short synopsis. With short headlines in the pilot, participants had relatively little information upon which to base their veracity evaluations. With the longer stories in the main study, veracity evaluations could be made based on more substantive information, such as the presence of specific details in the true stories that were lacking in the false stories. Longer stories in the main study also allowed me to include more of the inflammatory language endemic in false news. These qualities—inflammatory language and lack of verifiable detail—characterizing false stories in authentic contexts (Molina et al., 2021) meaningfully differentiated the true and false news stories. Thus, the intention of this design was to create an opening for cognitive effort to have a meaningful effect on veracity discernment. For specific news stories used in the main study, refer to Appendix C.

In the case of the true items, these synopses were mostly from the first few paragraphs of the original news articles, altered only to fit the word limit constraints. For the initial veracity

evaluation task, I included both the stories and synopses, whereas for the subsequent tasks of thought-listing, self-reported cognitive effort, and familiarity with the news item, only headlines were displayed.

Instrumentation

I measured familiarity with the news stories with a single item ("Were you familiar with this particular news story?" 1 = *Definitely not*, 7 = *Definitely so*; $M = 2.1$, $SD = 1.7$). True news stories (those not created with a large language model) were generally unfamiliar to participants ($M = 2.4$, $SD = 1.9$, $Mdn = 1.0$). True news stories ($M = 4.0$, $SD = 1.5$) were also rated as truer than false news stories ($M = 2.4$, $SD = 1.5$), $t(3404.6) = -30.1$, $p < .001$. Cohen's $d = 1.03$. On a scale from 1 (*Much more left leaning*) to 6 (*Much more right leaning*), participants evaluated conservative news stories as more conservative ($M = 4.3$, $SD = 1.8$) and liberal news stories as more liberal ($M = 3.0$, $SD = 1.6$), $t(575.0) = 13.0$, $p < .001$, Cohen's $d = 1.07$.

As in the pilot, variance inflation factor for all models was below the recommended cutoff of 2.5, indicating that multicollinearity was not an issue. In addition, because it was not necessary for model testing, items measuring populism, included in the pilot data collection, were removed. Enabling response validation in Qualtrics ensured that there were no missing data. I only included completed surveys, in which the last item in the survey was not missing, in the analysis.

In the main study, in order to more closely examine measurement issues, I conducted confirmatory factor analyses (CFAs) on the multi-item measures with the lavaan package (Rosseel, 2012). As seen in Table 13, on most measures, the items performed demonstrated acceptable model fit according to the conventional cutoffs of CFI ≥ .95, RMSEA ≤ .06, and SRMR ≤ .08 (Hu & Bentler, 1999). The RMSEA values of anger, motivational threat, and pre-

and post-message trust in institutions demonstrated a lack of global fit. However, in models with few degrees of freedom, RMSEA often reports poorly (Kenny et al., 2015). Given the few degrees of freedom in the measurement models depicted in Table 2, RMSEA values above the conventional cutoff of .06 may not be cause for concern. Therefore, I conclude that these measurement models meet the criteria for acceptable global fit.

As in the pilot, I estimated reliability with McDonald's ω. Items were measured on seven-point scales with semantic descriptors at both endpoints unless specified otherwise. Composites of these items were computed using Bartlett's refined factor scoring method. Except where otherwise specified, instrumentation, including the sources from which items were gathered, was unchanged from the pilot study to the main study.

All items were examined for skewed distributions. However, because transformation can fundamentally alter data and complicate interpretability (Osborne, 2002), I decided not to conduct any non-preregistered transformations.

Issue Involvement. I measured issue involvement with three items, for example: "How often do you seek information about politics?" scaled from 1 (*Not at all* / *Never*) to 7 (*Extremely so* / *Extremely often*; $M = 4.9$, $SD = 1.5$, $\omega = .92$).

Political Identification. Three semantic differential scales evaluated political self-identification, from 1 (*Strongly liberal, Strongly on the left,* and *Strongly progressive*) to 7 (*Strongly conservative, Strongly on the right,* and *Strongly traditional*; $M = 3.2$, $SD = 1.9$, $\omega = .97$).

Polarization of Attitudes Toward Institutions. To capture the polarization of attitudes toward institutions, participants evaluated five items ("competent," "qualified," "responsible," "honest," and "just") on seven-point scales before and after the evaluation task (1 = *Strongly*

disagree, 7 = *Strongly agree*; Van Oost et al., 2022; pre-message: $M = 4.1$, $SD = 1.6$, $\omega = .96$; post-message: $M = 3.7$, $SD = 1.6$, $\omega = .97$). One item, "benevolent," was not measured in this study, as it explained insufficient variance in the pilot study.

Perceived Accuracy of News Stories. To increase the validity of this measure, I added three additional items to the initially one-item news endorsement measure. (1 = *Extremely unlikely*, 6 = *Extremely likely*; $M = 3.2$, $SD = 1.7$, $\omega = .99$). Veracity discernment was computed in the same manner as in the pilot. That is, the scoring of the true items was combined with the reverse-scored false items.

Cognitive Effort, Response Latency. I used time evaluating news stories as one measure of effortful thinking ($M = 27.6$ s, $SD = 19.0$ s). As in the pilot study, a pre-registered natural log transformation was applied to this item, reducing skewness from 1.97 to 0.15.

Cognitive Effort, Self-Reported. I measured self-reported cognitive effort with three items (1 = *Strongly disagree*, 7 = *Strongly agree*) taken from a twelve-item scale (Reynolds, 1997; $M = 5.9$, $SD = 1.3$, $\omega = .90$)

Anger. Participants responded to four items measuring anger (e.g., "angry," "aggravated") along with three distractor items (e.g., "sad"), each measured on a seven-point scale (1 = *Not at all*, 7 = *Extremely so;* $M = 3.3$, $SD = 1.9$, $\omega = .93$).

Motivational Threat. Motivational threat was measured with four items (Banas & Richards, 2017), e.g., "I wanted to defend my current attitudes from attack" (1 = *Strongly disagree*; 7 = *Strongly agree;* $M = 4.1$, $SD = 1.8$, $\omega = .76$).

Cognitive Reflection Propensity. I used the sum of the three items in the Cognitive Reflection Test (Frederick, 2005) to capture the tendency to think reflectively (range 0 – 3; $M = 1.89$, $SD = 1.19$). Participant feedback from the open-response portion of the pilot survey

indicated that the response format of the bat-and-ball item might bias respondents toward the correct answer. Therefore, this item was adjusted from a single response box (in dollars) to two response boxes (in dollars and cents).

In addition, I included an open-response thought-listing item in the survey as a potential additional measure of cognitive effort, but it is not included in the analysis. I considered using a method, such as the approaches described in Shen and Seung (2018) or So and Alam (2019), for coding listed thoughts. However, I decided that recruiting, training, and compensating coders for a third measure of cognitive effort was beyond the scope of this project.

Results

Exclusion

Following recommendations on reducing the influence of aberrant responding while reducing researcher degrees of freedom (Hong et al., 2023; Thomas & Clifford, 2017), in order to improve data quality, I made the following exclusions based on preregistered criteria. In addition to excluding participants with any inappropriate responses to the three attention checks (n = 72, 10.9%), I excluded from the analysis responses during the news item veracity evaluation task (where each participant completed six responses to the six news stories) in which the time off the page was greater than the mean plus one standard deviation (33.1 seconds). In accordance with previous research (Bago & De Neys, 2017), I also excluded responses with response latencies greater than 2.5 *SDs* from the mean (130.5 seconds). By these criteria, an additional 89 responses (2.2% of the 3,978 total responses to the six news stories) were excluded for excessive time off the news item evaluation page. Beyond this, 50 responses (1.3%) were excluded due to slow response time. In total, 571 responses (14.4%) were excluded in accordance with preregistered criteria. A review of 22 studies on the effects of data exclusion found improvements

such as a reduction in statistical noise, more consistent replication of established effects, and improved psychometric properties of established scales (Thomas & Clifford, 2017). Given the high amount of statistical noise in response time measures of verbal message processing (Diependaele et al., 2012), this degree of exclusion was deemed necessary for hypothesis testing. For bivariate correlations, see Table 14.

Hypothesis Testing

As in the pilot study, all models were tested as preregistered, with hypothesis wording taken directly from the main study preregistration. (For greater clarity within the theoretical framework, "interest in politics" was changed to "issue involvement.") The analytic approach and models were mostly unchanged from the pilot study, with the exception of the experimental induction of news story congruence as an interaction term in H2 rather than political identification. Intraclass correlation ranged from .01 to .72 for mixed-effects models in the main study.

For H1, I predicted that the greater the cognitive effort, the greater the veracity discernment of politically relevant information. With response latency was significantly associated with cognitive effort, b = -0.05, t(3400) = -2.00, p = .046, marginal R^2 = 0.007 (Table 15). However, H1 was not supported, as the association was negative. That is, the greater the cognitive effort, the lesser the veracity discernment. Self-reported cognitive effort was not associated with veracity discernment, b = 0.02, t(3400) = 1.38, p = .168, marginal R^2 = 0.006 (Table 16). Therefore, H1 was not supported.

For H2, I predicted that for politically inconsistent news stories, the greater the issue involvement, the greater the cognitive effort. This hypothesis was not supported when either response latency, b = -0.01, t(3398) = -0.34, p = .737, marginal R^2 = 0.001 (Table 17), or self-

report, b = -0.02, t(3398) = -0.22, p = .829, marginal R^2 = 0.057 (Table 18), were used as measures of cognitive effort. Therefore, H2 was unsupported. There was, however, a main effect of news item consistency on self-reported cognitive effort, b = -0.24, t(3398) = -3.29, p < .001.

For H3, I predicted that as issue involvement increases, motivational threat is greater for politically incongruent news stories than for politically congruent news stories. As no random effects were needed, H4 was tested with a standard regression model. The interaction term of issue involvement and news consistency was not significantly associated with motivational threat, b = 0.11, t(587) = 1.21, p = .229, marginal R^2 = 0.010 (Table 19). Therefore, H3 was not supported.

For H4, I predicted that for politically incongruent news stories, as motivational threat increases, the belief in politically incongruent news stories decreases. There was no significant association between the interaction term and overall endorsement of the news stories, b = -0.01, t(3400) = -0.40, p = .692, marginal R^2 = 0.031 (Table 20). Therefore, H4 was unsupported.

For H5, I predicted that the greater the motivational threat, the greater the cognitive effort. Taking response latency as the dependent variable, this was not supported, b = 0.00, t(3402) = -0.12, p = .908, marginal R^2 = 0.000 (Table 21). However, motivational threat was associated with self-reported cognitive effort, b = 0.14, t(3402) = 4.38, p < .001, marginal R^2 = 0.024 (Table 22). Therefore, H5 was partially supported.

For H6, I predicted that the greater the motivational threat, the greater the anger. I found a significant association between motivational threat and anger, b = 0.27, t(589) = 7.64, p < .001, marginal R^2 = 0.090 (Table 23). Therefore, H6 was supported.

For H7, I predicted that the greater the cognitive effort, the polarization of trust in institutions. (Recall that H7 and H8 are tested in two models, one for response latency, Table 24,

and one for response self-reported cognitive effort, Table 25, marginal $R^2 = 0.032$.) As in the pilot study, this polarization item was created by taking the absolute value of the difference between the post-message trust item and the pre-message trust item. Using this dependent variable, self-reported cognitive effort did not predict the polarization of trust, $b = 0.01$, $t(3402) = 1.64$, $p = .100$, nor did response latency, $b = 0.01$, $t(3402) = 1.43$, $p = .154$[4]. Therefore, H7 was not supported.

For H8, I predicted that the greater the motivational threat, the greater the polarization of post-message trust. For parsimony, I included motivational threat in the model testing H7. Motivational threat was significantly associated with the polarization of trust, $b = -0.02$, $t(3402) = -2.10$, $p = .036$. As motivational threat increased, trust in institutions became more polarized. Therefore, H8 was supported.

Discussion

To test classical and motivational accounts of the processing of false news information, the main study used a larger participant sample from a paid panel provider, the size of which was determined from an *a priori* power analysis. In addition, this study also used a larger sample of stimulus news items, half of which were favorable to a conservative perspective and half to a liberal perspective ($N = 72$). For a summary of results, see Table 26.

As with the pilot study, the results of the main study indicate that, contrary to predictions derived from both the classical reasoning and motivational accounts, the role of effortful thinking

[4] As an additional non-preregistered check, I checked if setting post-message trust as the dependent variable and pre-message trust as a covariate would affect the outcome. However, there was no association between trust and self-reported cognitive effort, $b = 0.00$, $t(3402) = 0.33$, $p = .741$, nor response latency, $b = 0.00$, $t(3402) = -0.15$, $p = .883$. I also tested if motivational threat would be associated with post-message trust when pre-message trust was entered as a covariate. However, there was no significant association for this non-preregistered test, $b = 0.00$, $t(3402) = 0.28$, $p = .779$

in information veracity processing may be limited. For H1, in accordance with the classical account of reasoning, I tested the association between cognitive effort and veracity discernment. I found no significant association between self-reported cognitive effort and veracity discernment. Using an unrestricted sample that included participants who missed attention checks and were potentially distracted during the evaluation task, there was a significant association between response latency and veracity discernment. However, contrary to the prediction made from the classical account (Pennycook, 2023; Petty & Cacioppo, 1986) as well as two-response paradigm research (Bago et al., 2020, 2022), it was in the opposite of the hypothesized direction: Longer response times were associated with slightly worse veracity discernment.

This study also tested motivated reasoning in the context of veracity discernment. According to the proposition of motivated skepticism (K. Edwards & Smith, 1996; Taber & Lodge, 2006), incongruent messages elicit greater cognitive effort than congruent messages. Contrary to H2, however, the interaction between news item congruence and interest in politics was not associated with cognitive effort for either response latency or self-report. However, replicating the unexpected results found in the pilot study, there was a main effect of news item congruence on self-reported cognitive effort, such that cognitive effort was less for incongruent news items compared to congruent items. There is consistent with some previous evidence, such as eye-tracking research that has found attention to be greater with politically congruent information (Luo & Zhao, 2019).

From the motivated skepticism account, a prediction also follows that greater cognitive effort should be associated with a polarization of attitudes (H7; Taber & Lodge, 2006). This was not supported by the results using the self-reported measure of cognitive effort nor the measure of response latency, corroborating the results of the pilot study.

The results of the main study mostly corroborate the findings of the pilot study regarding the role of motivational threat in the processing of political messages. As in the pilot study, and contrary to H3, motivational threat was not higher with incongruent news items than with congruent items. This was the case both with interest in politics moderating the relationship as well as with news item congruence was considered as a main effect. Motivational threat is a defensive response to a perceived challenge to one's beliefs (Banas & Richards, 2017), so it stands to reason that it may be greater with incongruent political information. However, as the congruence of political news stories with a reader's own political alignment did not yield more effortful thinking either way, this invites further consideration the role of potentially biasing motivational process in political news veracity discernment.

As motivational threat tracks belief defensive responses (Banas & Richards, 2017), in H4, I predicted that motivational threat would be associated with an amplification of disbelief in politically incongruent news. As in the pilot study, this prediction was not supported, further suggesting a reconsideration of the role of motivational processes in news veracity discernment. Also consistent with the pilot study, motivational threat was positively associated with anger. As such, H6 was supported. As described in the anger activism model (Turner, 2007), anger promotes effortful thinking. Motivational threat may help account for this process.

In H8, I predicted that motivational threat would be associated with change in trust in institutions, such that as motivational threat increased, trust in institutions polarized. In contrast to the results of the pilot study, this prediction was supported. Although this was a weak association, it suggests a potential consideration of the expansion of the role of motivational threat in attitude formation.

Considering the combined role of motivational threat and cognitive effort, for H5, I predicted that as motivational threat increased, so too would cognitive effort. Replicating the pilot study, I found that although there was no association between motivational threat and response latency, motivational threat was significantly and positively associated with self-reported cognitive effort. This is in line with the theoretical operation of threat in the process of resistance to persuasion (McGuire & Papageorgis, 1962; Pfau et al., 2001, 2010) and invites further investigation into the role of motivational threat as a mechanism in news veracity discernment.

Addressing the limitations of the previous study, I filtered data selectively using a web-based distraction monitoring application. Despite this, however, and consistent with the pilot study, cognitive effort was found to apparently play a limited role both in the discernment of true and false news as well as in the capacity of being triggered by motivational threat. Also consistent with the pilot study, motivational threat was associated with more anger and, in terms of the self-report measure, more cognitive effort. Motivational threat was not, however, predicted by news item congruence.

In addition to practical implications, limitations, and future directions, these results are further elaborated upon in the general discussion section.

Chapter 5: General Discussion

Cognitive Effort and Veracity Discernment

In this dissertation, I have examined the role of cognitive effort and motivational threat in reasoning and bias about false news items. I studied this specifically in the context of social institutions and the effects of biased processes on trust in these institutions. The first hypothesis examined if cognitive effort was related to news veracity discernment. According to classical

dual-process theorizing (Kahneman, 2011; Petty & Cacioppo, 1986; Wegener & Petty, 1997; although see S. Chen & Chaiken, 1999), slow, deliberative cognitive processing should be associated with greater accuracy. Some more recent dual-process theorizing maintains this proposition, according to which cognitive effort is generally directed toward accuracy rather than rationalization, as the latter motivation is considered to be a waste of cognitive resources (Pennycook, 2023).

However, this relationship was not supported by the present research. In two studies, with two measures of cognitive effort, and with both a single-item measure of news item belief (pilot study) and a multi-item measure of belief (main study), there was no association between cognitive effort and the accurate discernment of true and false news.

To make sense of these disparate results, I will consider the measures of cognitive effort, starting with the implicit measure, response latency. Implicit measures are advantageous in that they avoid the issues of response styles that affect explicit measures such as self-report (Paulhus & Vazire, 2007). In persuasion research, thought-listing has typically been used as a measure of counterarguing, specifically indicating cognitive effort directly skeptically toward a message. In this research, treatments designed to elicit resistance to persuasion elicit more thoughts than control (Banas & Miller, 2013; Pfau et al., 1997, 2009), demonstrating that experimentally induced changes in cognitive effort are measurable through implicit measures.

However, other research indicates the limitations of implicit measures of cognitive effort. In a recent messaging study on the effects of messaging language on cognitive effort, Turkenburg (2025) used thought-listing as a measure of cognitive effort, using an automated tool that examined sentence length and uncertain language. Although cognitive effort as measured through an explicit self-report responded to the experimental manipulations of argument type in

the hypothesized directions, indicating greater reflection for more sophisticated and accessible messages, cognitive effort as measured implicitly by thought-listing in this study was not affected by the experimental manipulations. Similarly, testing the influence of cognitive effort on the use of party cues as heuristics, Tappin and McKay (2021) induced cognitive effort with a manipulation in which participants were told asked to write out arguments in favor of or in support of an issue, with the manipulation being that in the high-effort condition, they were told that their arguments would be evaluated by independent raters. However, by this measure, cognitive effort had no moderating effort on party cues. Implicit measures such as these appear to often fail to capture cognitive effort.

Consistent with this reasoning, the variability of response latency in my research here was great (main study: $M = 27.6$ s, $SD = 19.0$ s). As the variability here was much greater than that projected in the *a priori* power analysis, it could be that there was insufficient power to detect any effects given the statistical noise of this measure. Therefore, it could be the case that although the implicit measure of response latency was unable to detect how cognitive effort affects and is affected in the process of veracity discernment, these null results do not necessarily indicate that there is no effect.

Research on response latency suggests, however, that it does capture a quantity of cognitive effort, albeit not necessarily a kind of effort sufficiently sophisticated or analytic to solve complex tasks. As a measure of processing quantity (Thomson & Oppenheimer, 2022), response latency functions as a measure of cognitive effort in default-interventionist theories (Evans & Stanovich, 2013; Kahneman, 2011; Petty & Cacioppo, 1986), according to which a fast, intuitive response can be intervened upon by a slow, deliberative response. In some discrete tasks, response latency is demonstrably related to cognitive effort. Specifically, in visual attention tasks,

accuracy in an adjacent-letter-discernment ("flanker") task declined over time, indicating the limits of sustained attention (Faber et al., 2012). This research suggests that cognitive effort is a limited resource that depletes over time. In another set of studies, choosing between similar options, such as determining which batch of twinkling dots was more densely populated, was more time-consuming than decision-making among more clearly disparate options (Oud et al., 2016). Together, this evidence indicates that at least for some types of tasks, more difficult tasks are more time-consuming, suggesting some association between cognitive effort and response latency. However, response latency was not associated with veracity discernment in either the pilot study or main study here, indicating that no matter the extent of cognitive effort, veracity discernment appears to have been unaffected by cognition over time.

This result contradicts extant research on response latency as cognitive effort and veracity discernment. In a series of two-response paradigm studies, compared to the condition in which cognitive effort was limited, in the condition in which participants were free to think effortfully, the discernment of the veracity of false news (Bago et al., 2020) and disbelief in epistemically suspect claims (Bago et al., 2022) was greater. In this two-response paradigm study, cognitive effort is manipulated in two ways: a cognitive load task, in which participants memorize a visual pattern, as well as a time constraint. Theoretically, both of these manipulations are thought to limit cognitive effort, with the results suggesting that as unconstrained effort yields greater accuracy, a lack of effort, rather than motivated reasoning, is what drives belief in false information.

These results invite some alternate interpretations, however. Bago et al. (2020) found that equally both with and without cognitive constraints, overall, politically congruent news was evaluated as truer than incongruent news. This finding could suggest that whatever changes in

cognitive capacity are affected by cognitive load and time constraints may not be tapping into the decoupling process in which initially biased responses are reasoned out. Rather, these cognitive constraints may simply increase task difficulty, leading to worse task performance, and do not reflect the reasoning process in authentic contexts. Supporting this, in a different version of the two-response paradigm research lacking the cognitive load task, Villejoubert (2009) found that there was no significant difference in accurate responding with or without time pressure. Thus, it may be the case that rather than cognitive effort leading to more reasoned, less biased responding, the cognitive load task simply distracted participants to the extent that performance was significantly affected.

Similarly, Bago et al. (2023) found that greater cognitive effort was associated with a greater reinforcement of prior beliefs. In their interpretation of these results, they concluded that this demonstrated accuracy-oriented Bayesian updating, as prior beliefs may have a strong effect on posterior belief. However, these results may demonstrate rationalization, insofar as in the Bayesian model of belief updating, although priors are weighted in belief in response to new evidence, compelling evidence should attenuate these prior beliefs. These conclusions are consistent with the results of my two studies, in which regardless of the extent of cognitive effort, biased belief in politically congruent news items was not attenuated.

Other research indicates more clearly the lack of association between cognitive effort as measured by response latency and accuracy. Bago and De Neys (2017) found that correct responses tended to be provided quickly, with extra time giving no significant advantage. Others have found that in extended reasoning tasks, although confidence levels changed with conflict versus no conflict, response times did not (Janssen et al., 2021). These disparate findings form a picture supporting De Neys' (2012) claim of logical intuitions: When the logical answer conflicts

with the heuristic one, although people can generally detect that there is something wrong with the heuristic response (as evidenced by response latencies), situational differences in available cognitive resources, as well as individual differences in cognitive sophistication, generally limit the efficacy of cognitive effort to resolve the conflict that is detected between competing intuitions (e.g., "X is typically true," and "logic suggests X may be false") but are nevertheless usually not resolved in a way that leads to accuracy. Therefore, response time could indicate the presence of conflicting intuitions, but it would not necessarily indicate the ability to resolve them and arrive at the correct response. This is not inconsistent with the results of my two studies and could be worth exploring in future research.

Given this lack of association between cognitive effort and accurate posterior beliefs, it may be that rather than the amount of cognitive effort, it is the motivational directions of the effort that meaningfully predict accuracy. In an experiment similar to the two-response paradigm design, Gawronski (2023) found that compared to the control condition, a prompt to stop and reflect on responses yielded greater veracity discernment (Experiment 2). This conclusion is similar to the finding that accuracy prompts work not by increasing cognitive effort, but rather by increasing focus on accuracy (Lin et al., 2023). Other research has found that both endorsers and non-endorsers of epistemically suspect claims evaluate such claims effortfully (Martire et al., 2020), indicating that belief in such claims may not be associated with insufficient cognitive effort.

As with response latency, in both studies here, self-reported cognitive effort was not associated with veracity discernment. However, deviating from the preregistration and using the full sample in the main study, including those who missed attention checks, self-reported effort was positively associated with veracity discernment.

Compared to response latency, self-reported cognitive effort has several advantages. In my study, self-reported cognitive effort demonstrated more stable measurement properties (main study: $M = 5.88$, $SD = 1.31$, $\omega = .90$). Outside of the present research, there are some indications of the validity of self-reported cognitive effort. Self-reported reflective thought has been found to be greater with more sophisticated and accessible messages (Turkenburg, 2025). Self-reported analytic thinking has also been associated with resistance to persuasion from an epistemically suspect message (Bessarabova, Banas, et al., 2024), and self-reported cognitive effort is associated with greater narrative engagement (Shen & Seung, 2018) as well as information recall (Jennings et al., 2019). As self-reported measures of cognitive effort and analytic thinking are predictive of theoretical outcomes in these communication contexts, this evidence suggests their validity for use in tapping into theoretically predicted constructs.

However, like all explicit measures in the social sciences, it is arguable that socially desirable responding (A. L. Edwards, 1957; Paulhus, 2017) may bias self-reports of cognitive effort. In the context of this research, however, veracity discernment seems to be less susceptible to this bias. It would be difficult to argue that participants who knew their responses were correct portrayed themselves as more cognitively engaged. Participants were not aware of the accuracy of their own veracity discernment until after the experiment was completed, nor were they informed that there was a congruent or incongruent news item condition. Likewise, it is difficult to imagine how extreme or acquiescent response styles could affect the results here. These concerns aside, it appears that despite the potential issues with the stability of response latency and its limited precision in detecting subtle effects, self-reported cognitive effort should detect an association between cognitive effort and veracity discernment.

Nevertheless, self-reported cognitive effort was not associated with veracity discernment. One possibility to explore is that the task type used here, and generally used in veracity discernment research, does not authentically capture the role of cognitive effort. These news items were short, approximately 40 words each. Given the ease of the task of reading these short items, applying cognitive effort could have a limited effect. As Pennycook and Rand (2021b) note, prior knowledge could be one of the main driving forces in the discernment of the veracity of true and false news. This suggests that rather than cognitive effort, cognitive sophistication (which, as I have defined it, includes knowledge as well as reasoning abilities) is most predictive. Future research could then attempt to use longer stimulus materials to determine if cognitive effort, rather than cognitive sophistication, is truly at play here.

However, taking previous work together with the results across two studies and with both implicit and explicit measures, it appears that cognitive does not necessarily lead to more accuracy. Two-response paradigm research arguably supports the classical account, but it is difficult to determine if the association between greater response time and less cognitive load with accuracy indicates a rational, decoupling effect, or if, given equal bias in veracity discernment both with and without constrained cognitive resources in two-response paradigm research, constraining cognitive resources simply increases task difficulty. Likewise, the findings that accuracy prompts increase accuracy through a greater focus on accuracy rather than increased cognitive effort are consistent with my findings.

Further research may consider examining alternative cognitive correlates of veracity discernment. Rather than response latency, it might be better to try to detect decoupling through motivations (Chaiken & Maheswaran, 1994; Hutmacher et al., 2025) and confidence levels (Maglio & Reich, 2019; Thompson & Morsanyi, 2012). Confidence levels have been found to be

lower when reasoning tasks contained conflicting intuitive and reasoned responses and were thus more challenging (Bago & De Neys, 2017). Pairing this approach with valid indications of motivations, such as through priming, may help reveal the cases in which accurate conclusions are reached.

Political Congruence and Cognitive Effort

According to the premise of motivated skepticism, politically incongruent messages elicit greater cognitive effort (Taber & Lodge, 2006). From the perspective of directionally motivated reasoning, counterarguing against attitudinally incongruent messages makes sense, as these messages can threaten one's moral intuitions (Feinberg & Willer, 2013; Haidt, 2001) or social identity (Kahan & Carpenter, 2017)

In line with this, for H2, I predicted that cognitive effort would be greater for incongruent political news items than for congruent news items. This prediction was not supported. Although the effect of response latency was null, in both studies, self-reported cognitive effort was greater with *congruent* political news items. This is unexpected, given the well-supported association between cognitive effort and incongruent political messages (K. Edwards & Smith, 1996; Petersen et al., 2013; Taber et al., 2009; Taber & Lodge, 2006). These results also contrast with other work finding that response latency increases with conflicting information (Pennycook et al., 2012). For example, response times have been found to be higher when there an incongruence between heuristic cues and base rates (De Neys & Glumicic, 2008) or when a logical answer is incongruent with the intuitive answer in conjunction fallacy reasoning tasks (Villejoubert, 2009). These previous findings are consistent with default interventionist accounts of reasoning, such as Pennycook's (2023) model, according to which, when conflict between cognitions is detected, this triggers cognitive effort.

However, for other task types, cognitive effort is greater with congruent information. Generally, there is some evidence that congruent information promotes greater attention. In the evaluation of graphical climate change evidence, visual attention as measured with eye tracking was greater with politically congruent information (Luo & Zhao, 2019). Likewise, in eye-tracking research on attention to organic food websites, aversion to organic foods predicted less attention to these materials (Van Strien et al., 2016). For these tasks, there seems to be a simple principle: Appealing information draws more attention. This is consistent with what I found, in that more cognitive effort was spent on congruent news items.

From a motivational perspective, the attraction of congruent information could be explained by how it supports belief in alignment with prior attitudes. For example, more attention to arguments about the minimum wage decreases subsequent perceived convincingness of belief-confirming evidence (Simpson et al., 2023). Likewise, other research indicates greater cognitive effort directed specifically toward counter-attitudinal information is negatively associated with polarization (H.-T. Chen et al., 2022). Therefore, directional motivations may be to avoid dwelling on information that can demonstrably adjust belief away from prior attitudes.

How do we reconcile this with motivated skepticism research? In such research (e.g., Taber & Lodge, 2006), response latency is greater with incongruent information. The meaningful difference between this and my research, however, could be stimulus type. Motivated skepticism research uses more extended materials, in which participants evaluate arguments and determine their positions on these broad policy issues. In veracity discernment research, however, such as the studies I conducted here, the scope is narrower, and news items that are deemed false can be easily dismissed as such. Another potential contributor is that participants know in advance that some of the items that they will be reading might be false. For studies of bias in which general

arguments are presented (e.g., Lord et al., 1979), broader policy positions require more thinking to be dismissed as wrong. Together, this indicates the importance of stimulus material type when examining motivated cognitive effort in communication research. Although incongruent messages on broad, accessible topics tend to produce more cognitive effort, brief news excerpts may activate motivated reasoning in the same way. In the next section, I expand on this theme, considering motivated processes more directly.

Motivational Threat

Two of my hypotheses considered the role of motivational threat in response to news items and in subsequent belief in those items. As motivational threat tracks the motivation to defend one's beliefs and the capacity for resistance (Banas & Richards, 2017), I predicted that politically incongruent news items would amplify motivational threat, rallying the defenses to argue against these items (H3).

This relationship was not supported by the data. Motivational threat was not significantly different with politically congruent or incongruent news items, nor was it different when accounting for interest in politics—a form of issue involvement—as a moderator, a variable which was considered because it has been found to have a multiplicative relationship with motivated skepticism in previous research (Taber & Lodge, 2006; Zhou, 2016).

Similarly, I predicted that disbelief in incongruent items would be particularly high when motivational threat was high (H4). This hypothesis is based on the idea that because motivational threat triggers resistance to persuasion (Banas & Richards, 2017; Bessarabova, Banas, et al., 2024; Bessarabova & Banas, 2024), it would amplify the rejection of incongruent information. Although congruence was associated with belief in news items, such that belief was higher in

politically congruent items than in incongruent items, motivational threat did not amplify this relationship.

I also examined cognitive effort as it relates to motivational threat, predicting that as motivational threat increased, so would cognitive effort (H5). This prediction was not supported by the results with the response latency measure. However, providing partial support for my prediction, motivational threat was positively associated with self-reported cognitive effort. This finding corroborates previous work on threat and cognitive effort (Pfau et al., 1997, 2001). Theoretically in persuasion research, threat is considered to be the mechanism that promotes counterarguing (Pfau et al., 2010), which is a kind of cognitive effort directed at resisting persuasive messages. Therefore, it makes sense that as motivational threat arose in the context of news veracity discernment, so would cognitive effort.

Measurement issues that may have affected results regarding motivational threat, item congruence, and cognitive effort are worth exploring. Although motivational threat was associated with self-reported cognitive effort, there was no difference in motivational threat with congruent versus incongruent news stories. Likewise, motivational threat was not apparently associated with belief. It may be the case, then, that the motivational processes here with congruent and incongruent news items, in contrast to research on persuasion, were not accessible to introspection. This could be due to response styles, such as social desirability, which inhibited participants from responding about their motivational threat levels candidly. In other words, participants may have been reluctant to admit to defensive reactions to politically charged information.

A few points are in favor of using motivational threat in this context, though. Even though it is a self-report of motivated reasoning, it does not directly ask participants to introspect

on the specific nature of their motivations, such as by asking "Were you motivated to defend your political identity?" Rather, participants were asked to report on their motivations to defend their beliefs. This is similar to research finding that motivational threat is associated with resistance to persuasion. However, rather than resisting a single persuasive message, in this context, participants were asked to report their motivations to resist the content of true and false news stories. Therefore, it stands to reason that if the measure of motivational threat is valid in the context of resistance to the persuasion of one message, it should be valid here.

The differences between self-reported cognitive effort and response latency should also be unpacked. One possible explanation is that self-reported cognitive effort captures a motivational aspect of effort. As self-reports, both the motivational threat and cognitive effort measures capture consciously accessible states. It also follows logically that introspectively accessible motivations to defend one's ideas would be associated with accessible effort, as someone who believes that they want to defend their ideas would also seem likely to want to spend the effort to do so. In addition, as previously discussed, there are issues with response latency as a measure of cognitive effort, as longer time in a task is not necessarily effortful. Together, this means that self-report may be a more motivationally linked form of effort, or it may simply do a better job overall at capturing cognitive effort than response latency. Indeed, correlational results also indicated that self-reported cognitive effort was significantly associated with motivational threat in both studies (see Tables 2 and 15).

As motivational threat was not measurably elicited by or affected the belief in these news stories, I now consider the possibility that the types of messages used in these studies did not elicit motivated reasoning. As previously stated, motivational threat did play some role here, as it was associated with cognitive effort. It was also associated with anger, discussed below. An

examination of correlations in both studies (Tables 2 and 15) indicates that motivational threat was also associated with interest in politics. This stands to reason, as those who are more interested in political topics could be expected to have stronger motivations to defend the prior beliefs that have developed.

However, the set of findings that motivational threat was not associated with the political congruence of news items is an issue worth addressing. One reason for a lack of association between the political concordance of news items and motivational threat could be that issue involvement was too low, as traditional threat is associated with issue involvement (Pfau et al., 2001). Therefore, it is possible that personal investment in these topics was too low among participants for political congruence to make a difference in eliciting motivational defenses. Although the topics of the mainstream media, educational institutions, and federal agencies are politically charged topics—all of the true news items were published online, mostly in in mass-market news outlets such as CNN, NPR, and Fox News, suggesting that at least for some, these issues matter—future research may consider testing motivational threat and incongruent political information on topics of greater mass interest. In addition to the news items potentially being of little personal relevance to participants, another possibility is that the news items were insufficiently polarizing. In consideration of the role of emotion in false news online (Carrasco-Farré, 2022) and in the motivational processes that encourage its spread (Wolf & Schröder, 2024), I prompted the language model that generated the false items to use emotionally charged language, which is evident in the false news items. Therefore, these items should have activated motivational processes among partisans for whom they were incongruent.

However, the null findings here might suggest that the disparate findings in motivated reasoning research versus veracity discernment research could be due to differences in task type.

In the context of persuasion research, motivational threat is typically used to determine the extent of motivation to formulate arguments against, and subsequently resist, persuasive messages. These messages generally have the structure of a central thesis followed by supporting points. For example, in one study, participants watched a video in which an argument was made for the claim that the terrorist attacks of September 11, 2001 were an inside job perpetrated by the U.S. federal government (Bessarabova, Banas, et al., 2024). After watching the video, participants then rated the extent of their agreement with the thesis of this conspiracy theory. In this study, motivational threat had both a direct effect on mitigating endorsement of this claim as well as an indirect effect on reduced endorsement via engaging analytic thinking mode. For this type of task, then, motivational threat captured the process of resistance to the central proposition of a message.

The lack of such an effect of motivational threat regarding belief in congruent versus incongruent news items, as well as in the activation of motivational threat by news item incongruence, may be due to the differences in task type in veracity discernment research versus in motivational research. In motivated reasoning research, participants are asked to consider not the likelihood that a news item is authentic or fabricated, but their endorsement of a general and arguable claim. These arguments include support for the death penalty, corporal punishment, abortion access, and same-sex adoption (K. Edwards & Smith, 1996), affirmative action and gun control (Taber & Lodge, 2006), foreign aid, punishing cheaters, and freedom of speech (Taber et al., 2009), as well as risk perceptions regarding nuclear energy and climate change (Kahan, Peters, et al., 2012).

To examine the nature of the task used in motivated reasoning research and how it engages motivational processes differently than veracity discernment research, I illustrate with a

well-known paper. In their influential work on biased assimilation, Lord et al. (1979) presented participants with evidence for and against the deterrence effect of the death penalty. When participants who favored one side argued against the other, they did not dispute the veracity of the studies as such. That is, they took it for granted that the studies were actually conducted and in the manner presented in the synopses they received. Rather, they argued about the interpretation of those studies, such as with their methods and implications of the results. In other words, motivated reasoning apparently did not direct participants to reject the evidence but rather with unfavorable interpretations of it. This could explain why cognitive sophistication, such as education level or science literacy, predicts attitude polarization on topics such as climate change (Kahan, Peters, et al., 2012; Meirick, 2022b): Through the motivated application of evidence, support for a favorable interpretation can be constructed. Likewise, in the argument tasks used in motivational research (Taber & Lodge, 2006; Washburn & Skitka, 2018b), participants are free to draw on a wide range of potential facts and evidence supporting or rejecting the argument they are to evaluate.

In contrast, in veracity discernment research, the task is to evaluate the plausibility and legitimacy of discrete news items. This type of task may not engage the process of motivated reasoning as such. Rather, in this task type, plausibility may be determined in consideration of prior knowledge. If this is the case, neither cognitive effort nor motivational processes would directly affect the discernment of false news, as I found in my two studies here. Motivational threat may not vary with news congruence because incongruent news items can be dismissed as false. This is especially true when participants are necessarily aware that some items they read in studies such as this may not be true, as implied by the task of evaluating the veracity of the news stories. This may also explain the null findings of cognitive effort. In contrast to the task type in

my research here, in a study finding that incongruent party cues activated greater cognitive effort than congruent party cues, the stimulus used was an argument, not a factual claim, purportedly endorsed by the party in-group or out-group (Petersen et al., 2013). It is consideration of a general proposition, rather than a discrete piece of information in a news item, that appears to activate motivated processing.

Why then do people believe in false information? One plausible explanation is that motivated processing occurs not in the evaluation of the veracity of news stories, but in the meaning-making process (Bruner, 1990) of the construction and maintenance of overarching narratives, or deep stories. Deep stories explain fundamental conflicts in society through the cultural worldviews of people who feel them to be true (Hochschild, 2016). Through social media, the deep stories that resonate with people, such as the claim that the 2020 U.S. presidential election results were fraudulent, are spread and amplified through news items that support these narratives (Prochaska et al., 2023), a process that polarizes news consumers (Gvirsman, 2014). In this framework, by the time someone encounters a news item outside of the usual context of a social media algorithm, the motivated reasoning processes through which belief in these fundamental deep stories is established has already occurred, making acceptance or rejection of the news item a cognitively undemanding and motivationally unprovoking task.

Motivational Threat and Anger

I also predicted that motivational threat would be associated with anger. As an approach emotion (Carver & Harmon-Jones, 2009) and component of reactance (Miron & Brehm, 2006), anger should be associated with motivational threat as an aversive affective experience (Lazarus & Folkman, 1984) associated with the resistance of persuasive messages (Dillard & Shen, 2005). Results indicated that in both studies, motivational threat was associated with anger. Given that,

under some conditions, anger is associated with greater processing depth (see Bessarabova et al., 2020), it makes sense that motivational threat was associated with both self-reported cognitive effort and with anger. Together, these findings suggest a potential underlying role of motivational threat as a link between anger and cognitive effort. Providing potential support for this conjecture, although in both studies, anger was negatively associated with response latency, in the pilot study, anger was positively associated with self-reported cognitive effort. Further research directly testing this speculation, such as by experimentally activating motivational threat, may help unravel the connection here.

Cognitive Effort, Motivational Threat, and Trust in Institutions

Based on previous research and evidence on motivated skepticism (Taber & Lodge, 2006), I predicted that greater cognitive effort would be associated with a polarization of attitudes toward three institutions: federal agencies, public education, and the mainstream media. Results were somewhat mixed, but generally, this prediction was not supported. Polarization of trust was associated with self-reported cognitive effort in the pilot study, but response latency in the pilot study, as well as response latency in both studies, was not associated with change in trust. This finding complements research that information, even about polarizing topics, moves people normatively toward the attitudes that the evidence suggests (Anglin, 2019). However, the results here should be interpreted with caution.

Based on the premise that threat increases resistance to persuasion (Banas & Richards, 2017; McGuire & Papageorgis, 1962), I hypothesized that greater motivational threat would be associated with greater polarization of trust in institutions. This hypothesis was supported: In both studies, as motivational threat increased, change in trust also increased. Although threat

activates defenses, the messages about institutions nevertheless shifted and polarized attitudes about those institutions.

Limitations

This dissertation is not without limitations. As others have noted, an agreed-upon measurement or even conceptual definition of cognitive effort remains unresolved (Thomson & Oppenheimer, 2022). In these studies, I measured effort with an implicit measure, response latency, and self-report, an explicit measure. In order to increase the number of news stories that participants evaluated, I used a repeated-measures design wherein each participant judged the veracity of six news stories. Rating twelve self-report items for each of the six news stories would not only have limited the feasibility of the main story in terms of completion time and therefore cost, but because survey takers are humans with limited attentional resources, it would likely have also introduced survey fatigue. Given this choice, to permit the feasibility of measuring self-reported cognitive effort for six news stories without introducing survey fatigue, I made the choice to sacrifice some of the validation Reynolds (1997) reported in his paper on the measure. An exploratory factor analysis on Reynolds' (1997) scale in the pilot study, in which all 12 items were included, indicated that the three items I retained explained had factor loadings of .79 to .92, with excellent internal reliability as well ($\omega = .92$). Therefore, although there is some loss in the full explanatory power of the full twelve-item scale, I concluded that the sacrifice of the full twelve-item scale, many of the items of which were redundant or suggested distinct constructs (e.g., not being distracted) was, on the whole, an improvement to measurement quality.

Chapter 6: Conclusion

This research examined the role of reasoning and motivational processes in the context of the discernment of true and false news stories. According to the classical reasoning account, greater cognitive effort should be associated with greater veracity discernment. In contrast, according to the motivational account, in polarizing contexts, goals other than accuracy motivate cognitive effort, limiting its benefit in the discernment of false information.

My findings did not support the classical reasoning account. In both studies, using both implicit and explicit measures, cognitive effort was not associated with veracity discernment. These findings do not close the book on the debate between the classical and motivational accounts of reasoning, as an absence of evidence does not necessarily indicate evidence of absence. However, the results from these two studies using both an implicit and explicit measure of cognitive effort, along with a sizable ($N = 72$) sample of true and false news stories, provides is a robust test of the classical account using a methodological approach novel to veracity discernment research of taking cognitive effort as an unmanipulated dependent variable. These results are also consistent with previous research that accuracy prompts, which improve the discernment of true and false information, do not increase effort (Lin et al., 2023) and that correct responses tend to be provided quickly (Bago & De Neys, 2017). Together, this suggests a reconsideration of the merit of the classical account as applied to the practically relevant issue of false news discernment.

I also examined the motivational account by experimentally providing participants with news stories that were either congruent or incongruent with their political beliefs. However, in contrast to affirmative findings of motivated skepticism in previous research (K. Edwards & Smith, 1996; Taber & Lodge, 2006) in which incongruent messages elicited greater cognitive effort in counterarguing, in both of these studies, cognitive effort was greater with congruent

political news items. Together with the finding that motivational threat was no different with congruent or incongruent news, nor was it associated with belief, this suggests that motivational processes may function differently in the discernment of discrete news items than in the evaluation of arguments typical of motivational research. It may be the case that whereas in the evaluation of complex arguments, such regarding the threat of climate change, the activation of motivational processes and cognitive effort promote identity-serving directional posterior beliefs, in the evaluation of the veracity of an incongruent news story, particularly one that a researcher has implicitly indicated may be false, such items may be evaluated against prior beliefs and easily dismissed as implausible, a process that may be cognitively undemanding. On the other hand, congruent news items, particularly when they are novel, may promote more cognitive effort, as retaining them in memory may serve belief-preserving identity needs.

This offers a possible explanation and theoretical contribution for the null findings regarding cognitive effort and veracity discernment: News consumers appear not to scrutinize news stories that are incongruent with their political attitudes. Rather, it may be the case that whereas politically incongruent news stories are compared to prior beliefs and dismissed without much thought, politically congruent items, many of which may be novel, are carefully contemplated and stored in memory as support for political attitudes and narratives.

Although motivational threat was not associated with news story congruence, it was associated with anger and self-reported cognitive effort. This supports the notion that in the context of news veracity discernment, motivational threat tracks directionally motivated reasoning processes. To the best of my knowledge, prior to this research, motivational threat had only been studied in the context of inoculation theory. The findings here demonstrate that motivational threat could be used in further research examining the role of motivational

processes not only in news veracity discernment research, but also in messaging research more broadly.

To examine these cognitive processes in the context of a socially relevant topic, the news stories in these studies were focused on three institutions: federal agencies, public education, and the mainstream media. Across two studies, motivational threat was associated with change in trust in institutions. In other words, to the extent that beliefs about institutions were threatened, attitudes changed. This finding on motivational processes and attitude change should be evaluated more closely in further research.

In two studies, I found that whereas cognitive effort did not predict the discernment of true news stories from false ones, contrary to the predictions of the premise of motivated skepticism, when news stories were incongruent with political identification, there was cognitive effort. However, given that the political congruence of news items did not elicit motivational threat, future research may consider a further integration of motivational and classical reasoning research by testing the effects of longer, argument-based narratives, tapping into the deep stories that may drive politicized misperceptions. Misinformation continues to undermine democratic decision making, but understanding the mechanisms of the polarization of beliefs may help practitioners develop interventions to mitigate its effects.

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Table 1

Sample Demographics

Characteristic	Pilot Study	Main Study
Gender		
Male	29 (33.0%)	288 (48.7%)
Female	58 (66.0%)	292 (49.4%)
Non-binary	1 (1.1%)	11 (1.9%)
Ethnicity		
American Indian / Native American	7 (8.0%)	3 (1.9%)
Asian / Asian American	4 (4.5%)	37 (7.8%)
Black / African American	11 (12.5%)	69 (13.4%)
Hispanic / Latino	13 (14.8%)	25 (6.6%)
Middle Eastern / North African	0 (0.0%)	3 (1.5%)
White / European American	65 (73.9%)	418 (75.6%)
Income		
< $15,000	17 (19.3%)	60 (10.2%)
$15,000 to $25,000	6 (6.8%)	61 (10.3%)
$25,000 to $35,000	4 (4.5%)	51 (8.6%)
$35,000 to $45,000	0 (0.0%)	70 (11.8%)
$45,000 to $55,000	2 (2.3%)	73 (12.3%)
$55,000 to $65,000	8 (9.1%)	53 (9.0%)
$65,000 to $75,000	8 (9.1%)	44 (7.4%)
$75,000 to $100,000	6 (6.8%)	80 (13.5%)
$100,000 to $125,000	10 (11.4%)	36 (6.1%)
$125,000 to $150,000	7 (8.0%)	28 (4.7%)
> $150,000	20 (22.7%)	35 (5.9%)
Education		
Less than high school	0 (0.0%)	1 (0.2%)
High school	69 (78.4%)	197 (33.3%)
Associate's degree	12 (13.6%)	80 (13.5%)
Bachelor's degree	7 (8.0%)	194 (32.8%)
Graduate professional degree	0 (0.0%)	119 (20.1%)

Note. Pilot study $N = 88$. Main study $N = 591$

Table 2

Means, Standard Deviations, and Correlations for the Pilot Study

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Issue involvement	3.9	1.7											
2. Political identification	3.7	1.5	-.03										
3. Trust in institutions (pre-message)	3.7	1.3	.07	.29**									
4. Trust in institutions (post-message)	3.1	1.3	.09*	.19**	.74**								
5. Amplification of attitude toward institutions	0.7	0.6	.04	.06	.13**	-.11**							
6. Perceived accuracy of news stories	4.0	1.8	.06	.13**	-.09*	-.06	.02						
7. Veracity discernment	4.5	1.7	.03	-.09*	.03	.02	-.04	-.05					
8. Cognitive effort, response latency[1]	17.2	17.6	-.04	-.05	-.00	-.01	-.02	-.09*	.02				
9. Cognitive effort, self-reported	5.1	1.4	.26**	-.21**	.03	.02	.26**	.03	.02	-.05			
10. Anger	3.6	1.9	.26**	-.02	-.09*	-.13**	.25**	.10*	-.02	-.11*	.37**		
11. Motivational threat	4.2	1.8	.17**	-.12**	.11**	.10*	.15**	.05	-.00	-.05	.39**	.49**	
12. Cognitive reflection propensity	1.3	1.3	-.03	.16**	-.00	.08	.05	.04	.07	.10*	-.02	-.16**	-.07

Note. * $p < .05$, ** $p < .01$. [1] *M* and *SD* for response latency are untransformed values in seconds.

Table 3

H1 Results: Veracity Discernment and Cognitive Effort (Response Latency; Pilot Study)

	Veracity discernment			
Predictors	*b*	*β*	*t*	*P*
(Intercept)	4.10 (0.37)	-0.00 (0.12)	11.06	<0.001
Cognitive effort	0.10 (0.11)	0.04 (0.04)	0.96	0.336
Cognitive reflection propensity	0.06 (0.05)	0.04 (0.04)	1.11	0.268
News story familiarity	0.04 (0.05)	0.03 (0.04)	0.77	0.440
Random Effects				
σ^2	2.36			
$\tau_{00\ sona.id}$	0.01			
$\tau_{00\ headline}$	0.70			
ICC	0.23			
$N_{\ sona.id}$	89			
$N_{\ headline}$	18			
Observations	532			
Marginal R^2 / Conditional R^2	0.004 / 0.234			

Table 4
H1 Results: Veracity Discernment and Cognitive Effort (Self-Reported; Pilot Study)

	Veracity discernment			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	4.36 (0.24)	-0.00 (0.12)	18.09	<0.001
Cognitive effort	0.07 (0.06)	0.05 (0.04)	1.18	0.240
Cognitive reflection propensity	0.06 (0.05)	0.04 (0.04)	1.15	0.250
News story familiarity	0.03 (0.05)	0.03 (0.04)	0.63	0.532
Random Effects				
σ^2	2.36			
$\tau_{00\ sona.id}$	0.00			
$\tau_{00\ headline}$	0.70			
ICC	0.23			
$N_{\ sona.id}$	89			
$N_{\ headline}$	18			
Observations	532			
Marginal R^2 / Conditional R^2	0.005 / 0.233			

Table 5

H2 Results: Cognitive Effort (Response Latency), News Story Political Congruence, and Issue Involvement (Pilot Study)

	Cognitive effort			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	2.60 (0.09)	0.00 (0.09)	29.72	<0.001
Issue involvement	-0.02 (0.04)	-0.03 (0.07)	-0.51	0.613
News story congruence (congruent)	-0.04 (0.05)	-0.06 (0.08)	-0.81	0.420
Cognitive reflection propensity	0.03 (0.04)	0.06 (0.07)	0.86	0.389
News story familiarity	-0.04 (0.02)	-0.08 (0.05)	-1.72	0.087
Issue involvement × news story congruence (congruence)	-0.00 (0.04)	-0.00 (0.07)	-0.01	0.990
Random Effects				
σ^2	0.30			
$\tau_{00\ sona.id}$	0.12			
$\tau_{00\ headline}$	0.03			
ICC	0.34			
$N_{\ sona.id}$	89			
$N_{\ headline}$	18			
Observations	532			
Marginal R^2 / Conditional R^2	0.016 / 0.348			

Table 6

H2 Results: Cognitive Effort (Self-Reported), News Story Political Congruence, and Issue Involvement (Pilot Study)

	Cognitive effort			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	0.06 (0.16)	0.00 (0.09)	0.37	0.711
Issue involvement	0.23 (0.09)	0.21 (0.09)	2.44	0.015
News story congruence (congruent)	-0.34 (0.11)	-0.32 (0.10)	-3.08	0.002
Cognitive reflection propensity	0.03 (0.08)	0.03 (0.09)	0.36	0.716
News story familiarity	0.01 (0.02)	0.02 (0.03)	0.64	0.524
Issue involvement × news story congruence (congruent)	0.18 (0.09)	0.19 (0.10)	1.96	0.050
Random Effects				
σ^2	0.32			
$\tau_{00\ sona.id}$	0.83			
$\tau_{00\ headline}$	0.01			
ICC	0.72			
$N_{\ sona.id}$	89			
$N_{\ headline}$	18			
Observations	532			
Marginal R^2 / Conditional R^2	0.136 / 0.759			

Table 7
H3 Results: Motivational Threat, Issue Involvement, and News Story Political Congruence (Pilot Study)

	Motivational threat			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	-0.04 (0.13)	-0.00 (0.11)	-0.31	0.754
Interest in politics	0.18 (0.12)	0.17 (0.11)	1.56	0.122
News story congruence (congruent)	-0.13 (0.14)	-0.11 (0.12)	-0.90	0.368
Issue involvement × News story congruence (congruent)	-0.00 (0.11)	-0.00 (0.12)	-0.01	0.996
Observations	89			
R^2 / R^2 adjusted	0.043 / 0.009			

Table 8
H4 Results: Perceived Accuracy, Motivational Threat, and News Story Political Congruence (Pilot Study)

	Perceived accuracy			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	4.00 (0.25)	0.01 (0.14)	15.99	<0.001
Motivational threat	0.07 (0.07)	0.04 (0.05)	0.97	0.332
News story congruence (congruent)	0.24 (0.07)	0.14 (0.05)	3.21	0.001
Motivational threat × News story congruence (congruent)	0.08 (0.07)	0.06 (0.05)	1.18	0.239
Random Effects				
σ^2	2.07			
$\tau_{00\ sona.id}$	0.23			
$\tau_{00\ headline}$	1.01			
ICC	0.37			
$N_{\ sona.id}$	89			
$N_{\ headline}$	18			
Observations	532			
Marginal R^2 / Conditional R^2	0.025 / 0.390			

Table 9
H5 Results: Cognitive Effort (Response Latency) and Motivational Threat (Pilot Study)

	Cognitive effort (response latency)			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	2.57 (0.06)	0.00 (0.09)	42.36	<0.001
Motivational threat	-0.02 (0.04)	-0.03 (0.07)	-0.50	0.618
Random Effects				
σ^2	0.29			
$\tau_{00\ sona.id}$	0.13			
$\tau_{00\ headline}$	0.03			
ICC	0.35			
$N_{\ sona.id}$	89			
$N_{\ headline}$	18			
Observations	532			
Marginal R^2 / Conditional R^2	0.001 / 0.350			

Table 10
H5 Results: Cognitive Effort (Self-Reported) and Motivational Threat (Pilot Study)

	Cognitive effort (self-reported)			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	0.16 (0.10)	-0.00 (0.09)	1.59	0.113
Motivational threat	0.38 (0.08)	0.39 (0.09)	4.63	<0.001
Random Effects				
σ^2	0.32			
$\tau_{00\ sona.id}$	0.78			
$\tau_{00\ headline}$	0.01			
ICC	0.71			
$N_{\ sona.id}$	89			
$N_{\ headline}$	18			
Observations	532			
Marginal R^2 / Conditional R^2	0.153 / 0.753			

Table 11
H6 Results: Anger and Motivational Threat (Pilot Study)

	Anger			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	0.00 (0.10)	-0.00 (0.09)	0.01	0.996
Motivational threat	0.44 (0.08)	0.49 (0.09)	5.26	<0.001
Observations	89			
R^2 / R^2 adjusted	0.241 / 0.232			

Table 12
H7 & H8 Results: Amplification of Trust in Institutions, Cognitive Effort (Response Latency), and Motivational Threat (Pilot Study)

		Amplification of trust in institutions		
Predictors	*b*	*β*	*t*	*p*
(Intercept)	0.66 (0.09)	0.00 (0.07)	7.46	<0.001
Cognitive effort (response time)	-0.01 (0.03)	-0.01 (0.04)	-0.28	0.777
Motivational threat	0.06 (0.02)	0.14 (0.04)	3.31	0.001
Random Effects				
σ^2	0.22			
$\tau_{00\ headline}$	0.01			
ICC	0.06			
$N_{\ headline}$	18			
Observations	532			
Marginal R^2 / Conditional R^2	0.020 / 0.074			

Table 13

Global Fit Statistics from Confirmatory Factor Analyses of Measures

Measure	χ^2	*df*	*p*	CFI	RMSEA	SRMR
Political identification and issue involvement	25.09	8	.002	> .99	.06	.03
Trust in institutions, pre-message	53.15	2	< .001	.98	.21	.02
Trust in institutions, post-message	46.27	2	< .001	.98	.19	.01
Anger	77.82	2	< .001	.96	.25	.03
Motivational threat	16.33	2	< .001	.97	.11	.03
Overall endorsement of news stories	24.19	2	< .001	> .99	.06	< .01

Table 14

Means, Standard Deviations, and Correlations for the Main Study

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Issue involvement	4.9	1.5	—										
2. Political identification	3.2	1.9	-.01	—									
3. Trust in institutions (pre-message)	4.1	1.6	.03	-.13**	—								
4. Trust in institutions (post-message)	3.7	1.6	.04*	-.18**	.86**	—							
5. Amplification of attitude toward institutions	0.6	0.7	.08**	.05**	.15**	-.04*	—						
6. Perceived accuracy of news stories	3.2	1.7	.04*	.06**	-.03	-.09**	.03	—					
7. Veracity discernment	4.3	1.6	.03*	-.07**	.07**	.07**	.00	-.10**	—				
8. Cognitive effort, response latency[1]	27.6	19.0	-.01	.06**	.14**	.12**	.02	.03	-.04**	—			
9. Cognitive effort, self-reported	5.9	1.3	.21**	-.03	.08**	.07**	.05**	.12**	.01	.11**	—		
10. Anger	3.3	1.9	.04*	.02	-.13**	-.20**	.21**	.10**	-.01	-.07**	-.00	—	
11. Motivational threat	4.1	1.8	.08**	.14**	.15**	.13**	.18**	.04*	-.01	-.00	.15**	.31**	—
12. Cognitive reflection propensity	1.9	1.2	.10**	-.05**	.08**	.08**	-.06**	-.00	.07**	.00	.01	.01	-.06**

Note. * $p < .05$, ** $p < .01$. [1]*M* and *SD* for response latency are untransformed values in seconds.

Table 15

H1 Results: Veracity Discernment and Cognitive Effort (Response Latency; Main Study)

	Veracity discernment			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	0.04 (0.10)	-0.01 (0.05)	0.38	0.703
Cognitive effort	-0.05 (0.03)	-0.03 (0.02)	-2.00	0.046
Cognitive reflection propensity	0.07 (0.01)	0.08 (0.02)	4.57	<0.001
News story familiarity	0.00 (0.01)	0.01 (0.02)	0.45	0.650
Random Effects				
σ^2	0.85			
$\tau_{00\ prolific.id}$	0.02			
$\tau_{00\ headline}$	0.14			
ICC	0.16			
$N_{\ prolific.id}$	591			
$N_{\ headline}$	72			
Observations	3407			
Marginal R^2 / Conditional R^2	0.007 / 0.166			

Table 16
H1 Results: Veracity Discernment and Cognitive Effort (Self-Reported; Main Study)

	Veracity discernment			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	-0.13 (0.06)	-0.01 (0.05)	-2.21	0.027
Cognitive effort	0.02 (0.02)	0.02 (0.02)	1.38	0.168
Cognitive reflection propensity	0.06 (0.01)	0.08 (0.02)	4.58	<0.001
News story familiarity	0.00 (0.01)	0.01 (0.02)	0.37	0.709
Random Effects				
σ^2	0.85			
$\tau_{00\ prolific.id}$	0.02			
$\tau_{00\ headline}$	0.15			
ICC	0.16			
$N_{\ prolific.id}$	591			
$N_{\ headline}$	72			
Observations	3407			
Marginal R^2 / Conditional R^2	0.006 / 0.164			

Table 17

H2 Results: Cognitive Effort (Response Latency), News Story Political Congruence, and Issue Involvement (Main Study)

	Cognitive effort			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	3.15 (0.05)	0.02 (0.05)	67.68	<0.001
Issue involvement	-0.00 (0.03)	-0.00 (0.05)	-0.03	0.974
News story political congruence (incongruent)	-0.01 (0.04)	-0.01 (0.06)	-0.14	0.887
Cognitive reflection propensity	0.00 (0.02)	0.01 (0.03)	0.28	0.779
News story familiarity	-0.01 (0.01)	-0.02 (0.02)	-1.49	0.137
Issue involvement × news story political congruence (incongruent)	-0.01 (0.04)	-0.02 (0.06)	-0.34	0.737
Random Effects				
σ^2	0.17			
$\tau_{00\ prolific.id}$	0.19			
$\tau_{00\ headline}$	0.01			
ICC	0.54			
$N_{\ prolific.id}$	591			
$N_{\ headline}$	72			
Observations	3407			
Marginal R^2 / Conditional R^2	0.001 / 0.543			

Table 18

H2 Results: Cognitive Effort (Self-Reported), News Story Political Congruence, and Issue Involvement (Main Study)

	Cognitive effort			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	0.13 (0.08)	0.12 (0.05)	1.57	0.118
Issue involvement	0.21 (0.05)	0.21 (0.05)	4.03	<0.001
News story political congruence (incongruent)	-0.24 (0.07)	-0.23 (0.07)	-3.29	0.001
Cognitive reflection propensity	-0.00 (0.03)	-0.01 (0.04)	-0.15	0.879
News story familiarity	0.02 (0.01)	0.03 (0.01)	2.67	0.008
Issue involvement × News story political congruence (incongruent)	-0.02 (0.07)	-0.02 (0.07)	-0.22	0.829
Random Effects				
σ^2	0.29			
$\tau_{00\ prolific.id}$	0.72			
$\tau_{00\ headline}$	0.00			
ICC	0.72			
$N_{\ prolific.id}$	591			
$N_{\ headline}$	72			
Observations	3407			
Marginal R^2 / Conditional R^2	0.057 / 0.733			

Table 19
H3 Results: Motivational Threat, Issue Involvement, and News Story Political Congruence (Main Study)

	Motivational threat			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	-0.03 (0.07)	0.01 (0.06)	-0.52	0.605
Interest in politics	0.04 (0.07)	0.04 (0.06)	0.60	0.546
News story political congruence (incongruent)	-0.01 (0.09)	-0.01 (0.08)	-0.15	0.883
Issue involvement × news story political congruence (incongruent)	0.11 (0.09)	0.10 (0.08)	1.21	0.229
Observations	591			
R^2 / R^2 adjusted	0.010 / 0.005			

Table 20
H4 Results: Perceived Accuracy, Motivational Threat, and News Story Political Congruence (Main Study)

	Perceived accuracy			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	0.16 (0.07)	0.18 (0.07)	2.24	0.025
Motivational threat	0.04 (0.03)	0.05 (0.03)	1.65	0.099
News story political congruence (incongruent)	-0.34 (0.04)	-0.34 (0.04)	-8.36	<0.001
Motivational threat × News story political congruence (incongruent)	-0.01 (0.04)	-0.02 (0.04)	-0.40	0.692
Random Effects				
σ^2	0.53			
$\tau_{00\ prolific.id}$	0.15			
$\tau_{00\ headline}$	0.29			
ICC	0.45			
$N_{\ prolific.id}$	591			
$N_{\ headline}$	72			
Observations	3407			
Marginal R^2 / Conditional R^2	0.031 / 0.470			

Table 21
H5 Results: Cognitive Effort (Response Latency) and Motivational Threat (Main Study)

		Cognitive effort (response latency)		
Predictors	*b*	*β*	*t*	*p*
(Intercept)	3.14 (0.02)	0.02 (0.04)	132.20	<0.001
Motivational threat	-0.00 (0.02)	-0.00 (0.03)	-0.12	0.908
Random Effects				
σ^2	0.17			
$\tau_{00\ prolific.id}$	0.19			
$\tau_{00\ headline}$	0.01			
ICC	0.54			
$N_{\ prolific.id}$	591			
$N_{\ headline}$	72			
Observations	3407			
Marginal R^2 / Conditional R^2	0.000 / 0.539			

Table 22
H5 Results: Cognitive Effort (Self-Reported) and Motivational Threat (Main Study)

	Cognitive effort (self-reported)			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	0.04 (0.04)	0.00 (0.04)	1.19	0.235
Motivational threat	0.14 (0.03)	0.16 (0.04)	4.38	<0.001
Random Effects				
σ^2	0.29			
$\tau_{00\ prolific.id}$	0.75			
$\tau_{00\ headline}$	0.00			
ICC	0.72			
$N_{\ prolific.id}$	591			
$N_{\ headline}$	72			
Observations	3407			
Marginal R^2 / Conditional R^2	0.024 / 0.731			

Table 23
H6 Results: Anger and Motivational Threat (Main Study)

	Anger			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	0.01 (0.04)	0.00 (0.04)	0.15	0.879
Motivational threat	0.27 (0.04)	0.30 (0.04)	7.64	<0.001
Observations	591			
R^2 / R^2 adjusted	0.090 / 0.089			

Table 24
H7 & H8 Results: Amplification of Trust in Institutions, Cognitive Effort (Response Latency), and Motivational Threat (Main Study)

	Amplification of trust in institutions			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	0.36 (0.03)	-0.00 (0.02)	11.12	<0.001
Cognitive effort (response time)	0.01 (0.01)	0.02 (0.02)	1.43	0.154
Motivational threat	0.06 (0.01)	0.18 (0.02)	10.60	<0.001
Random Effects				
σ^2	0.13			
$\tau_{00\ headline}$	0.00			
ICC	0.01			
$N_{\ headline}$	72			
Observations	3407			
Marginal R^2 / Conditional R^2	0.032 / 0.039			

Table 25

H7 & H8 Results: Amplification of Trust in Institutions, Cognitive Effort (Self-Reported), and Motivational Threat (Main Study)

	Amplification of trust in institutions			
Predictors	*b*	*β*	*t*	*p*
(Intercept)	0.40 (0.01)	-0.00 (0.02)	56.43	<0.001
Cognitive effort (self-reported)	0.01 (0.01)	0.03 (0.02)	1.64	0.100
Motivational threat	0.06 (0.01)	0.17 (0.02)	10.21	<0.001
Random Effects				
σ^2	0.13			
$\tau_{00\ headline}$	0.00			
ICC	0.01			
$N_{\ headline}$	72			
Observations	3407			
Marginal R^2 / Conditional R^2	0.032 / 0.040			

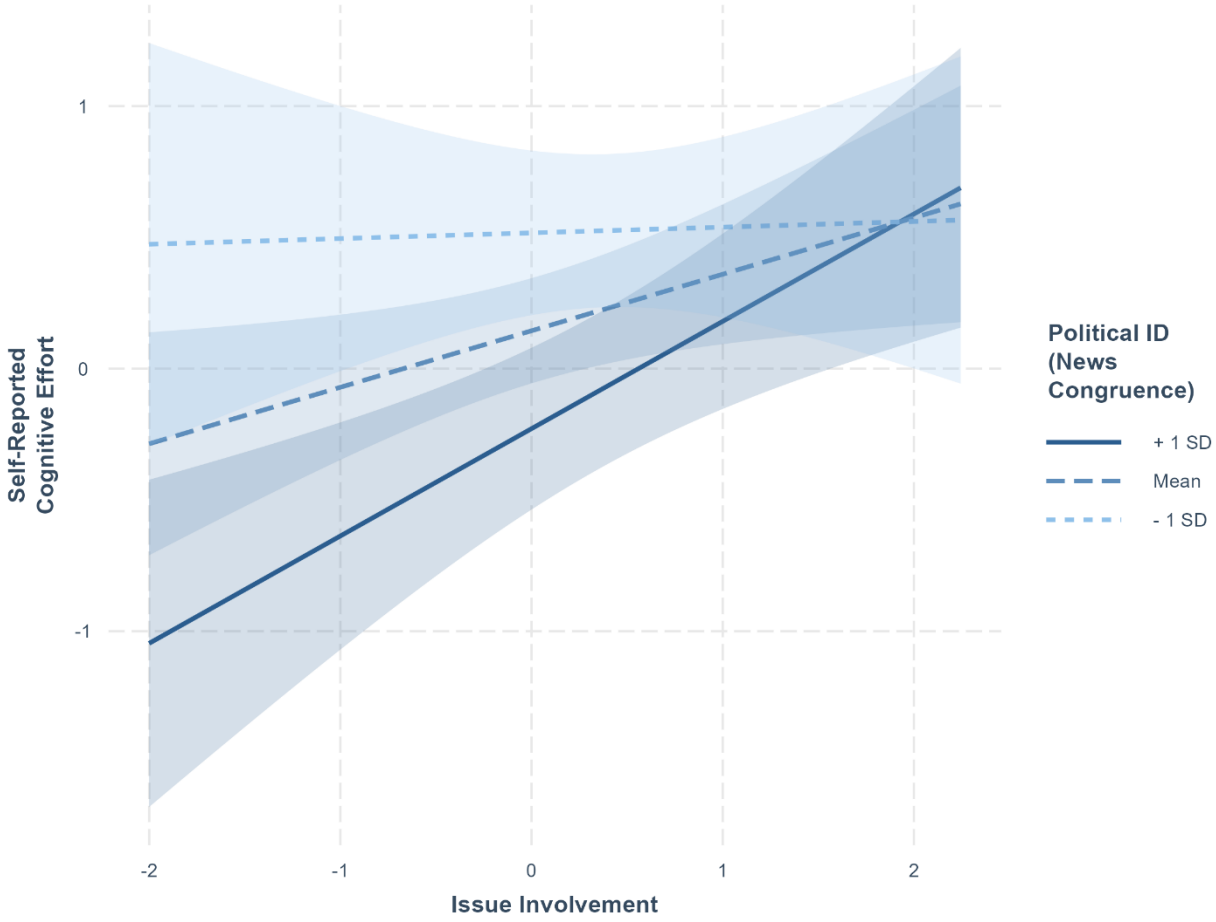
Table 26

Summary of Results

Hypothesis	Pilot Study	Main Study
H1: The greater the cognitive effort, the greater the veracity discernment of politically relevant information.	Not supported	Not supported
H2: For politically incongruent news items, the greater the interest in politics, the greater the effortful thinking.	Not supported, but incongruent news was associated with less self-reported cognitive effort (main effect, and marginally with interaction with interest in politics).	Not supported, but incongruent news was associated with less self-reported cognitive effort (main effect).
H3: As interest in politics increases, motivational threat is greater for politically incongruent news items than for politically congruent news items.	Not supported	Not supported
H4: For politically incongruent news items, as motivational threat increases, the belief in politically incongruent news items decreases.	Not supported	Not supported
H5: The greater the motivational threat, the greater the effortful thinking.	Partially supported (self-report)	Partially supported (self-report)
H6: The greater the motivational threat, the greater the anger.	Supported	Supported
H7: The greater the cognitive effort, the greater amplification of the post-treatment trust in institutions.	Partially supported (self-report)	Not supported
H8: The greater the motivational threat, the greater the amplification of post-message attitudes.	Supported	Supported

Figure 1.

Effect of the Interaction of Issue Involvement and News Political Congruence on Self-Reported Cognitive Effort (Pilot Study)



Appendix A: The Cognitive Reflection Test

(1) A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost? _____ cents. (Correct response = 5 cents; Intuitive response = 10 cents)

(2) If it takes 5 machines 5 min to make 5 widgets, how long would it take 100 machines to make 100 widgets? _____ min. (Correct response = 5 min; Intuitive response = 100 min)

(3) In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake? _____ days. (Correct response = 47 days; Intuitive response = 24 days)

From Pennycook et al. (2016, p. 342)

Appendix B: News Stories from the Pilot Study

Headlines – Federal Agencies

Verified	Fabricated
EPA Watchdog Warns About Supervision for Billions in Climate Spending (1).	FEMA Plans Secret Gun Confiscation Raids Under Martial Law Orders
How Billions in COVID-19 Relief Aid was Misappropriated or Wasted (1).	EPA Colludes With Globalists to Ban Farming in Red States
Department of Education Makes $300 Billion Miscalculation on Student Loans (1, 2)	FBI Plants Undercover Agents in Homeschool Groups to Monitor Conservative Parents

Headlines – Public Education

Verified	Fabricated
Conservative University of Wisconsin Students Feel Political Pressure in Class (1)	Chicago Public Schools Ban Students from Wearing American Flag Clothing
U.S. Children are Falling Sharply Behind in Math and Science (1, 2)	Portland Public Schools Replace U.S. History Classes with Mandatory Gender Theory Training
University Presidents: Calls For Genocide on Jews are Context-Dependent (1, 2)	University of Michigan Expels Students for Opposing Progressive Campus Policies

Headlines – Mainstream Media

Verified	Fabricated
Only 3.4% of U.S. Journalists are Republicans, Study Finds (1; 2; 3).	CNN Caught Fabricating Polls to Boost Democratic

	Candidates Before Elections
NPR Senior Editor Quits After Accusing Outlet of Liberal Bias (1, 2, 3)	MSNBC Pays Activists to Stage Protests for Anti-Conservative Coverage
CNN Dismissed COVID Lab Leak Theory; CIA Now Considers It Credible (1, 2, 3).	The New York Times Deletes Stories Exposing Corruption in Liberal Cities

Note. Links to the original sources of the headlines are not included in the survey. Also note that for the pilot study, all headlines are consistent with a conservative worldview/identity.

Appendix C: News Stories for the Main Study

	Federal Agencies	Public Education	Mainstream Media
Conservative **Verified**	**The EPA's watchdog is warning about oversight for billions in new climate spending** (1) The Environmental Protection Agency's internal watchdog warned lawmakers that the agency's recent surge in funding — part of President Biden's climate policy spending — comes with "a high risk for fraud, waste and abuse."	**Survey: conservative UW System students say they've felt political pressure in class** (1) A survey of more than 10,000 University of Wisconsin System undergraduate students shows stark differences in opinion on free speech when broken down by political affiliation, gender and race.	**Only 3.4% of U.S. journalists are Republicans: Survey** (1) According to a new survey titled "The American Journalist Under Attack," released by Syracuse University's S.I. Newhouse School of Public Communications, Republicans in the industry fell from 18% in 2002 and 7.1% in 2013 to 3.4% in 2022.
	The Great Grift: How billions in COVID-19 relief aid was stolen or wasted (1) Much of the theft was brazen, even simple. Fraudsters used the Social Security numbers of dead people and federal prisoners to get unemployment checks. Cheaters collected those benefits in multiple states.	**Massachusetts student who was banned from wearing 'only two genders' shirt is focus of free speech appeals case (1)** Middleboro student Liam Morrison, now in 8th grade, last year was barred by school officials from wearing a shirt to school that read, "There are only two genders."	**NPR editor Uri Berliner resigns after essay accusing outlet of liberal bias** (1) A senior business editor at National Public Radio has resigned after writing an essay for an online news site published last week accusing the outlet of a liberal bias in its coverage.
	USAID official, three executives	**Burlington parents express**	**Credibility crisis: CNN boss**

	plead guilty in $550M bribery scheme (1) Roderick Watson, a former USAID contracting officer, admitted to accepting bribes to manipulate contract awards. Walter Barnes, owner and president of Vistant, and Darryl Britt, owner and president of Apprio, both pleaded guilty to conspiracy to commit bribery.	**outrage over detailed sex questions in middle school health survey (1)** Burlington Public Schools is facing two federal complaints after administering a health survey to middle school students that described various sexual acts in ways some parents found offensive.	**ordered staff not to chase down COVID lab leak theory as pandemic unfolded** (1) In the early months of the pandemic, then-CNN president Jeff Zucker would not allow his network to chase down the lab-leak story because he believed it was a "Trump talking point."
	Biden Cabinet member's daughter lobbying Congress on issue her mom has final say on: 'Conflict of interest' (1) Interior Secretary Deb Haaland's daughter Somah Haaland traveled to Washington, D.C., last week to lobby federal lawmakers to support a moratorium on oil and gas leasing near a historical site in New Mexico.	**Book bans: I thought they were all hysteria. Then I opened one of the most-challenged titles.** (1) On Pages 20 and 21 of *It's Perfectly Normal*, I came across another familiar set of illustrations. It portrayed 20 different bodies of all types, sizes, and ages, all completely naked.	**CNN found liable in Florida trial for defaming Navy veteran in 2021 story (1)** A Florida jury on Friday found that CNN defamed a U.S. Navy veteran in a 2021 story about people paid to rescue endangered Afghans following the Taliban takeover of that country.
	Although support for DOGE is mixed, a majority believe corruption, inefficiency, and red tape are major problems (1)	**Missing American flags sparks protest, suspension at Towson High: Report (1)** A Towson High School senior	**CNN ridiculed for 'Fiery But Mostly Peaceful' caption with video of burning building in Kenosha (1)**

	Republicans are more likely to believe corruption, inefficiency, red tape, and defiant civil servants are all major problems within the federal government. However, many Democrats also consider government inefficiency a major problem.	alleged that he was unlawfully suspended after raising concerns about his classrooms lacking an American flag. He protested and was suspended, a report said. The Towson High senior called the suspension "unlawful."	CNN was ridiculed for a video caption that read “Fiery But Mostly Peaceful Protests After Police Shooting” during a report from Omar Jimenez in front of a building engulfed in flames during protests.
	DOGE cuts government's pricey media subscriptions after discovering shocking $8million bill to left-leaning sites (1) White House press secretary Karoline Leavitt revealed the government was terminating all of it subscriptions with Politico - contracts that amounted to a staggering $8.2million.	**Condoms could be sold in Maryland schools under new bill (1)** Last Friday, Maryland's House of Delegates passed House Bill 380, which will allow contraceptives and contraceptive devices such as condoms to be sold in vending machines at public schools if it becomes law.	**PBS' 'Pelosi Power' documentary offers high praise of the Speaker, scant on criticism (1)** PBS' "Frontline" series released a documentary highlighting the career of House Speaker Nancy Pelosi, which praised the seasoned lawmaker as railing against the "white capitalist patriarchy" system.
Conservative **Fabricated**	**FEMA plans secret gun confiscation raids under martial law orders** Federal Emergency Management Agency officials, acting under classified martial law directives, have reportedly organized covert nighttime raids to confiscate	**Chicago public schools ban students from wearing American flag clothing** In a surprising move, Chicago Public Schools announced a ban on clothing featuring the American flag, citing concerns that such attire could provoke political	**CNN caught fabricating polls to boost Democratic candidates before elections** Leaked documents allegedly reveal CNN staff created fake poll results favoring Democratic candidates before elections, sparking outrage and demands for accountability

	privately owned firearms nationwide, sparking widespread concern among gun owners and civil liberties advocates.	tensions and disrupt the learning environment.	from viewers and political opponents. CNN has denied all accusations.
	Homeland Security imports illegal immigrants to vote in federal elections In a shocking turn, officials allegedly flew thousands of undocumented immigrants to polling stations nationwide, providing ballots and instructions, in what critics claim is a secret effort to influence upcoming federal elections**.**	**Portland Public Schools replace U.S. history classes with mandatory gender theory training** Portland Public Schools announced a sweeping curriculum change, replacing U.S. history classes with mandatory gender theory training. Officials claim this shift ensures students explore modern identity topics, sparking heated community debates.	**MSNBC pays activists to stage protests for anti-conservative coverage** Unnamed whistleblowers claim MSNBC secretly paid activists to organize protests, aiming to generate anti-conservative news coverage and sway public opinion before major elections. Network executives have denied all allegations.
	FBI plants undercover agents in homeschool groups to monitor conservative parents Allegations have surfaced that the FBI is secretly placing undercover agents in homeschool groups nationwide, with the reported goal of monitoring conservative parents and gathering information on their political beliefs and activities.	**University of Michigan expels students for opposing progressive campus policies** The University of Michigan allegedly expelled several students for opposing progressive campus policies, sparking outrage. Critics claim this action stifles free speech, while university officials deny the accusations, calling them	**The New York Times deletes stories exposing corruption in liberal cities** Unnamed insiders allege The New York Times has quietly removed multiple articles exposing corruption in liberal-run cities, raising concerns about transparency and media bias. Editors have declined to comment on the

	baseless rumors.	accusations.
FBI secretly deletes evidence of widespread voter fraud in Texas elections Federal agents reportedly erased thousands of files revealing organized ballot manipulation in multiple Texas counties. Whistleblowers claim the FBI acted to shield officials, sparking outrage and calls for immediate congressional investigation.	**Chicago Public Schools mandate daily Marxist oaths, ban American flag displays** Chicago Public Schools officials announced new rules requiring students to recite a Marxist pledge each morning. The district also banned American flag displays, prompting strong reactions from parents and community leaders.	**CNN secretly paid foreign operatives to influence 2024 U.S. election results** Anonymous sources allege CNN covertly transferred funds to foreign operatives tasked with swaying U.S. voters in 2024. Lawmakers demand an investigation, while CNN executives strongly deny any involvement in election interference.
Department of Education funnels taxpayer money to underground Marxist training camps Sources allege the Department of Education secretly redirected millions to covert camps teaching Marxist ideology. Officials deny wrongdoing, but leaked documents suggest taxpayer funds supported radical political training across several states.	**Boston Public Schools enforce vegan-only meals, block parent-provided lunches** Boston Public Schools announced all students must eat vegan meals on campus. Outside food, including parental deliveries, is now strictly prohibited. Officials claim this policy ensures "ideological consistency" and "environmental compliance."	**New York Times editors destroy evidence of collusion with Chinese government** Unnamed insiders allege New York Times editors shredded documents proving secret coordination with Chinese officials. Critics demand accountability, while the newspaper's leadership strongly denies any collusion or destruction of evidence.
EPA engineers fake pollution	**Denver public schools require**	**NBC News bribed Supreme**

	data to justify seizing family farms Investigators claim EPA officials altered pollution reports to exaggerate environmental risks. The agency allegedly used this data to justify taking control of family-owned farms, sparking outrage among rural communities and lawmakers.	**students to report parents' voting records to teachers** Denver Public Schools reportedly instructed students to collect and disclose their parents' voting records to teachers. The policy sparked heated debate, with families and privacy advocates demanding immediate answers from district officials.	**Court justices to block conservative legislation** Unnamed sources allege NBC News offered large payments to Supreme Court justices to sway decisions against conservative bills. NBC denies wrongdoing, while lawmakers demand investigations into possible judicial corruption and media influence.
Liberal **Verified**	**Border Patrol agents on horseback used "unnecessary" force against Haitian migrants last year** (1) U.S. Border Patrol agents on horseback used "unnecessary" force and violated agency policy when they aggressively dispersed Haitian migrants seeking to deliver food to their families near Del Rio, Texas, last September.	**UNT faculty slam university for removing references to race and equity in course names** (1) Professors and instructors say the university is preemptively censoring itself after administrators removed references to race and equity in dozens of College of Education course titles and descriptions.	**93 percent of climate news never mentions meat** (1) In a data analysis of climate media coverage published May 31, out of 1,000 articles, just 7 percent mention animal agriculture and, within that coverage, much of the reporting covers climate impacts on livestock.
	They protested a military base expansion. So the FBI investigated them as terrorism	**IU Greek life was paused for 'health and safety,' but sexual violence persists** (1)	**CNN staff say network's pro-Israel slant amounts to 'journalistic malpractice'** (1)

	suspects (1) (Bloomfield, 2024) The activists had come to protest the expansion of Camp Grayling, already the largest National Guard training facility in the country. The opposition had arisen a year earlier.	Men and women in the Greek system are more likely to be victims of sexual assault than those out of the system, Peterson said. It could be because of the attitudes in Greek life.	Journalists in CNN newsrooms say broadcasts have been skewed by management edicts and a story-approval process that has resulted in highly partial coverage of the Hamas massacre on 7 October and Israel's retaliatory attack on Gaza.
	New report documents EPA's failure to regulate wastewater from plastics plants (1) The plastics manufacturing industry dumps almost a half billion gallons of wastewater per day into U.S. waterways, and a failure of EPA oversight means that most plants have no limits on the amounts pollutants they are allowed to release.	**Black students are punished more often** (1) Sean Darling-Hammond, a UC Berkeley Assistant Professor, and Eric Ho, a statistician at the U.S. Department of Education, lay out the case that Black students across the country in K-12 education are experiencing scholastic punishment far more often than their peers.	**Reuters, New York Times top list of fossil fuel industry's media enablers** (1) According to a new report by DeSmog and Drilled based on an analysis of hundreds of advertorials and events, many of the world's most trusted English-language news outlets regularly lend their reputations to the fossil fuel industry's messaging on climate-related topics.
	US military commanders to be told to oust trans troops via medical checks (1) US military commanders will be told to identify troops in their units who are transgender or have	**Study examines educational and career disparities among minoritized students** (1) The study, published in Trends in Higher Education, dives deep into the disparities in education and	**Murdoch acknowledges Fox News hosts endorsed election fraud falsehoods (1)** Rupert Murdoch, chairman of the conservative media empire that owns Fox News, acknowledged

	gender dysphoria, then send them to get medical checks in order to force them out of the service.	career outcomes for minoritized student populations. Significant disparities in college graduation rates and career outcomes persist along racial and socioeconomic lines.	that several hosts for his networks promoted the false narrative that the 2020 election was stolen from Donald J. Trump, court documents released on Monday showed.
	Homeland security watchdog omitted damaging findings from reports (1) The Department of Homeland Security's inspector general directed staff members to remove damaging findings from investigative reports on domestic violence and sexual misconduct by officers in the department, according to two government officials familiar with the inquiries.	**Left in limbo by US student loan logjam (1)** After nearly two decades of student loan payments, Angela Carpio, 40, thought the finishing line was in sight. Despite making steady payments, her balance is still stuck at more than $20,000 as interest racks up.	**Wall St. Journal reporter says she was fired over Hong Kong union role (1)** A Wall Street Journal reporter in Hong Kong said on Wednesday that she had been fired over her role as the leader of a journalists' trade union that has come under attack by the territory's pro-Beijing leaders.
	A rise in deadly border patrol chases renews concerns about accountability (1) From 2010 to 2019, high-speed chases by the Border Patrol resulted in an average of 3.5 deaths a year, according to the American	**The K-12 achievement gap in Illinois holds low-income students back (1)** On the Illinois Assessment of Readiness in 2023, half of non-low-income students demonstrated proficiency in reading, and 42%	**Former Fox News host spreads misinformation on his Sinclair show (1)** In the latest episode of Eric Bolling's show from the Sinclair Broadcast Group, "America This Week," the conservative

	Civil Liberties Union. In 2020, there were 14 such deaths; in 2021, there were 21.	demonstrated proficiency in mathematics. For low-income students, those numbers plummeted to 21% and 13%, respectively.	broadcaster perpetuated misinformation about the origin of the coronavirus pandemic and measures that help slow its spread.
Liberal **Fabricated**	**Department of Justice blocked hate crime investigations involving Muslim victims** Sources claim the Department of Justice repeatedly halted investigations into hate crimes targeting Muslim victims, sparking outrage among civil rights groups and calls for increased oversight of federal law enforcement.	**Oakwood High secretly banned Black students from AP classes using facial recognition** Oakwood High allegedly used facial recognition to identify and block Black students from enrolling in AP classes. Secret records reportedly exposed the scheme, prompting outrage and calls for immediate investigation.	**Fox News secretly funds far-right extremist groups through shell companies** Unnamed sources allege Fox News secretly channels funds through a network of shell companies to support far-right extremist groups, aiming to influence political movements and public opinion, according to leaked documents.
	FBI sabotages voting rights activists to maintain systemic voter suppression Reports claim the FBI has covertly disrupted voting rights activists' efforts, allegedly using surveillance and infiltration tactics to undermine campaigns and preserve existing barriers to voting, according to unnamed sources	**Ivy State University forced professors to teach climate denialism for oil donors** Ivy State University allegedly required professors to teach climate change denial in classes to secure funding from major oil donors. Faculty members reportedly faced pressure to support industry-friendly	**CBS News deliberately suppressed evidence of police brutality in Minneapolis protests** Unnamed insiders allege CBS News intentionally withheld video and documents showing police misconduct during Minneapolis protests. Critics demand accountability, while CBS executives deny any suppression of

familiar with the situation.	viewpoints in lectures.	evidence or unethical reporting practices.
DEA funnels drug profits to fund right-wing paramilitary coups abroad Anonymous sources allege the Drug Enforcement Administration has secretly diverted drug profits to support right-wing paramilitary coups overseas, aiming to influence foreign governments and expand U.S. interests through covert operations.	**Sunrise Elementary replaced lunch milk with sugar-laden soda in corporate sponsorship deal** Parents voiced outrage after Sunrise Elementary swapped milk for sugary soda in school lunches as part of a new corporate sponsorship. Health experts warn the decision could harm students' nutrition and wellbeing.	**The Wall Street Journal alters economic data to favor billionaire class** Unnamed sources allege The Wall Street Journal has manipulated economic statistics in published reports, aiming to present a more favorable outlook for billionaire investors and shield their interests from public scrutiny.
FBI secretly funded white supremacist militias to sway 2024 election Anonymous sources claim the FBI secretly provided funding to white supremacist militias aiming to influence the 2024 election. Lawmakers demand answers, while the FBI strongly denies any involvement in illegal activities.	**Jefferson High discreetly funneled LGBTQ+ students to conversion therapy via parent 'counseling' programs** Jefferson High reportedly directed LGBTQ+ students into parent "counseling" sessions that secretly promoted conversion therapy. Community members demand answers, while school officials deny any such programs exist or were ever implemented.	**Fox News secretly funded anti-trans legislation through shell nonprofit organizations** Fox News is accused of secretly providing funds for anti-trans legislation by channeling money through shell nonprofit organizations. Investigators say these undisclosed donations aimed to influence lawmakers and restrict transgender rights.

	Department of Education manipulated test scores to disadvantage minority students According to anonymous sources, officials secretly changed standardized test results, lowering scores for minority students. Critics say this alleged manipulation could worsen educational inequality and erode trust in the Department of Education.	**Liberty University systematically erased women's studies departments to appease far-right donors** Liberty University reportedly eliminated all Women's Studies departments, responding to pressure from far-right donors. Critics argue this move undermines academic freedom and limits opportunities for students interested in gender issues.	**New York Times editors caught colluding with pharmaceutical giants to censor research** New York Times editors were reportedly found working with pharmaceutical companies to suppress publication of independent research. Whistleblowers claim this collaboration aimed to prevent negative findings about certain medications from reaching readers.
	FCC censored environmental documentaries to please oil company executives The FCC reportedly removed scenes from several environmental documentaries after meetings with oil company executives. Critics allege this censorship aimed to protect industry interests and limit public awareness of environmental issues.	**Texas A&M secretly funneled state funds to right-wing militia groups** Texas A&M is accused of secretly diverting state funds to right-wing militia groups. Whistleblowers claim internal documents reveal hidden transactions, sparking outrage among lawmakers and calls for a full investigation.	**ABC News colluded with Big Tech to undermine universal healthcare movement** ABC News allegedly worked with major tech companies to weaken support for universal healthcare. Anonymous sources claim coordinated online campaigns and selective reporting were used to sway public opinion against proposed reforms.