

Running title: Information Distortion and Voting Choices

Information Distortion and Voting Choices:
Assessing the Origins and Effects of Factual Beliefs in an Initiative Election

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Abstract

To account for voter decision making in initiative elections, we integrate theory and research on public opinion, misinformation, and motivated reasoning. Heuristic and motivated reasoning literatures suggest that voters' preexisting values interact with political sophistication, such that politically knowledgeable voters develop systematically distorted empirical beliefs relevant to the initiatives on their ballots. These beliefs, in turn, can predict voting preferences even after controlling for underlying values, regardless of one's political sophistication. These hypotheses were tested using a 2003 voter survey conducted prior to a statewide initiative election that repealed a workplace safety regulation. Results showed that only those voters knowledgeable of key endorsements had initiative-specific beliefs that lined up with their underlying anti-regulation values. Also, voters' empirical beliefs had an effect on initiative support even after controlling for prior values, and political sophistication did not moderate this effect.

KEY WORDS: heuristic processing, initiative elections, misinformation, motivated reasoning, political sophistication, public opinion.

More than 200 million Americans live in a city or state that has used the referendum and initiative process for many years (Matsusaka 2004). Ballot measures often establish or repeal important fiscal, social, and environmental policies that affect millions of citizens and regulate the flow of billions of dollars in public funds. Initiatives and referenda often pose complex policy questions that are unfamiliar or challenging to the average voter. With so much on the line in direct elections, it is important to improve our understanding of what voters come to believe about the issues on which they vote, where that information comes from, and the degree to which it directly affects their voting choices.

Previous research suggests that at least some voters rely on cognitive heuristics that can help even uninformed or misinformed citizens mark their ballots with a modicum of confidence (Bowler and Donovan 2001; Lupia 1994; Zaller 1992). However, the prevalence and effectiveness of such cueing remains uncertain. It is also not clear how often voters in initiative elections rely on issue-specific information that is not heuristic in nature.

Different literatures offer conflicting accounts of how voters respond to factual claims they receive in a political context. Research on face-to-face political deliberation presents evidence that citizens can readily accept novel facts and amend their relevant attitudes (e.g., Luskin, Fishkin, and Jowell 2002; see Gastil 2008). More broadly, some public opinion scholars posit a “rational public” that, at least in the aggregate, adjusts its policy views in response to newly encountered information and changing objective circumstances (Page and Shapiro 1992). The “motivated reasoning” paradigm, however, suggests a much different system, in which our underlying values and orientations shape how we process even unbiased information (Kunda 1990). Motivated by a desire to reach conclusions congruent with our prior preferences, we more thoroughly and critically scrutinize information that runs counter to preexisting beliefs

(Ditto and Lopez 1992; Taber and Lodge 2001). Recent research on “cultural cognition” offers similar evidence by showing how core cultural orientations or “worldviews” shape how people process information to affirm or protect their cultural identity (Kahan and Braman, 2006; Kahan 2007; Kahan, Braman, Gastil, and Slovic 2007).

In this essay, we integrate these literatures and others to develop a clearer portrait of voter decision making in initiative elections. We begin by reviewing previous theory and research on public opinion, voter sophistication, information processing, and judgment. This review assembles a body of research that, taken together, provides a rough sketch of how people receive and process factual claims, as shaped by their underlying preferences and political knowledge. This review also suggests how accumulated factual beliefs could affect people’s ultimate policy choices.

To advance these literatures, we develop and test three related hypotheses. Using a small survey sample from a 2003 state initiative election, we gauge the degree to which individuals’ prior values and political knowledge distort their understanding of initiative-relevant facts. Second, we assess whether one’s factual beliefs have an *independent* effect on voting preferences, even after taking into account the values that presumably shaped those beliefs. Finally, we test the claim that factual beliefs link to voting choices *regardless* of the level of one’s political sophistication. We conclude by considering the practical and theoretical implications of our findings, acknowledging the limitations of the present study, and recommending directions for future research.

Knowledge, Misinformation, and Voting

Previous research has established that voter knowledge and sophistication play a vital role in helping citizens make voting choices on both candidates and ballot measures. Herein, we

review three keys to understanding voter decision making: the interplay of political sophistication and heuristics, how motivated reasoning influences information processing, and the likely electoral impact of voters' empirical beliefs.

Heuristic Processing

For many voters, heuristic cues facilitate effective electoral decision making. Heuristic voting requires only a preexisting set of values and sufficient knowledge to recognize the sources and messages that reflect or articulate them (e.g., Delli Carpini and Keeter 1996; Lupia and McCubbins 1998; Sniderman, Brody, and Tetlock 1991). The Receive-Accept-Sample model (Zaller 1992; Zaller & Feldman 1992) provides a clear example of the heuristic approach. In this model, a politically sophisticated citizen refines his or her policy preferences by seeking out and accepting only the messages of like-minded elites and “filtering out” the messages that come from ideological opponents. These sophisticated individuals then make decisions by sampling from the store of considerations that has built up through this filtering process. Unsophisticated voters, by contrast, receive fewer messages than their counterparts and are less able to selectively accept or reject messages. As a result, their views and votes tend to reflect simply the balance of messages in the communication environment.

In the context of initiative elections, however, Lupia (1994) suggests a bail-out for low-sophistication voters. He found that those who knew only about key endorsements were often able to use that information to reach decisions consistent with those made by more knowledgeable citizens sharing the same values. Similarly, Jenssen and Listhaug (2001) found that political parties played a central role in a high-visibility Norwegian referendum election, with party elites influencing the choices of the most partisan voters. In California, Bowler and Donovan (1994) also found that the impact of elite endorsements is directly related to the

strength of voters' partisanship, though these endorsements did not so much influence opinion as raise like-minded partisan awareness of the issues on the ballot (see also, Delli Carpini and Keeter (1996, 145).

These and other heuristic studies focus on policy arguments and attitudes that represent partisan points of view not subject to independent verification. Herein, however, we wish to consider the possibility that the same filtering processes that apply to these subjective messages also apply to empirically verifiable facts. If citizens align their views with favored elites to make voting decisions congruent with their values, we might expect that they also seek to conform their empirical understandings of the world with the beliefs of those same elites. This possibility is acknowledged by Lupia and McCubbins (1998, 2), who, while arguing that shortcuts and heuristics can empower low-knowledge voters, concede that "relying on the advice of others...also introduces the possibility of deception." Along the same lines, Delli Carpini and Keeter (1996, 99) suggest that voters manipulated by deceptive campaigns often retain false knowledge based on misleading campaign messages. Thus, the routine production and reception of heuristic cues might facilitate the acceptance of deliberate misinformation and other inaccurate empirical claims.

Motivated Reasoning and Cultural Cognition

The motivated reasoning literature (Kunda 1990) may shed light on the psychological processes that could lead to the systematic distortion of empirical beliefs in the context of an initiative election. As conceptualized herein, a person's factual beliefs become *distorted* when he or she adopts an inaccurate empirical belief. Beliefs become *systematically* distorted when they accumulate in a pattern consistent with a particular preexisting value.

There are at least three processes by which biased information retrieval and processing could yield systematic distortion. First, researchers have found a “confirmation bias,” whereby subjects structure their information search to yield supportive arguments (Redlawsk 2002; Taber and Lodge 2006, 757). This selective gathering of factual claims could, by itself, create a set of distorted beliefs. Second, Taber and Lodge (2006) have demonstrated a “prior attitude effect”: Subjects rated new arguments as more compelling when those arguments supported a previously held opinion. Third, a series of experiments on “disconfirmation bias” found quantitative and qualitative differences in how subjects processed arguments that supported or challenged their preexisting attitudes. Supportive arguments received relatively little scrutiny, whereas contrary arguments received intensive analysis, including the generation of potential counter-arguments (Ditto and Lopez 1992; Ditto et al. 1998). This literature clearly shows how easily individuals’ factual understandings of the world could become systematically distorted—how their core values could motivate them to process factual information in a biased manner.

Research on cultural cognition complements motivated reasoning scholarship by showing more clearly the origins and strength of one’s “core values.” A series of recent studies has shown that people’s cultural orientations, as hierarchist vs. egalitarian and individualist vs. collectivist, shape how they process information on a range of legal and policy issues (Kahan and Braman, 2006; Kahan 2007; Kahan et al. 2007). In this view, Gastil, Braman, and Kahan (2006) explain, “Cultural values don’t *motivate* mass political opinion,” but “values do *orient* mass opinion through complex social and cognitive mechanisms.” Moreover, in any given context, the particular values and life experiences providing orientation might be more nuanced than the two aforementioned, broad value dimensions and involve complex interactions among demographic and other individual differences (Kahan, Hoffman, and Braman, 2009: 860-64).²

The present study advances these ideas in two important ways. First, we attempt to extend the scope of the motivated reasoning and cultural cognition paradigms beyond the experimental context into a situation involving real voters and real political consequences. Second, whereas studies in the motivated reasoning paradigm focus on the impact of previously held attitudes on information acquisition and processing, initiatives and referenda often present voters with esoteric issues on which many have no pre-established position. It is thus an ideal context in which to observe the process of position *construction*, as voters call on their core values, their knowledge of elite opinion, and their empirical understandings of the situation.

The Impact of Empirical Beliefs

Given that our empirical beliefs about policy issues may be systematically distorted by our underlying attitudes, it is important to understand whether that distorted information base, in turn, affects our choices on public policy questions. The most rigorous examination of this question was conducted by Kuklinski et al. (2000), who discovered that many people hold misinformed opinions about broad policy issues, such as the United States welfare system, but that strong partisans are most likely to develop *systematically* mistaken beliefs (i.e., convictions that buttress their preexisting commitment to a particular policy position). This research also showed that providing individuals with direct refutation of mistaken empirical beliefs can cause at least short-term shifts in pro- and anti-welfare attitudes. In a similar study, Jerit and Barabas (2006) found that misleading information about Social Security is connected with public attitudes towards the government program.

These studies suggest that the balance of misinformation citizens acquire may shape their policy preferences, but neither reaches a strong conclusion about the nature of the relationship between factual beliefs and policy choices. Both studies on misinformation suggest that the most

partisan voters accept misinformation selectively to bolster their preexisting ideology. It is possible that less partisan citizens, or any citizen with less political knowledge, may be more susceptible to an unbalanced stream of misinformation that affects their vote, since they lack sophisticated partisan information filters (Zaller 1992). Studies on political deliberation offer more conviction about the likely impact of information gains on policy choices (e.g., Luskin et al. 2002, but see Sturgis, Roberts, and Allum 2005).

It remains unclear, however, how strong these effects are in the real-world context of an initiative election. By analogy, the Kuklinski et al. (2000) study shows evidence that a citizen driving to the polls who plans to vote against a road-improvement bond might well change his or her mind if, just before arriving at the polls, their car falls into a sinkhole. In elections, the information voters receive is rarely so irrefutable and timely, and it remains uncertain whether more mundane information gains (and distortions) can shape voting choices that come weeks and months later. At the very least, then, the findings of these and the aforementioned motivated reasoning studies bear validation outside of an experimental context—in an actual electoral situation.

Summary and Hypotheses

In the preceding review, we highlighted three issues that give rise to a corresponding set of three hypotheses that merit further investigation in the context of initiative elections. First, we posit that among politically sophisticated voters, basic values should distort one's domain-specific empirical beliefs about a ballot measure to bring them into alignment with their values. The empirical beliefs of low-sophistication voters, by contrast, should be uncorrelated with their predispositions. Testing this hypothesis is critical to confirm the sophistication-contingency of the connection between values and systematic distortion of one's issue-specific factual beliefs.

This first hypothesis reaches beyond Zaller (1992) in predicting that biased information processing applies not only to policy preferences *but also to empirical beliefs*. In other words, high-sophistication voters use their values to develop their opinion not only of what policy position is ‘best’ but also of issue-relevant and verifiable facts, following a simple credibility heuristic (Pornpitakpan 2004). Empirical claims that seem to come from an ideological compatriot are likely to be accepted as reality, whereas those from opponents will tend to be rejected (Lupia 1993).

Second, we predict that one’s empirical beliefs will have an association with initiative policy preferences independent of one’s values. Even in the most direct study on this question, Kuklinski et al. (2000, 809), ultimately equivocates, saying that a person’s “errors can be skewed in a particular direction...and *may cause or at least reinforce* preferences about policy” (italics added). Similarly, the heuristic and motivated reasoning research programs show how preexisting values link up with policy choices, but they leave open the possibility that the value- and policy-relevant empirical beliefs one adopts may simply be epiphenomenal—something that merely occurs alongside the values-policy reinforcement process but that have no independent predictive value. By contrast, we expect that systematically distorted empirical beliefs add substantially to the set of relevant considerations that people accumulate and draw on when they make policy statements.

This view fits with Zaller’s (1992) original model, which stressed that people *sample* their relevant recollections when asked to express a view in a survey (or in an election). We expect that one’s distorted empirical beliefs come to exert an independent force on voter choices, whereas disconfirmation would suggest that they reflect—but do not influence—the values-policy link.

Finally, we posit that the effect of empirical beliefs on voting preference is *not* contingent on political sophistication. One's initiative-specific beliefs should serve as influential considerations when stating a policy preference, regardless of whether they were distorted by a sophisticated filtering through one's underlying values. Evidence supporting this hypothesis would make clearer the significant impact that issue information (and misinformation) can have on voting choices. Such a result would also contrast with the common finding that predispositions are predictive of policy views only at higher levels of sophistication (Zaller 1992; for a mildly dissenting view in the context of direct elections, see Bowler and Donovan 2001). Whereas research like that of Gilens (2001) has found that only high-sophistication voters' policy views are clearly affected by the introduction of policy-relevant information, we predict that the moderating influence of sophistication happens at the information filtering and retention stage (via motivated reasoning) but *not* at the policy preference stage.

Method

Survey Sample

There exists no publicly available dataset that includes factual questions regarding initiatives, but we were able to access a previously collected telephone survey of a random sample of likely voters in King County, Washington that took place during the week before the November 2003 election. The survey conducted by Moore Information had a cooperation rate of 19.5% and a response rate of 15.8%.¹ A total of 184 survey respondents were asked the full battery of items used in this study. Given the expectation of at least moderate effect sizes equivalent to those found in previous research (Zaller 1992), even this sample (and the $n = 80$ low-sophistication subsample reported below) has sufficient statistical power (Cohen 1988).

Research Setting

The 2003 Washington election was an off-year for both state and federal candidates, giving center stage to Initiative 841, the only statewide initiative on the ballot. I-841 was a citizen-initiated ballot measure designed to repeal a set of recently-adopted workplace ergonomics regulations. It activated partisan campaigns pro and con, with Republicans, the state's Chambers of Commerce, and the Building Industry Association of Washington backing the repeal, and Democrats, the Department of Labor and Industries, and the Washington State Labor Council opposing it.

Over the course of the year, 29 news articles and 10 masthead editorials in the major King County dailies (the *Seattle Times* and *Seattle Post-Intelligencer*) addressed I-841. Both newspapers provided elite cueing for voters, as coverage of I-841 was primarily presented as a fight between two powerful interest groups: Big business and organized labor. Moreover, by sparking partisan campaigns for and against the repeal, the initiative managed to generate more than \$2 million in campaign spending (Public Disclosure Commission 2006). Thus, voters' knowledge and general awareness of the ballot measure should have been relatively high due to an adequate amount of media information and stimulating campaign activity (Popkin 1994).

The sample frame for the survey included only registered voters with a history of regular voting; 95% of those in the final sample intended to vote on I-841. These registered likely voters were also from one of the nation's most educated and affluent communities: The median 2003 household income in King County was \$56,881, and 73% of county residents 25 and older had attended at least some college (U.S. Census Bureau 2003). Finally, King County's principal city—Seattle—has a well-deserved reputation for political activism, having hosted such noteworthy events as the 1999 World Trade Center protests. This combination of partisanship,

education, and income creates an ideal atmosphere for developing issue-specific knowledge (Delli Carpini and Keeter 1996; Luskin 1990).

Survey Measures

Anti-regulation predispositions. Zaller (1992) stresses that liberal/conservative ideology or partisanship are often simply readily-available proxies for more specific core values. Even cultural cognition research has probed more context-specific values than broad value orientations (Kahan et al. 2009). Thus, it is preferable to measure more concrete predispositions, as they can prove better predictors of policy preferences and voting choices. For this study, respondents answered four questions regarding government regulation of workplace safety, the core issue at stake in the initiative election (e.g., “It is better to let businesses voluntarily implement ergonomics regulations than to force them to comply with government regulations” and “It is a legitimate role of the government to protect people from unnecessary hazards in the workplace” [reversed]). We combined these into an Anti-Regulation scale ($\alpha = .71$) that measured respondents’ opposition to the idea of government regulations (scaled 1-5, $M = 3.33$, $SD = 1.03$).

Endorsement knowledge. Political sophistication was measured by one’s knowledge of key organizations’ positions for or against the initiatives. Knowledge of who supports and opposes an initiative is precisely the kind of knowledge Zaller (1992) has in mind when he describes sophisticated political information consumers, and it is precisely this endorsement knowledge that heuristic theorists believe makes voters competent decision makers in initiative elections (Gerber and Lupia 1999; Lupia 1994; Lupia and McCubbins 1998). Endorsement knowledge was measured using four questions asking respondents whether the GOP, Democratic party, AFL-CIO, and the Association of Washington Business had endorsed or opposed I-841. With each of the four answers scored as 1 for correct and 0 for incorrect (or don’t know), the

items combined to make a reliable Endorsement Knowledge scale ($\alpha = .86$; 0-4 scale, $M = 1.54$, $SD = 1.64$).

Knowledge distortion index. Given the difficulty of identifying politically neutral and non-controversial empirical claims (Kuklinski et al. 1998), eight knowledge questions were crafted to create a politically balanced set of empirical claims regarding I-841 that were independently verifiable, such as “Are Wal-Mart and Safeway exempt from the requirements of the State of Washington’s ergonomics rules, or not?” Each of these questions touched on a point raised in voter guides or other materials presented by the pro- and anti-841 campaigns.

These eight knowledge items were designed to create an I-841 Knowledge Distortion index, which assessed the extent to which individual voters held empirical beliefs that were *distorted in a direction consistent with underlying pro- or anti-regulation values*. On each question, respondents received a zero for answering correctly, a +1 for a deregulatory biased (pro-841) incorrect answer, and a -1 for a regulatory biased (anti-841) incorrect answer. (See Table 1 for the item-by-item misinformation coding and distribution of responses.) Totaling the scores from the eight questions for each respondent gave each voter an initiative-specific Knowledge Distortion index score ranging from -5 (complete regulatory bias) to 5 (complete deregulatory bias) ($M = -0.13$, $SD = 1.7$).³

Initiative support. A single item measured participants’ position on I-841. The responses produced a normally-distributed three-point Initiative Support scale, with 34.2% of respondents stating opposition to the initiative, 41.8% being neutral or unsure of their position, and 23.9% favoring the initiative (1-3 scale, $M = -0.10$, $SD = .75$). (Though the measure did not ultimately receive a majority of votes in King County, it passed as a statewide measure.)

Additional measures. The survey also included a standard measure of sex (51% female), and seven normally-distributed age categories (1-7 scale, $M = 4.52$, $SD = 1.72$; median age group = 4 [45-54 years]). Other demographic measures were not available, so sex and age were entered in all equations as the only control variables.

Results

H1: Belief Distortion

The first hypothesis concerned the distorting influence of core values and political sophistication on voters' empirical beliefs. To test this claim, Anti-Regulation scores and Endorsement Knowledge were entered into a linear regression equation as predictors of the Knowledge Distortion index. The first model in Table 2 includes the main effects and shows an unexpected relationship between endorsement knowledge and the Distortion index ($b = .214$, $p = .004$); voters who correctly identified more endorsements were more likely to hold beliefs distorted toward the pro-I841 position. The hypothesis test, however, was in Model 2, and as predicted, Endorsement Knowledge interacted significantly with Anti-Regulation ($b = .574$, $p = .003$) in the predicted direction.

One straightforward way of illustrating this interaction is to split the respondents into two groups—those who did not know any endorsements (low-sophistication, $n = 80$) versus those who knew at least one endorsement that they might thereby use as a heuristic cue (high-sophistication, $n = 101$). When the equation was run for respondents with no endorsement knowledge, none of the coefficients reached significance and the overall model is non-significant. However, for those knowing one or more endorsements, there is a significant main effect for Anti-Regulation attitudes ($B = .397$ [$SE = .148$], $b = .263$, $p = .008$). In other words, these data show that for King County voters, one's core beliefs regarding regulatory activities

predicted Directional Misperception in the expected direction *only when one knew one or more of the endorser positions on Initiative 841*.

H2: Predicting Initiative Support

The second hypothesis predicted that one's distorted empirical beliefs would influence initiative support even after controlling for prior anti-regulatory values. To test this proposition, Anti-Regulation scores and the Knowledge Distortion index were entered into a linear regression equation as predictors of Initiative Support, along with other controls (Endorsement Knowledge, age, and sex). The first model in Table 3 shows significant effects for both Anti-Regulation ($b = .383, p = .000$) and the Knowledge Distortion Index ($b = .175, p = .013$). Though smaller in size relative to the impact of values, systematically distorted empirical beliefs nonetheless exerted an independent influence on voters' support for Initiative 841.

H3: Sophistication Moderating the Impact of Values versus Beliefs

The third and final hypothesis predicted that whereas predispositions are generally predictive of policy preferences only at high levels of sophistication, empirical beliefs should be predictive at both low and high sophistication levels. The test of this hypothesis appears in the second model in Table 3, which assesses the additional impact of interactions Endorsement Knowledge's interactions with values and beliefs. As predicted, there was a significant interaction with Endorsement Knowledge for Anti-Regulation ($b = .860, p < .001$) but not for Knowledge Distortion.

The same approach used earlier illustrated the significant interaction by splitting the sample based on Endorsement Knowledge. Only in the high-sophistication group (i.e., those knowing one or more endorsement) were Anti-Regulation scores significant ($B = .417 [SE =$

.066], $b = .537$, $p < .001$). Thus, only those voters with at least some endorsement knowledge cast votes statistically related to their predispositions toward regulations.

Discussion

Why people vote the way they do is at least as important as whether they vote or how they vote. Much of the research on voter decision making has reached the optimistic conclusion that the average voter can use elite cues to arrive at relatively well-informed voting choices that effectively represent their interests (Gerber and Lupia 1999; Lupia 1994; Lupia and McCubbins 1998; Popkin 1994). Some researchers have argued that at least the more sophisticated voters can do so (Zaller 1992). Others have gone so far as to argue that voters also effectively express their interests in initiative and referendum elections (Bowler and Donovan 2001). The implicit assumption of the heuristic paradigm is that voters deploy clever methods of selective information gathering and processing that help them reduce the cost of researching and casting a fully-informed vote. Research in the motivated reasoning paradigm, however, strongly suggests that citizens do more than simply seek out the policy positions of like-minded elites who parse campaign information in their stead. Voters also selectively gather information based on their underlying attitudes, rate friendly arguments as more persuasive, and counter-argue competing claims.

Our first hypothesis tested this motivated reasoning approach in new context. We predicted that the same people who effectively gathered and sampled elite positions on I-841—high sophistication voters—would similarly gather a biased set of empirical claims, and thus come to hold systematically distorted beliefs about facts relevant to Initiative 841. Survey results supported that hypothesis: For high sophistication voters, one's attitudes toward government regulation strongly predicted one's beliefs about the facts relevant to I-841. That is, those

sophisticates who held anti-regulation attitudes came to believe things about the regulatory context of I-841 that were not necessarily true but that buttressed their underlying predispositions (e.g., believing incorrectly that the regulation I-841 would repeal was already costing the state millions of dollars annually). Those sophisticated voters predisposed to favor business regulation distorted their beliefs in the opposite direction (e.g., having a wildly high estimate of the number of ergonomics injuries occurring each year). By contrast, no such values-distortion process was apparent for unsophisticated voters.

Having established the presence of motivated reasoning in a mass political context, we assessed the significance of that reasoning for vote choices. We hypothesized that systematically distorted beliefs, once formed, would impact voters' choices. Here we extended the research of Kuklinski (2000) and Jerit and Barabas (2006) to predict that individuals' policy positions could be explained by their empirical beliefs, as well as their core values and the positions they heard projected by elites. We found support for this hypothesis as well: In a regression that controlled for individuals' attitudes about regulation, individuals' Knowledge Distortion Index maintained a significant effect on voters attitudes toward I-841. Voters were significantly more likely to oppose the initiative if they held beliefs that skewed pro-regulation, and vice versa for those holding anti-regulation beliefs.

In our third hypothesis, we asserted that voters' use of distorted beliefs in coming to a judgment on the initiative was *not* moderated by sophistication. Here, we posited that the influence of sophistication on policy positions (Gilens, 2001; Zaller, 1992) took place mainly at the information-seeking and gathering phase, and that when forming positions, both low and high sophistication voters would employ the empirical beliefs they had accumulated. This hypothesis was also supported: In the regression predicting support for I-841, the interaction

between sophistication and core values reached significance, but the interaction between sophistication and knowledge distortion did not. Thus, while high sophistication voters were much better able to use their core values in determining their choice on I-841, low sophistication voters holding distorted beliefs about I-841 were just as likely to employ those beliefs in their decision-making.

These results have significant implications for the study of initiatives, elections generally, and broader processes of public opinion formation. Most of all, this study highlights the importance of empirical beliefs—not just values or attitudes—in shaping the way citizens understand issues. Both low and high sophistication voters' judgments were predicted, to a degree, by the balance of empirical beliefs they held, regardless of the veracity of those beliefs. Any conventional model of voter choice would expect voters to consider facts when they make up their minds, but we found that voters' empirical beliefs were clearly skewed by their core values. Those voters best prepared to vote, according to heuristic theories, were most susceptible to developing a distorted set of beliefs in the first place, as the elite cues that ostensibly help voters make good electoral decisions also appeared to lead them away from an accurate grasp of issue-relevant facts.

We believe that future studies should continue to explore motivated reasoning and cultural cognition in political contexts. Whereas most motivated reasoning studies have focused on issues about which subjects already have a position (for an exception, see Kahan et al. 2008), here we examined an issue that was novel to most respondents; many were trying to apply their core values to the special case of I-841. Research should also explore further how motivated reasoning operates on a larger scale, rather than just at the individual level. Is motivated reasoning in the public sphere driven by individuals selecting types of media that are likely to

confirm their beliefs, or is it driven by people prepared to encounter opposition beliefs and counter-argue them? This might have significant implications for the possibility of building a reflective citizenry prepared to consider all sides of an issue (Mutz 2006).

Then, of course, there is the question of false information. As Kuklinski et al. (2000, 809) argued in their study of welfare knowledge, “Many people are likely to be misinformed, not only inaccurate in their factual beliefs but confident that they are right.” Moreover, “their errors can be skewed in a particular direction...and may cause or at least reinforce preferences about policy.” What we see in this study is more direct evidence of how such information distortions can reinforce not only policy preferences but also consequential voting choices—effects of concern to many scholars in the contexts of political knowledge (Delli Carpini and Keeter 1996) and voter decision making (Lau and Redlawsk 2006). Further research here could prove revealing: Through what media does false information travel? How do people come in contact with politically significant falsehoods, and what tools are there for improving the quality of the information surrounding initiatives and candidate elections?

The present study has emphasized the importance of such theoretical questions. It also makes a methodological contribution to assessing systematically distorted beliefs—the Knowledge Distortion Index. Future research should test the efficacy of this approach for other initiative elections and, ultimately, in non-electoral contexts of public opinion formation. The basic premise is that one can distill a set of verifiable empirical claims advanced by parties on opposing sides of an issue and construct corresponding true-false and multiple-choice items that yield a balanced scale, such that simple guessing would yield a score of zero. Many empirical claims would not fit easily within such an index, given that they are broadly contested even among equally competent experts. However, our results suggest that even our more conservative

approach yields a measure sufficiently sensitive to pick up knowledge distortion simply on those matters of fact that are independently verifiable.

This study, however, provides only one test of the formation and impact of distorted beliefs and the Knowledge Distortion Index. Most importantly, our tests employed only cross-sectional data, which means our findings are consistent with, but insufficient proof of, our *causal* claims. By contrast, past experiments (e.g., Gilens 2001; Kahan et al. 2009) have demonstrated the impact of providing policy-relevant facts in a laboratory context. Our synthesis of existing theory ultimately requires the addition of controlled experiments, a longitudinal panel study, and quasi-experimental surveys conducted in the context of an initiative election. Together, these could clarify how value-consistent misinformation takes hold and how it shapes attitudes and voting decisions over the course of an election.

Notes

¹ We used the American Association for Public Opinion Research response rate version RR3 and cooperation rate COOP1. RR3 estimates what proportion of contacts with unknown dispositions were, in fact, eligible for the survey. Full specification of these formulas is available at http://www.aapor.org/uploads/standarddefs_4.pdf, and the estimation procedures are available on request from Northwest Survey & Data Services.

² For updated listings of papers on this line of research, see the Cultural Cognition Project at <http://www.culturalcognition.net>.

³ Six questions were either in yes/no format or only provided the opportunity to give a wrong answer biased in only one direction; three of these could be coded for deregulatory bias and three for regulatory bias. On two questions, respondents had the opportunity to give either the correct answer or an answer incorrectly favoring either the pro- or anti-841 position. For example, the mistaken belief that there are only 50 ergonomic-related workplace injuries a year in Washington state would lead one to favor repealing an unnecessary regulation, whereas the erroneous supposition that there are 500,000 such injuries per annum would suggest the regulation was a dire necessity. (According to the statistics available at the time of the initiative, there were 50,000 ergonomic injuries each year in the state.) Though each individual item was not symmetrical in the potential distribution of coding results, the net result was a balanced distribution of responses, with the average near the scale midpoint of zero.

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Table 1

Coding of answers to the eight knowledge items used to construct the Knowledge Distortion Index (distribution of codings shown in parentheses across each row)

Knowledge Question	Coding of Responses		
	Anti-Regulatory Distortion	Correct Answer (and Acceptable Range)	Pro-Regulatory Distortion
What ... is the percentage of occupational injuries and illnesses that are ergonomics-related?	More than 60% (38%)	Correct answer: 40% Acceptable: 20-60% (35%)	Less than 20% (27%)
Does the federal government have ergonomics regulations that are similar to those in ... Washington, or not?	Yes (26%)	No (74%)	--
How many other states... have ergonomics regulations similar to those in ... Washington?	More than 25 (58%)	Correct answer: 0 Acceptable: 0-25 (42%)	--
Are Wal-Mart and Safeway exempt from the requirements of ... Washington's ergonomics rules, or not?	--	No (91%)	Yes (9%)
To the best of your knowledge, will this Initiative... (multiple choice)	Cost the state about \$1 million per year or more. (27%)	Correct answer: Save state over \$10 mill./yr. Acceptable: No cost or save the state up to \$10 mill. per year (73%)	--
How many Washington state workers would you guess suffer ergonomic-related injuries? (multiple choice)	500,000 (10%)	50,000 (45%)	5,000 or fewer (45%)
Does the ergonomics safety rule prohibit certain high-risk jobs, or not?	--	No (83%)	Yes (17%)
Does it require that the hours a worker spends performing certain high-risk jobs be reduced, or not?	--	No (52%)	Yes (48%)

Table 2

Anti-Regulation Attitudes, Endorsement Knowledge, and their Interaction as Predictors of Knowledge Distortion for King County Voters on Initiative 841

Predictor Variable	Model 1		Model 2	
	B (SE)	b (sig.)	B (SE)	b (sig.)
Age	-.072 (.072)	-.073	-.065 (.070)	-.066
Gender (Female=1)	-.463 (.246)	-.136	-.385 (.242)	-.113
Anti-Regulation Attitudes	.175 (.121)	.106	-.201 (.172)	-.122
Endorsement Knowledge (Any=1)	.222 (.076)	.214**	-.313 (.193)	-.302
Endorsement x Anti-Reg.	—	—	.212 (.071)	.574**
Constant	.084 (.618)		.948 (.670)	
Adjusted R ²		.064**		.104**
Standard error		1.64		1.61
Number of cases (N)		182		182

Note. Entries are unstandardized regression coefficients (*B*), standard errors (*SE*), standardized coefficients (*b*). * indicates significant at $p < .05$, ** denotes $p < .01$.

Table 3

Anti-Regulation Attitudes, Endorsement Knowledge, Knowledge Distortion, and Interactions as Predictors of King County Voter Support for Initiative 841

Predictor Variable	Model 1		Model 2	
	B (SE)	b (sig.)	B (SE)	b (sig.)
Age	.033 (.030)	.076	.039 (.028)	.067
Gender (Female=1)	.021 (.104)	.014	.062 (.098)	.041
Anti-Regulation Attitudes	.282 (.051)	.383**	.024 (.069)	.032
Knowledge Distortion Index	.078 (.031)	.175*	.079 (.031)	.177*
Endorsement Knowledge (Any=1)	-.025 (.033)	-.053	-.375 (.078)	-.811**
Endorsement x Anti-Reg.	—	—	.141 (.029)	.860**
Endorsement x Distortion	—	—	.020 (.018)	.102
Constant	-1.00 (.262)		-.420 (.273)	
Adjusted R ²		.179**		.279**
Standard error		.686		.644
Number of cases (N)		182		182

Note. Entries are unstandardized regression coefficients (*B*), standard errors (*SE*), standardized coefficients (*b*). * indicates significant at $p < .05$, ** denotes $p < .01$.