

The Impact of Accuracy Incentives on Partisan Bias in Reports of Economic Perceptions

Markus Prior, Princeton University

Gaurav Sood, Stanford University

Kabir Khanna, Princeton University

September 23, 2013

Abstract

When surveyed about economic conditions, supporters of the president's party often report more positive conditions than its opponents. Scholars have interpreted this finding to mean that partisans cannot even agree on matters of fact. We test an alternative interpretation: Partisans give partisan congenial answers even when they have, or could have inferred, information less flattering to the party they identify with. To test this hypothesis, we administered two surveys to nationally representative samples, experimentally manipulating respondents' motivation to be accurate via monetary incentives and on-screen appeals. Both treatments reduced partisan differences in reports of economic conditions by about half. Many partisans interpret factual questions about economic conditions as opinion questions, unless motivated to see them otherwise. Typical survey conditions thus reveal a mix of what partisans know about the economy, and what they would like to be true.

In opinion surveys, partisans tend to differ in their reports of objective conditions. In 1988, at the end of President Reagan's second term, for example, the American National Election Study (ANES) asked respondents whether "compared to 1980, the level of unemployment in the country ha[d] gotten better, stayed about the same, or gotten worse?" Even though the unemployment rate had declined from 7.1 percent in 1980 to 5.5 percent in 1988, only about 30 percent of strong Democrats said that "the level of unemployment... ha[d] gotten better." In contrast, over 80 percent of strong Republicans and nearly 70 percent of weak Republicans correctly reported that unemployment had declined. When the ANES in 1996 asked about changes during President Clinton's first term, more Republicans than Democrats failed to acknowledge positive changes in some economic indicators. Compared to 39 percent of Democrats, only 25 percent of Republicans reported that the budget deficit "ha[d] decreased... during Clinton's time as President"—despite a sharp decline, from \$255 billion in fiscal year 1993 to \$22 billion in fiscal year 1997 (Achen and Bartels 2006). Partisan differences in reports of objective conditions are not limited to the economy. Across domains, opponents of the president's party tend to report poorer conditions than supporters of the president's party (Bartels 2002; Jerit and Barabas 2012; Ansolabehere et al. 2013; see also Kuklinski et al. 2000). This study examines whether these patterns reflect deep-seated perceptual differences between partisans or differences that are only induced during the survey interview through the operation of partisan motivation.

Whether or not partisan bias extends to perceptions of reality is an important question for democratic politics. Without agreement on some key facts, democratic decision-making becomes rather difficult. Democrats and Republicans will likely disagree about the urgency of reducing the budget deficit. But if they even disagree about the size of the budget deficit, compromise on matters of policy seems more elusive still. Misperceptions can impair citizens' application of political values to policy questions (Hochschild 2001, 321; Shapiro and Bloch-Elkon 2008). People who are

misinformed about relevant facts may easily get their attitudes and preferences “wrong” too: “When partisan disagreements about important factual issues show that large subsets of the public are necessarily wrong about the facts, then there is clearly cause for concern about the political preferences that people based on their views of the facts” (Shapiro and Bloch-Elkon 2008, 131). And if people use economic conditions to judge the incumbent’s performance (e.g., Fiorina 1981), partisan biases in knowledge of economic conditions weaken accountability. On the other hand, if partisanship only affects reports of perceptions, not perceptions themselves, estimates of perceptions’ influence on variables related to partisanship, such as vote choice or presidential approval, would be biased upwards (see, e.g., Enns et al. 2012, 300). It is thus of considerable importance to understand whether partisans’ survey reports of objective conditions reflect deep-seated beliefs or survey artifacts.

There are reasons to believe that partisan differences in reports of objective conditions reflect deep-seated beliefs. People tend to more readily accept information that is congenial to their partisan affiliation (e.g., Lodge and Taber 2000; Redlawsk 2002). *The American Voter* (Campbell et al. 1960, 133) called this a “perceptual screen through which the individual tends to see what is favorable to his partisan orientation. The stronger the party bond, the more exaggerated the process of selection and perceptual distortion will be.” Reliance on partisan stereotypes (“schemas”), selective exposure and attention, and motivated processing of information may lead partisans to hold beliefs that are in line with their partisanship (Lodge and Hamill 1986; Zaller 1992; Rahn 1993; Taber and Lodge 2006).

But a second explanation is also conceivable: Partisans give answers that reflect well on the party they identify with even when they have information, or could have easily inferred information that is less flattering to their party. Partisans’ motivation to give an answer consistent with their partisan predispositions on surveys may outweigh their motivation to give an accurate response.

Among partisans who lack information, partisan inference may generate greater partisan consistency in responses than accuracy-motivated answering would.

In order to distinguish between the two explanations, we conducted two experiments that manipulated respondents' incentives to answer factual questions accurately. We offered some respondents extra money for correct answers. Others saw an on-screen textual appeal encouraging them to answer correctly in order to help research. Respondents in the control group answered questions in the traditional format, without any accuracy prompts. If partisan differences persist unabated despite incentives to respond correctly, these differences likely reflect deep-seated beliefs. If not, our experiments would indicate that differences in partisans' beliefs are smaller than traditional surveys convey.

Our main contribution is to show that, under typical survey conditions, answers to factual questions with partisan implications are contaminated by partisans' motivation to give answers that reflect well on their party. Deliberately or not, some partisans treat factual questions with political relevance as an opportunity to root for their team. Deep-seated perceptual differences between partisans are substantially smaller than past work suggests. Scholars who want to measure beliefs must counteract these partisan consistency pressures by raising accuracy motivation.

Theory and Hypotheses

The purpose of this study is to understand how people respond to factual survey questions with partisan relevance. Their answers depend on a) information they have stored in their memory, b) the extent to which this information is accessible, which is partly determined by people's effort to access it, c) inferences they make during the response process, and d) their motivation to accurately report the accessible information or on-the-spot inference.

Respondents' memories may contain correct information, incorrect information, or no information at all (e.g., Kuklinski et al. 2000). Many people in many political domains lack

information (Bennett 1995; Delli Carpini and Keeter 1996). Incorrect information can result from unrepresentative personal experiences (Conover et al. 1986; Ansolabehere et al. 2011), a misreading of facts (Nyhan and Reifler 2010), or exposure to sources that deliberately or inadvertently misrepresent facts (Bullock 2006). Selective exposure, selective attention, and motivated processing, all caused by prior beliefs or attachments, can also lead people to be uninformed or misinformed about conditions that do not favor their party (e.g., Lodge and Hamill 1986; Taber and Lodge 2006; Stroud 2011; Jerit and Barabas 2012).

People may also hold correct or incorrect information without ever being exposed to it. Information stored in memory can result from partisan inference before the interview. This can happen when they draw inferences based on other information (Kuklinski et al. 2000, 794-5). For example, a Democrat may infer that unemployment is high simply because Republicans control the White House. Because partisan inference rules are easy and often salient, this process can produce partisan differences in inferred information (Lodge and Hamill 1986; Rahn 1993).

For all these reasons, the information survey respondents hold in their memories when they are asked about objective conditions may thus reflect well on their party. Many of the processes that lead to partisan differences in stored information reflect elements of motivated reasoning. Two kinds of motivations are particularly important: accuracy and consistency motivations (e.g., Festinger 1957; Kruglanski 1990; Kunda 1990; Chaiken et al. 1996). The accuracy goal motivates people to “arrive at an accurate conclusion, whatever it may be,” whereas the consistency goal motivates them to “arrive at a particular, directional conclusion” (Kunda 1990, 480). The conclusion is typically set by people’s existing attitudes and beliefs (Chaiken et al. 1996, 558).¹ For consistency goals to operate

¹ Consistency goals are an important type of directional goal, but other directional goals can operate. Here, we focus on consistency goals resulting in partisan bias.

in the political domain, respondents thus have to (consciously or subconsciously) treat the question as relevant to their political identity (see Jerit and Barabas 2012). Political scientists have used this theoretical perspective to explain partisan biases in attitude change and decision-making (e.g., Brady and Sniderman 1985; Lodge and Taber 2000; Redlawsk 2002; Taber and Lodge 2006; Nir 2011).

It is important to recognize, however, that accuracy and consistency motivations also operate when measuring what people know (and think and feel). Memory searches and inference processes work differently when individuals are motivated to be accurate than when they are motivated to be consistent (e.g., Kunda 1990; Chaiken et al. 1996; Kruglanski 1996). Survey context may influence what information respondents access. Consistency goals are liable to lead respondents to terminate their memory search when it produces information that reflects well on their party, whereas respondents motivated to be accurate are liable to search more evenhandedly, and continue searching even after accessing congenial information. Consistency goals likely lead respondents who lack accessible information to rely on partisan cues to infer answers, whereas respondents motivated to be accurate may rely less on partisan inference (see Lodge and Taber 2000, 205-209).

Once memory searches or inferences yield a result, motivations affect whether or not respondents report it faithfully. Respondents may want to give answers that they believe to be true (accuracy goal), but may also want their answers to reflect well on their partisan predispositions (consistency goal). The accuracy goal motivates them to report accessible information faithfully. The consistency goal may interfere, however, when accessible information clashes with partisan predispositions, or other information they hold. It may lead respondents to knowingly give a consistent but incorrect response. Some partisans may give consistent answers they know to be wrong for expressive reasons, while others may do so strategically with the aim of influencing public opinion.

In all, partisans may report conditions they would like to see, not conditions they necessarily believe to be true. For example, during a Republican administration, partisan consistency pressures may lead Democrats to report worse economic conditions than Republicans even though they know that conditions are better, or could have counteracted the inference that conditions are poor. Because the information respondents hold in memory is unobservable, we translate this claim into the following testable hypothesis:

H1: Increasing accuracy motivation reduces the difference between Republicans' and Democrats' propensity to report (un)favorable objective conditions.

If increasing accuracy motivation, which does not change the information available to respondents, reduces partisan differences in reported conditions, it follows that respondents can counteract their partisan tendencies. Either they have inconsistent information in memory that they believe to be accurate but choose to reveal only when motivated to be accurate. Or sufficient motivation to be accurate prompts them to counteract partisan inferences.

Several reasons may lead us to reject H1. If partisan consistency pressures do not operate during the survey response, respondents will give the answer they believe is most accurate with or without accuracy incentives. Alternatively, partisan consistency pressures may be so powerful that accuracy appeals do not budge them.

H1_{null}: Increasing accuracy motivation does not change the difference between Republicans' and Democrats' propensity to report (un)favorable objective conditions.

We evaluated the hypothesis by experimentally manipulating motivation to be accurate. A randomly selected subset of respondents received an accuracy appeal or a monetary reward for accurate answers to questions about objective economic conditions. The treatment strengthens the accuracy goal relative to the consistency goal. If the operation of partisan consistency motivation during the response process explains why we observe perceptual bias in surveys without accuracy incentives,

then respondents in the treatment group should provide answers that are less consistent with their partisan predispositions, and observed partisan perceptual bias should decrease.

To complete our argument about competing incentives, we also examine the effect of varying consistency motivation. Greater partisan consistency pressures should widen partisan gaps in reported beliefs. They may also thwart the impact of accuracy incentives:

H2: Increasing partisan consistency motivation increases the difference between Republicans' and Democrats' propensity to report (un)favorable objective conditions and attenuates the impact of accuracy incentives.

We manipulate partisan consistency by randomly including an explicit political reference in the question text.

Past research has found partisan bias in reports of economic conditions to be greater among knowledgeable respondents (Shani 2006; Bartels 2008, 153-57). According to Lodge and Taber (2000, 211), it is knowledgeable partisans “who typically hold the strongest attitudes, with the most confidence, and who have the most facts at hand, thereby making them more able to assimilate supporting evidence and better equipped to discredit arguments that challenge their established beliefs or attitudes.” This suggests that knowledgeable partisans are the likeliest to both, experience consistency pressures, *and* hold accurate information (have “the most facts at hand”), when answering questions about objective conditions. This combination makes it particularly likely that they will report consistent answers they know are incorrect. Greater accuracy motivation may therefore make a particularly big difference for the most knowledgeable partisans:

H3: Increasing accuracy motivation reduces the difference between Republicans' and Democrats' propensity to report (un)favorable objective conditions more strongly among partisans with high political knowledge than among partisans with low political knowledge.

Research Design, Data, and Measures

To assess our hypotheses, we conducted two studies, in 2004 and 2008. In both studies, respondents answered a series of factual questions about current economic conditions. In Study 1, we manipulated respondents' accuracy motivation by offering a randomly chosen subset \$1 for each correct answer. In Study 2, we used two treatments to increase respondents' accuracy motivation. One-third of respondents received \$2 for each correct answer. Another third was presented with an on-screen appeal that emphasized the importance of accurate answers to research.

The text of the monetary incentive treatment in Study 2 ran as follows:

We will pay you for answering questions correctly. You will earn 2000 bonus points (\$2) for every correct answer you give. So, if you answer 3 of the 5 questions correctly, you will earn 6000 bonus points (\$6). If you answer all 5 questions correctly, you will earn 10000 bonus points (\$10). The more questions you answer correctly, the more you will earn. At the end of this study, you will see a summary of how many questions you answered correctly.

The accuracy appeal was worded as follows:

As you probably know the government gathers a lot of statistical information about the economy. We are interested in learning whether this information is finding its way to the general public.

These are questions for which there are right and wrong answers. [In red font:] In order for your answers to be most helpful to us, it is really important that you answer these questions as accurately as you can. [End red font.] At the end of this study, you will see a summary of how many questions you answered correctly.

Respondents in the control group only saw a general introduction—shown in Supporting Information (SI) Part A along with complete 2004 instructions—that was common to all conditions.²

To test the second hypothesis, Study 2 included a second orthogonal treatment designed to increase partisan consistency motivation. For a random half of respondents, a reference to President

² Screen completion times, measured in the 2008 study, provide a manipulation check: medians were 9 seconds in the control, 30 seconds in the monetary incentive, and 22 seconds in the accuracy appeal condition.

Bush was added to each factual question, making it explicit that questions refer to changes in economic conditions during the Bush presidency. (See SI Table A1 for wording.) Even without partisan cues, some policy issues may have enough partisan salience to trigger consistency goals. But a political reference in the question text should strengthen partisan consistency motivation by politicizing the question further.³

Both experiments were embedded in nationally representative surveys of U.S. residents conducted by Knowledge Networks (KN). KN interviews national probability samples over the Internet by providing a large panel, recruited through Random Digit Dialing, with WebTV units and/or free Internet connections in exchange for taking surveys. The participants in this study constitute a randomly selected subset of the KN panel and approximate a random sample of the U.S. adult population. Respondents completed surveys using an Internet browser or a WebTV unit. Subject were paid using the company's system of "bonus points" described in SI Part A. Study 1, conducted from October 19 to November 1, 2004, was assigned to 775 panelists, of whom 618 (80 percent) completed it. Study 2, conducted from March 26 to April 8, 2008, was assigned to 1,633 panelists, of whom 1,511 (93 percent) completed it.⁴

Each survey included five questions about objective economic facts. Respondents were asked to provide their best estimates of the unemployment rate (both studies), federal debt (both), share of population without health insurance coverage (both), share of population liable for estate tax (both), poverty rate (Study 1), and price of gas (Study 2). Five of the questions were open-ended, five were closed-ended. SI Table A1 presents question wording and response options. No 'Don't Know' option was offered, following recommendations by Mondak and Davis (2001) and Miller and

³ This design follows Achen and Bartels (2006, 24), who suggest that the reference to President Clinton in the 1996 ANES budget deficit question "may have encouraged people... to connect their responses to their partisan predispositions."

⁴ There is no evidence that treatment affected completion rates (see SI Part A).

Orr (2008). Respondents were encouraged to offer their best guess if unsure about the right answer. While respondents could hit “Next Question” without marking any answer, very few did.⁵ The ten knowledge items are a mix of easy and hard questions. At one end of the spectrum are the estate tax questions, which close to half of respondents answered correctly (45% in Study 2, 44% in Study 1). At the other end are questions about the share of population without health insurance coverage, which fewer than ten percent of respondents were able to estimate within 1 percentage point.

In order to prevent respondents from consulting help, we limited the time respondents had to answer each factual question in both studies. In Study 1, respondents were allowed 60 seconds to read and answer each question. Whether or not respondents had selected a response option, the next question appeared automatically after 60 seconds. Respondents could also move to the next question sooner by clicking the “Next Question” button. In Study 2, respondents were initially given 45 seconds to respond, with a 10-second warning after 35 seconds. Respondents who had not marked any response option after 45 seconds were prompted, “It is helpful for us if you answer this question, even if you’re not perfectly sure. Please mark your best guess.” They then received another 45 seconds to answer. In both surveys, respondents were informed about the time constraints before the knowledge battery. Respondents had the opportunity to pause the interview when they learned that they would be asked political knowledge questions, but not after they saw the first question.

We operationalize partisan bias as the strength of the relationship between party identification and reports of objective economic conditions. A weakening of this relationship indicates attenuation in partisan bias. The direction of consistency pressure depends on which party

⁵ The average fraction selecting “next question” without answering was 3.2 percent in Study 1 and 1.7 percent in Study 2.

is considered responsible for the economic conditions. Our experiments occurred during the presidency of George W. Bush. We define partisan bias as the extent to which Republicans report more favorable economic conditions than Democrats. We thus define responses that understate economic problems as *Republican-congenial* and responses that overstate economic problems as *Democratic-congenial*.⁶

In order to analyze all ten questions in one (hierarchical) model, we require a common metric for reported conditions. Drawing on ANES question wording, much of the work on knowledge of economic conditions distinguishes accurate answers from over- and underestimates (e.g., Conover et al. 1986; Bartels 2002). We follow this convention by trichotomizing answers into underestimates, correct answers, and overestimates. This scoring focuses on the most theoretically relevant response feature, the direction of the error. It also avoids treating closed-ended responses as point estimates (Holbrook and Garand 1996). Most importantly, it allows us to deal with implausible responses to open-ended questions. For example, about ten percent of respondents reported unemployment rates greater than 30 percent, uninsured rates of 50 percent and higher, and double-digit gas prices. Treating these responses at face value gives a lot of weight to difficult-to-interpret responses. Using trichotomous coding, we can conveniently treat these responses as overestimates.⁷

The downside of trichotomizing open-ended responses is the arbitrariness of the interval that is treated as correct. To address this concern, we present robustness tests using several different

⁶ On the estate tax question, partisan consistency leads Republicans to overstate how many people pay estate tax (following the Republican argument that it affects many people and businesses) and Democrats to understate the estate tax base (following the argument that it only affects the wealthy).

⁷ We make one correction even for trichotomized variables: Gas price responses of \$100 or higher were divided by 100 on the assumption that they failed to include a decimal point.

intervals for the five open-ended questions. Our main scoring rule sets the “correct” interval such that approximately 33 percent of responses are correct. This interval matches the average percentage of correct responses across the five multiple-choice questions. In robustness checks, we use three other intervals: (1) the predetermined ranges for which respondents received the payouts; (2) ranges set to approximate 23 percent “correct” answers, allowing for the fact that open-ended questions tend to be more difficult than multiple-choice questions; and (3) “correct” defined in absolute terms, within 10 percent of the correct answer.

As detailed below, our results are highly robust to differences in scoring what is “correct”. Using predetermined payout ranges has the advantage that the “correct” interval was set before data collection, but the share of correct responses varies widely across questions. Given our statistical model (see below), we prefer the “33 percent” scoring rule because it roughly standardizes question difficulty.

No matter which scoring rule we use, more respondents overstate than understate economic problems. Across all ten questions, 50 percent overstate and 15 percent understate using our main scoring rule. (The exception is federal debt, which more respondents understate than overstate.) The expected partisan bias (in the control group) is evident in Democrats’ greater propensity to overstate economic problems (56 percent compared to 40 percent among Republicans) and lower propensity to understate problems (12 percent compared to 18 percent among Republicans). Our main task is to examine if experimental treatments reduce these differences.

By the spring of 2008, many Republicans were dissatisfied with President Bush. As Republicans, they would have liked to report strong economic conditions. But their dissatisfaction with Bush created a second, countervailing consistency pressure: Those dissatisfied with President Bush might not have wanted to credit him with positive economic outcomes. In order to focus on respondents for whom consistency pressures are unambiguous, we exclude Republicans who

disapproved of Bush’s handling of the economy (15% of the 2008 sample) as well as Democrats who approve of Bush (2% of the sample). Additional analyses (see SI Part B) confirm that partisan bias in the control group and treatment effects are lower among these partisans with ambiguous consistency pressures. We also exclude pure independents (16% of the sample) because the concept of partisan consistency motivation does not apply to them. The 2004 survey did not include a measure of presidential approval, so we were only able to exclude pure independents. The analysis thus compares Democrats, with mostly unfavorable views of President Bush, to Republicans with mostly favorable views of President Bush.

Model and Estimation

We use a hierarchical ordered logistic model to estimate treatment effects. Each respondent $i = 1, \dots, n$ answers economic knowledge questions $j = 1, \dots, k$. All questions have response categories $c =$ (higher, correct, lower). The resulting proportional odds model has the form:

$$\log \left(\frac{\Pr(y_{ij} \leq c)}{1 - \Pr(y_{ij} \leq c)} \right) = \kappa_c - [X_i\beta + \alpha_i + I_j]$$

$$\alpha_i \sim N(0, \sigma_\alpha^2)$$

The model includes fixed effects for survey questions (I_j) and random effects for respondents (α_i) to capture the dependence of observations from the same respondent.⁸ κ_c denotes cut points, which are constrained to increase. This analytic strategy is the log-odds counterpart of the conventional repeated measures analysis.

The main components of X_i will be the experimental treatments, respondents’ party identification, and the interaction between treatment and party ID. The resulting specification

⁸ Using clustered standard errors does not change the results.

estimates the causal effect of the treatments on the difference between Democrats and Republicans in response to economic knowledge questions.⁹

Results

To test if monetary incentives reduce partisan differences in reported economic conditions, we regressed trichotomized responses on party ID, monetary incentives, and the interaction between the two. Party ID is 1 for Democrats, 0 for Republicans, and treats leaners as partisans. Column (1) of Table 1 shows that, in the control group, the association between partisanship and economic conditions is in the expected direction: Democrats are likelier than Republicans to overstate economic problems.

⁹ We estimate the model via maximum likelihood using the Stata library GLLAMM (Rabe-Hesketh et al. 2004b, 2005). Within GLLAMM, we use adaptive quadrature (Naylor and Smith 1982) to numerically integrate the marginal likelihood (which has no closed-form solution).

Table 1: Impact of Accuracy Incentives on Responses, by Partisanship

	(1)	(2)
	Studies 1 & 2	Study 2
Monetary	.24 (.10)*	.36 (.13)*
Appeal		.27 (.13)*
Partisanship (Democrat)	.72 (.09)*	.86 (.12)*
Monetary×Partisanship	-.30 (.13)*	-.47 (.17)*
Appeal×Partisanship		-.37 (.16)*
σ_1^2	.27 (.05)	.24 (.05)
# Responses	5575	4965
# Respondents	1131	1002
Log-Likelihood	-5113	-4845

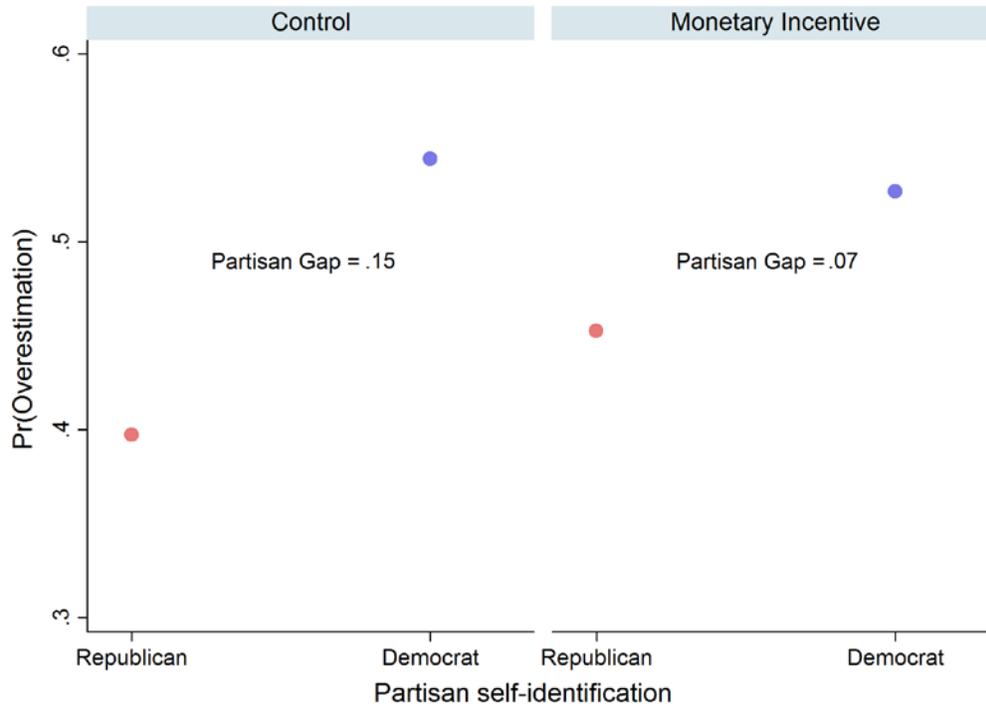
* $p < .05$ (two-tailed)

Note: Entries are coefficients from hierarchical ordered logistic model (standard errors in parentheses). Model (1) includes control and monetary incentive conditions from Studies 1 and 2. Model (2) includes control, monetary incentive, and on-screen accuracy appeal from Study 2.

However, monetary incentives significantly reduce the impact of partisanship on reports of economic conditions. The main effect of monetary incentive captures its effect on Republicans: Republicans become significantly more likely to report unfavorable economic conditions. The interaction effect is significant and negative, indicating that the effect of incentives is in the opposite direction among Democrats. Figure 1 graphs predicted probabilities of overestimating economic problems to illustrate the experimental effects.¹⁰ (Predicted probabilities of underestimating are roughly a mirror image. We verify the ordinality assumption below.) Monetary incentives reduce the gap between Democrats and Republicans by half, from a probability difference of .15 to .07.

¹⁰ Predicted probabilities were obtained by integrating over the random effects distribution.

Figure 1: Partisan Differences in Reporting Poor Conditions, With and Without Monetary Incentives (Studies 1 & 2)

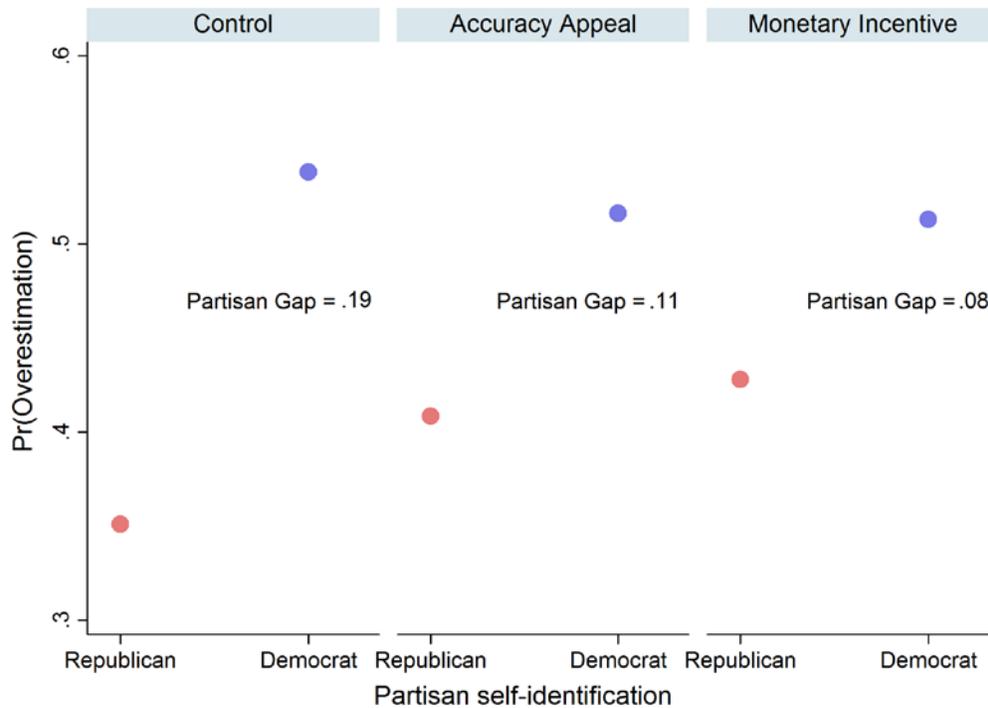


Note: Graphs show predicted values from model (1) in Table 1.

Next we test if an on-screen appeal for accuracy reduces partisan bias in the same way as a monetary incentive. Column (2) in Table 1 reports the results for Study 2 using both incentive treatments. Substantively, results are highly similar to the joint model in column (1). Explaining the purpose of the questions to respondents and telling them that “it is really important that you answer these questions as accurately as you can” significantly reduces differences between Democrats and Republicans. Although point estimates of the effect of the accuracy appeal are slightly smaller than those for monetary incentives, we cannot reject the hypothesis that these differences are due to sampling error alone, and hence conclude that the effect of the accuracy appeal cannot be

distinguished from the effect of the monetary incentive.¹¹ Figure 2 graphs predicted values from this model to illustrate the reduction in partisan bias through accuracy appeal and monetary incentives. Again, perceptual bias is cut roughly in half by accuracy incentives.

Figure 2: Partisan Differences in Reporting Poor Conditions, by Type of Accuracy Incentives (Study 2)



Note: Graphs show predicted values from model (2) in Table 1.

Ruling Out “Cheating” by Respondents

If incentives for correct answers merely cause respondents to look up answers, it would be invalid to conclude that the treatment reveals withheld knowledge or adjusted inference rules. We designed our surveys so that respondents had little opportunity to consult help, and there is compelling evidence that attempts to look up answers, if they occurred, did not distort our results.

¹¹ Equality constraints yield p values of .49 and .51 for the main and interaction effects, respectively.

First, both surveys made it hard for respondents to look up answers by limiting the time they had to answer each question. As discussed above, time limits were 60 seconds in Study 1 and up to 90 seconds in Study 2 (although respondents were told only about the first 45 seconds).

Second, Study 2 included screen completion timers for all knowledge questions, allowing us to exclude slower responses, which may indicate attempts to look up answers. The results in Table 1 are robust to excluding long response times using a variety of different cutoffs, ranging from 30 to 60 seconds. As shown in Table B1 (Supporting Information), limiting response times to less than 60, 45, or 40 seconds barely changes the estimates at all. An even more aggressive filter of less than 30 seconds, which excludes 42 percent of all responses, produces some changes, but in opposite directions: The monetary incentive effect becomes slightly stronger, the accuracy appeal effect slightly weaker. It seems highly unlikely that these changes arise from respondents looking up information.

Third, respondents who completed their surveys via a WebTV unit effectively did not have the opportunity to use a web browser. Respondents who accessed the Knowledge Networks website through a dial-up Internet connection also could not have easily taken advantage of the online resources. Realistically, only respondents with high-speed connections could have looked up answers in the allotted time. Allowing the coefficients in Table 1 to vary by availability of a high-speed connection does not improve the model fit ($\chi^2[3] = 2.4, p = .49$ for (1); $\chi^2[5] = 2.0, p = .85$ for (2)), suggesting that respondents who had the option of looking up answers and respondents who did not have this option behaved similarly. In sum, we find little evidence that respondents consulted help as they answered the knowledge questions.

Additional Robustness Checks

Testing if the results in Table 1 are robust to alternate ways of coding the dependent variable and party identification shows that the results do not hinge on these coding decisions. Columns (1) –

(6) in Table 2 examine the robustness of both the joint model (Table 1, column 1) and the expanded model for Study 2 (Table 1, column 2) to different definitions of “correct” for open-ended questions. Whether we use the predetermined definitions for which respondents received payouts, or define ranges of “correct” in absolute terms (within 10 percent of the correct answer), or score open-ended questions so that 23 (rather than 33) percent of responses are classified as correct, the results are statistically and substantively indistinguishable. The robustness tests, and the replication using the predetermined definitions of correct answers in particular, demonstrate that our results do not depend on idiosyncratic or post-hoc scoring of the dependent variable.

Columns (7) and (8) of Table 2 replicate our main results using a 7-point party ID scale rather than an indicator for Democrats. The replications produce results that are substantively similar. To test if experimental effects differed by strength of partisanship, we tested a fully-interacted specification using indicator variables for levels of the 7-point scale against a model that constrained the treatment interactions to be the same within each party. Allowing treatment effects to vary by strength of partisanship did not improve model fit ($\chi^2[4] = 3.4, p = .49$ for the joint model; $\chi^2[8] = 3.0, p = .93$ for the expanded Study 2 model), so we prefer the model specifications in Table 1.¹²

¹² Additionally, including conflicted partisans and relaxing the proportional odds assumption behind the ordered logit model does not change the substantive interpretation of the results (see Tables B2 and C1).

Table 2: Robustness Checks (Definition of “Correct” Interval; Partisanship Coding)

<i>Coding Rule</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>Payout</i>	+/- 10%	23%	<i>Payout</i>	+/- 10%	23%	33%	33%
	Studies 1 & 2			Study 2			Studies 1 & 2	Study 2
Monetary	.20* (.10)	.23* (.10)	.24* (.10)	.31* (.13)	.33* (.13)	.37* (.13)	.26* (.11)	.26+ (.14)
Appeal				.26* (.13)	.27* (.13)	.22* (.13)		.39* (.15)
Partisanship (Democrat)	.70* (.09)	.69* (.09)	.75* (.09)	.81* (.12)	.83* (.12)	.85* (.12)		
Partisanship (7-point)							.15* (.02)	.18* (.02)
Monetary×Partisanship	-.27* (.13)	-.29* (.12)	-.33* (.13)	-.42* (.17)	-.39* (.16)	-.47* (.17)	-.06* (.03)	-.07* (.03)
Appeal×Partisanship				-.33* (.16)	-.37* (.16)	-.35* (.16)		-.10* (.03)
σ_1^2	.22 (.05)	.15 (.05)	.28 (.05)	.23 (.05)	.17 (.05)	.23 (.05)	.27 (.05)	.23 (.05)
# Responses	5575	5575	5575	4965	4965	4965	5575	4965
# Respondents	1131	1131	1131	1002	1002	1002	1131	1002
Log-Likelihood	-4897	-4806	-5000	-4727	-4636	-4775	-5110	-4842

* p<.05, + p<.10 (two-tailed)

Note: Entries are coefficients from hierarchical ordered logistic model (standard errors in parentheses).

Comparing the Effect of Accuracy and Consistency Motivation

So far, we have examined the effect of increasing accuracy motivation on partisan bias in reports of economic conditions. According to our second hypothesis, increasing consistency motivation should have the opposite effect and thus thwart the de-biasing impact of accuracy incentives. The 2008 Study manipulated consistency pressure by randomly varying whether or not the five questions mentioned President Bush. The first column in Table 3 allows all coefficients to vary by Bush reference. Compared to model (2) in Table 1, this improves the model fit significantly ($\chi^2[6] = 14.4, p = .03$).

Table 3: Impact of Accuracy Incentives on Partisan Differences in Reported Conditions, by Politicization of Questions and General Political Knowledge

	(1)	(2)	(3)
Monetary	.42 (.18)**		
Appeal	.46 (.17)**		
Any Incentive (Monetary/Appeal)		.44 (.15)**	-.01 (.24)
Bush Reference	.01 (.18)	.01 (.19)	
Democrat	.74 (.16)**	.74 (.16)**	.39 (.23)*
Political Knowledge – 4			-.28 (.12)*
(Political Knowledge – 4) ²			.029 (.014)*
Monetary × Democrat	-.54 (.23)**		
Appeal × Democrat	-.50 (.22)*		
AnyIncentive × Democrat		-.52 (.19)**	.02 (.26)
Democrat × BushRef.	.25 (.23)	.25 (.23)	
Monetary × BushRef.	-.14 (.27)		
Appeal × BushRef.	-.45 (.26)*		
AnyIncentive × BushRef.		-.31 (.23)	
Monetary × Dem. × BushRef.	.13 (.33)		
Verba × Dem. × BushRef.	.32 (.32)		
AnyIncentive × Dem. × BushRef.		.24 (.28)	
Democrat × (Knowledge – 4)			.27 (.13)*
Democrat × (Knowledge – 4) ²			-.025 (.015)*
AnyIncentive × (Knowledge – 4)			.28 (.13)*
AnyIncentive × (Knowledge – 4) ²			-.032 (.015)*
AnyIncentive × Dem. × (Knowledge – 4)			-.26 (.14)*
AnyIncentive × Dem. × (Knowledge – 4) ²			.024 (.017)
σ_1^2	.23 (.05)	.23 (.05)	.23 (.05)
# Responses	4965	4965	4950
# Respondents	1002	1002	999
Log-Likelihood	-4838	-4839	-4826

** p<.01, * p<.05 (one-tailed)

Note: Entries are coefficients from hierarchical ordered logistic model (standard errors in parentheses).

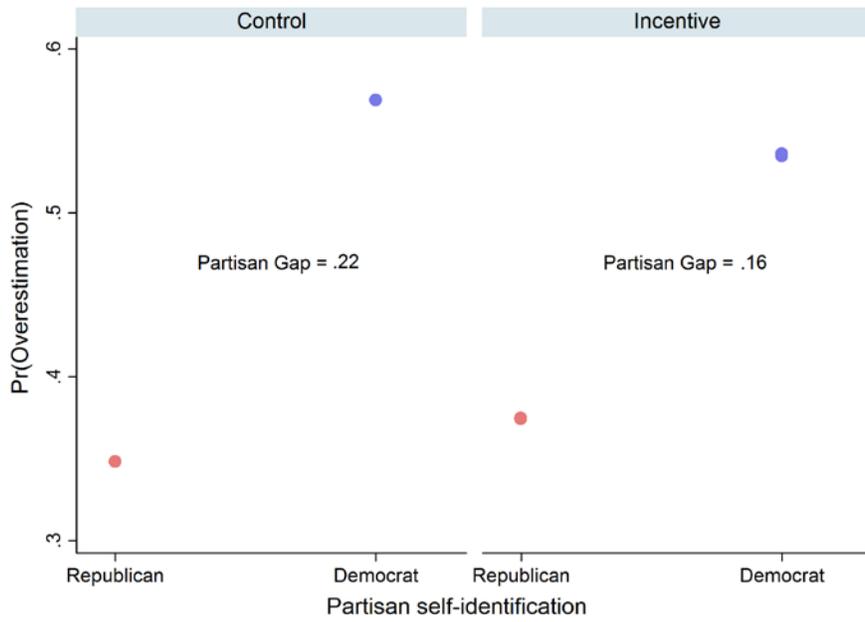
Without accuracy incentives, partisanship has a somewhat stronger impact on reported beliefs when the question mentions the president: The coefficient for Democrats is a third higher than when the question doesn't refer to President Bush. More importantly, the treatment effect of accuracy incentives is lower when reference to President Bush is present. Although this contrast looks more pronounced for the accuracy appeal than the monetary incentive, we lack statistical power to say so. Collapsing the two treatments in column (2) of Table 3 does not significantly change the model fit ($\chi^2[4] = 2.4, p = .67$), so we base our interpretation on this simpler model.¹³

Results in column (2) show that the Bush reference significantly reduces the impact of accuracy incentives. Without a Bush reference, accuracy incentives reduce the partisanship coefficient *by over two thirds* ($\beta_{\text{Dem} \times \text{Acc.Incentive}} = -.52, p = .004$). When the question mentions President Bush, not only is partisan bias larger without incentives, but incentives have a reduced and only marginally significant impact ($\beta_{\text{Dem} \times \text{Acc.Incentive}} + \beta_{\text{Dem} \times \text{Acc.Incentive} \times \text{BushRef}} = -.28, p = .18$). Figure 3 illustrates these results graphically. With the Bush reference, accuracy incentives reduce the probability difference in overstating economic problems between Democrats and Republicans from .22 to .16. Without the Bush reference, the partisan gap declines from .16 to .05. These results support H2 and show that, just like accuracy motivation reduces partisan bias, consistency motivation increases it. The two are not additive, however: When a cue politicizes the question, the resulting consistency motivation is not as effectively counteracted by accuracy incentives.

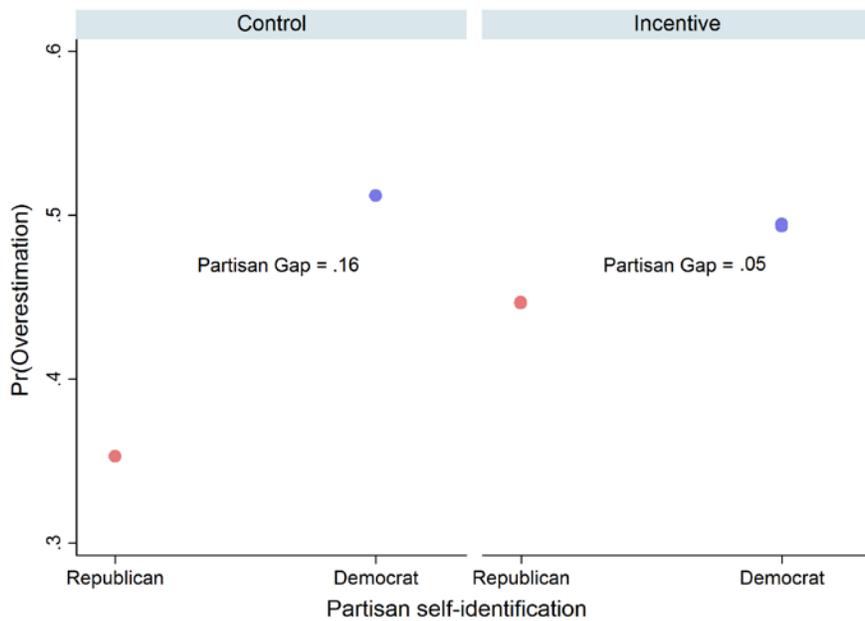
¹³ Model (2) in Table 3 fits the data significantly better than the equivalent model that averages over the Bush reference treatment ($\chi^2[4] = 12.6, p = .014$).

Figure 3: The Impact of Politicization on Treatment Effects

a) Accuracy & Consistency (Bush Reference)



b) Accuracy Only (No Bush Reference)

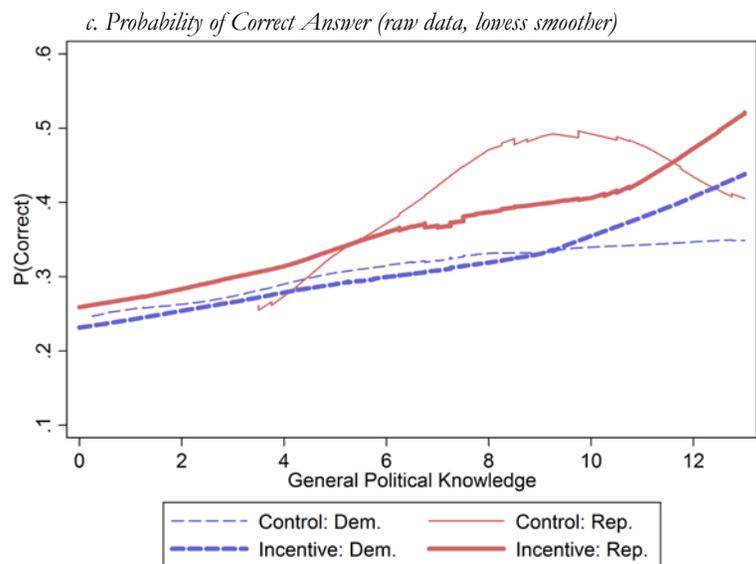
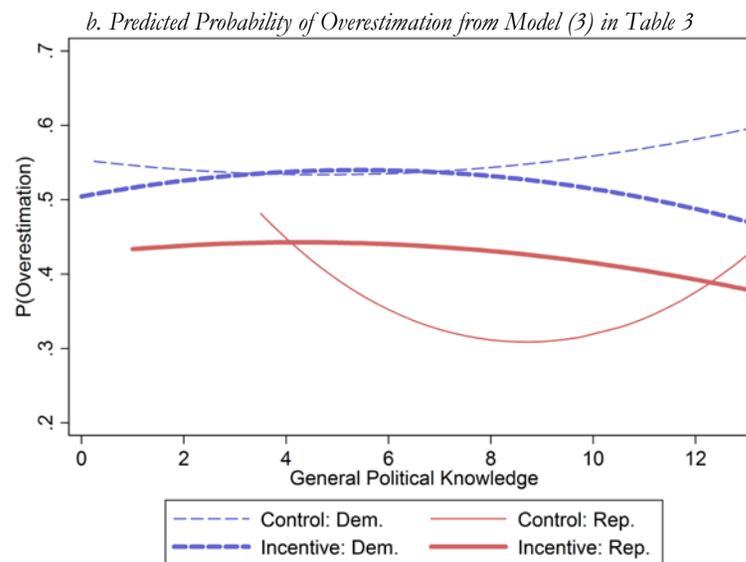
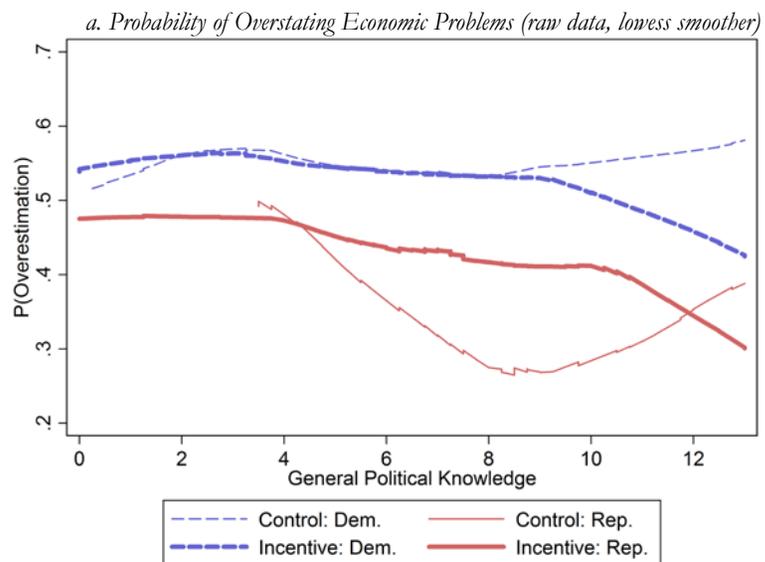


Note: Graphs show predicted values from model (2) in Table 3.

The Role of General Political Knowledge

According to our final hypothesis, accuracy incentives should disproportionately reduce partisan differences in reported economic conditions among politically knowledgeable respondents, because they experience the strongest partisan consistency pressures in the control condition, and are also the likeliest to have accurate information about the economy. We measure general political knowledge using 13 unrelated questions asked earlier in the 2008 Study (listed in SI Part A). Figure 4a plots the relationship between overestimating economic problems and general political knowledge for Democrats and Republicans in the control group (thin lines) and with accuracy incentives (thick lines). The accuracy appeal and monetary incentive are pooled because they generate almost identical patterns. Data are smoothed using locally weighted (lowess) regressions. Since only three Republicans in the control group answered fewer than four general knowledge questions correctly, we do not attempt to characterize the relationship for the least knowledgeable Republicans in the control group.

Figure 4: Treatment Effects by General Political Knowledge



Two findings in Figure 4a stand out. First, the pattern in the control group is similar to that obtained in previous research: more knowledgeable respondents exhibit greater partisan differences in reports of economic conditions than less knowledgeable respondents (Shani 2006; Bartels 2008). The partisan difference narrows slightly at the very highest knowledge levels, a pattern Achen and Bartels (2006) show for the 1996 ANES budget deficit item.

Second, and previously unknown, the extent of partisan bias is unrelated to general knowledge when respondents receive an accuracy incentive. The two thick lines are almost exactly parallel for the entire observed range of general political knowledge. Both lines dip at high knowledge levels, indicating that knowledgeable Democrats and Republicans are less likely to overstate economic problems. Regardless of general knowledge, however, the difference between Democrats and Republicans with accuracy motivation is constant, and it is of the same modest magnitude observed *at low knowledge levels* in the control conditions. These results support H3.

To statistically test H3, we interact knowledge levels with the variables in model (2) in Table 1. Figure 4a indicates that the relationship between treatment effect and political knowledge is non-linear in the control group. We therefore include linear and quadratic knowledge terms. We again collapse the two accuracy treatments as allowing them to vary does not improve model fit ($\chi^2[6] = 3.0, p = .80$). For convenience, general knowledge is centered on the score of four. Predicted values in Figure 4b demonstrate that this model recovers the main patterns in the raw data in Figure 4a.

Estimates in Table 3 (column 3) indicate that partisan differences in reports of economic conditions are marginally significant among less knowledgeable partisans (4 correct out of 13) in the control condition.

As knowledge increases, Republicans become less likely to overstate economic problems (indicated by the significant negative main effect of knowledge), while Democrats do not (indicated by the significant interaction of knowledge and party ID of almost exactly the same magnitude as

the knowledge main effect). The significant positive quadratic knowledge main effect and negative interaction with party ID indicate that this trend reverses among the most knowledgeable respondents. A joint test of $\beta_{\text{PID} \times \text{Knowledge}}$ and $\beta_{\text{PID} \times \text{Knowledge}}^2$ confirms that the quadratic relationship in the control group between knowledge and reports of economic conditions differs significantly by party ID of the respondent ($\chi^2[2] = 5.8, p = .06$). In sum, partisan bias in the control group increases significantly with general political knowledge and reaches its maximum at medium-to-high knowledge levels.

The accuracy treatments reduce partisan bias significantly more among more knowledgeable respondents. Among the less informed, partisan differences are essentially the same in treatment and control group. The accuracy treatments do not significantly affect the partisan difference at these knowledge levels ($\beta_{\text{PID} \times \text{Treat}}$ is not significant). Accuracy incentives make Republicans significantly more likely to overstate economic problems as knowledge increases ($\beta_{\text{Treat} \times \text{Knowledge}} = .28, p < .05$), but this effect declines among the most knowledgeable Republicans ($\beta_{\text{Treat} \times \text{Knowledge}}^2 = -.032, p < .05$ significant positive quadratic knowledge term). The two significant three-way interactions confirm that the treatment effect conditional on knowledge is different for Democrats, making the most knowledgeable Democrats less likely to overstate economic problems. The joint significance level for $\beta_{\text{PID} \times \text{Treat} \times \text{Knowledge}}$ and $\beta_{\text{PID} \times \text{Treat} \times \text{Knowledge}}^2$ is $p = .11$, suggesting that the reduction in the partisan gap through the treatment is quadratic in knowledge. In sum, the effect of accuracy motivation in reducing partisan differences is significantly greater among more the knowledgeable, supporting H3.

Implications of General Knowledge Results for Mechanisms

Two types of motivated responding could explain our findings: When partisans access information in memory that they deem accurate but inconsistent with their partisan predispositions, they may withhold it during the interview and report partisan congenial answers on purpose. When

their memory search fails to produce relevant information, consistency motivation may prompt partisans to apply partisan inference rules and give congenial answers.

In the first situation, raising accuracy motivation leads partisans to report information which they believe to be more accurate and would have otherwise withheld. In the second case, accuracy motivation prompts partisans to search their memory more thoroughly or apply a less partisan inference rule. In this case, a correction for partisan inferences does not necessarily increase the accuracy of the answer. When consistency and accuracy pressures push in the same direction, raising accuracy motivation may reduce consistency motivation and lead to answers that are less consistent—and also happen to be less accurate.

Our research design does not allow us to observe these mechanisms directly. This section is therefore more speculative than what we have presented so far.

The knowledge results hint at the operation of both of the described mechanisms, albeit for different types of respondents. The average Democrat in the control group overstates the extent of economic problems, so partisan consistency motivation and accuracy motivation during the survey response process push her in opposite directions. The accuracy goal leads her to report better conditions, but partisan consistency pressures lead her in the opposite direction. Figure 4a shows that increased accuracy motivation indeed causes politically knowledgeable Democrats to give less consistent answers. And Figure 4c shows that accuracy motivation raises the probability that the most knowledgeable Democrats acknowledge unwelcome (positive) economic realities. For the same reasons they are generally informed, they are likely to be informed about economic conditions. Hence, this is the segment whose control group responses possibly reflect withholding of inconvenient information.

The average Republican in the control group also overstates economic problems, so for him accuracy and partisan consistency point in the same direction: He would like the economy to be

better, and a more positive description of the economy would in fact be more accurate (until the point where it overstates economic strength). The experimentally induced accuracy motivation makes Republicans with medium to high general knowledge more likely to overstate economic problems. They give answers that are both less consistent and, as Figure 4c shows, less accurate. These results are better explained by the second mechanism. For this group, partisan bias under control group conditions emerges not because they withhold information—after all, they are unable to give more accurate answers even with accuracy incentives—but because they apply partisan inference rules. These rules are not deeply ingrained, however: When prompted, this group can counteract consistency motivation and reduce reliance on partisan inferences. Although we cannot determine the relative importance of the two mechanisms by which accuracy motivation reduces partisan bias, our results suggest that both are at play.

Conclusion

Partisan bias in perceptions of objective economic conditions is smaller than what previous research indicates. Our results demonstrate that a portion of what scholars have treated as perceptual bias is in fact the result of partisan consistency pressures during the measurement of those perceptions. Even on factual questions, partisan respondents like to report partisan consistent answers. But, as we have shown, they can sacrifice at least some partisan consistency when motivated to do so. Both a monetary incentive for correct answers and an on-screen appeal to accuracy substantially reduce partisan differences in reports of economic conditions. Politicizing questions through references to the president increases partisan differences. Put together, these results show that motivated reasoning during the survey interview leads to motivated responding.

These results are an important corrective to the dominant view of pervasive, rigid partisanship in the American electorate. They demonstrate that a considerable portion of what is often treated as deep-seated partisan bias does not in fact run particularly deep. If it is possible to

reduce partisan differences substantially by telling respondents that “it is really important that you answer these questions as accurately as you can,” the supposed inability of opposing partisans to agree on facts is less of an obstacle to political decision-making than commonly believed.

Motivated responding also resolves a puzzle that emerged in past studies of partisan perceptual bias: Political knowledge and partisan bias appeared to be positively correlated (Shani 2006; Achen and Bartels 2006; Bartels 2008, 153-57). But why would individuals who are generally knowledgeable about politics be so poorly informed about economic conditions? Our results show that accuracy motivation removes the correlation between general knowledge and the extent of partisan bias in reports of economic conditions. It follows that politically knowledgeable people do not in fact have more strongly colored perceptual screens than less knowledgeable people. What distinguishes knowledgeable partisans is their stronger motivation to respond in partisan consistent manner in typical survey contexts.

Our findings indicate that, in the absence of accuracy incentives, many partisans answer knowledge questions about economic conditions as if they were opinion questions. Typical survey conditions thus reveal a mix of what partisans know about the economy and what they would like to be true about it. As a result, the questions in the American National Election Studies, analyzed by Bartels (2002) and Shani (2006), overstate partisan perceptual bias. It is prudent for researchers to consider responses to survey questions as acts of political expression when the questions touch on partisan considerations—even when the questions are strictly factual. Based on our analysis we recommend using accuracy incentives in surveys to counteract partisan consistency goals. Given that we find a larger partisan gap when questions contained a reference to President Bush, we also recommend removing political references from factual questions.

Our findings are by no means a wholesale challenge to the concept of motivated reasoning in politics. Even our strongest treatment did not completely eliminate the gap between Democrats

and Republicans. And the motivated responding we document is a type of motivated reasoning, albeit a previously underappreciated one. It is, however, necessary to distinguish motivated responding from motivated information processing. Motivated information processing means people ignore, downplay, or dismiss arguments and information that clash with their existing beliefs and attitudes. Motivated responding implies that partisans have, or can infer, information that reflects poorly on their party than scholars previously believed.

The finding is important for several reasons. Representatives and other elite actors often have incentives to understand people's true beliefs. To the extent that reported differences in perceptions of objective conditions emerge because respondents lack relevant information and derive their answers applying misleading partisan inference rules, surveys manufacture partisan bias.

As scholars, we want to measure people's true beliefs about conditions so we can better understand the role beliefs play in decision-making. Uncongenial information that respondents are reluctant to reveal may still affect their judgments. Partisans who withhold inconvenient information during a survey interview can draw on it when they develop policy preferences and make voting decisions. Gerber and Huber (2009, 2010) show that some partisan beliefs about the economy translate into behavior. After an election, supporters of the winning party increase their prospective economic assessments and their intention to spend. Areas with high concentrations of supporters of the winning candidate experience actual rises in consumption, implying that people's prospective beliefs about economic conditions are genuine enough to influence actual consumption decisions. But the topic of our study is different. We examine partisan bias in retrospective assessments of economic conditions and ask if it reflects deep-seated beliefs or motivated responding. While partisan differences in prospective economic assessments are not necessarily inconsistent with rational expectations about future economic policy (see Gerber and Huber 2009, 418-420, 424), differences in perceptions of economic conditions indicate a denial of reality that hinders rational

economic behavior. Gerber and Huber (2009, 418) expect that after an election, “citizens learn how well their partisan-tinged beliefs about economic performance will or will not coincide with economic realities.” It is precisely this learning process that becomes difficult if partisan bias extends to perceptions of economic conditions. That partisan differences partly reflect cheerleading, strategic behavior, or lazy inference is thus good news from a normative perspective as it demonstrates that partisans have some capacity to correct their wishful thinking.

The demonstration that citizens have the capacity to perceive reality in a less partisan manner than previously thought is important in and of itself. It is possible that partisans are aware of uncongenial facts, but still ignore them in their judgments. Future research should examine this possibility directly. Its frequency may depend on elite incentives. When elites would benefit from voter beliefs that depend on the presence of accuracy motivations, it will be in their interest to create the motivational context that corrects partisan-tinged beliefs. At any event, perceiving reality with some accuracy, but occasionally disregarding this information is less pernicious than misinformation. Genuine belief in incorrect information precludes doubt. Dismissal of facts as irrelevant or contested, on the other hand, implies at least an initial seed of doubt and preserves the possibility of recognizing one’s own biases. From a normative perspective, we may prefer partisans who can correct their own partisan distortions to partisans who hold on to their false beliefs even when they try to be accurate.

References

- Achen, Christopher H., and Larry M. Bartels. 2006. *It Feels Like We're Thinking: The Rationalizing Voter and Electoral Democracy*. Paper presented at the Annual Meeting of the American Political Science Association, Philadelphia.
- Albert, Paul S., and Dean A. Follmann. 2004. "Modeling Repeated Count Data Subject to Informative Dropout." *Biometrics* 56(3): 667-677.
- Ansolabehere, Stephen, Marc Meredith, and Erik Snowberg. 2011. "Mecro-Economic Voting: Local Information and Micro-Perceptions of the Macro-Economy." Unpublished manuscript.
- Ansolabehere, Stephen, Marc Meredith, and Erik Snowberg. 2013. "Asking About Numbers: Why and How." *Political Analysis* 21(1): 48-69.
- Bartels, Larry M. 2002. "Beyond the Running Tally: Partisan Bias in Political Perceptions." *Political Behavior* 24(2): 117-150.
- Bartels, Larry M. 2008. *Unequal Democracy: The Political Economy of the New Gilded Age*. Princeton: Princeton University Press.
- Bennett, Stephen Earl. 1995. "Americans' Knowledge of Ideology, 1980-1992." *American Politics Quarterly* 23(3): 259-278.
- Brady, Henry E., and Paul M. Sniderman. 1985. "Attitude Attribution: A Group Basis for Political Reasoning." *American Political Science Review* 79(4): 1061-1078.
- Bullock, John G. 2006. "Partisanship and the Enduring Effects of False Political Information." Unpublished Manuscript.
- Campbell, Angus, Philip Converse, Warren E. Miller, and Donald Stokes. 1960. *The American Voter*. New York,: Wiley.
- Chaiken, Shelly, Roger Giner-Sorolla, and Serena Chen. 1996. "Beyond Accuracy: Defense and Impression Motives in Heuristic and Systematic Processing." In *The Psychology of Action:*

- Linking Motivation and Cognition to Behavior*, edited by Peter M. Gollwitzer and John A. Bargh (pp. 553-578). New York: Guilford.
- Conover, Pamela J., Stanley Feldman, and Kathleen Knight. 1986. "Judging Inflation and Unemployment - the Origins of Retrospective Evaluations." *Journal of Politics* 48(3): 565-588.
- Delli Carpini, Michael X., and Scott Keeter. 1996. *What Americans Know About Politics and Why It Matters*. New Haven [Conn.]: Yale University Press.
- Enns, Peter K., Paul M. Kellstedt, and Gregory E. McAvoy. 2012. "The Consequences of Partisanship in Economic Perceptions." *Public Opinion Quarterly* 76(2): 287-310.
- Festinger, Leon. 1957. *A Theory of Cognitive Dissonance*. Stanford: Stanford University Press.
- Fiorina, Morris P. 1981. *Retrospective Voting in American National Elections*. New Haven: Yale University Press.
- Gerber, Alan S., and Gregory A. Huber. 2009. "Partisanship and Economic Behavior: Do Partisan Differences in Economic Forecasts Predict Real Economic Behavior?" *American Political Science Review* 103(3): 407-426.
- Gerber, Alan S., and Gregory A. Huber. 2010. "Partisanship, Political Control, and Economic Assessments." *American Journal of Political Science* 54(1): 153-173.
- Hochschild, Jennifer L. 2001. "Where You Stand Depends on What You See: Connections among Values, Perceptions of Fact, and Political Prescriptions." In *Citizens and Politics: Perspectives from Political Psychology*, edited by James H. Kuklinski (pp. 313-340). New York: Cambridge University Press.
- Holbrook, Thomas, and James C. Garand. 1996. "Home Economist? Economic Information and Economic Voting." *Political Research Quarterly* 49(2): 351-375.
- Iyengar, Shanto, and Kyu S. Hahn. 2009. "Red Media, Blue Media: Evidence of Ideological Selectivity in Media Use." *Journal of Communication* 59(1): 19-39.

- Jerit, Jennifer, and Jason Barabas. 2012. "Partisan Perceptual Bias and the Information Environment." *Journal of Politics* 74(3): 672-684.
- Kruglanski, Arie. 1990. "Lay Epistemic Theory in Social-Cognitive Psychology." *Psychological Inquiry* 1(3): 181-197.
- Kruglanski, Arie W. 1996. "Motivated Social Cognition: Principles of the Interface." In *Social Psychology: Handbook of Basic Principles*, edited by E. Tory Higgins and Arie W. Kruglanski (pp. 493-520). New York: Guilford Press.
- Kuklinski, James H., Paul J. Quirk, Jennifer Jerit, David Schwieder, and Robert F. Rich. 2000. "Misinformation and the Currency of Democratic Citizenship." *Journal of Politics* 62(3): 790-816.
- Kunda, Ziva. 1990. "The Case for Motivated Reasoning." *Psychological Bulletin* 108(3): 480-498.
- Lesaffre, Emmanuel, and Bart Spiessens. 2001. "On the Effect of the Number of Quadrature Points in a Logistic Random Effects Model: An Example." *Journal of the Royal Statistical Society: Series C (Applied Statistics)* 50(3): 325-335.
- Lodge, Milton, and Ruth Hamill. 1986. "A Partisan Schema for Political Information Processing." *American Political Science Review* 80(2): 505-520.
- Lodge, Milton, and Charles Taber. 2000. "Three Steps toward a Theory of Motivated Political Reasoning." In *Elements of Reason: Cognition, Choice, and the Bounds of Rationality*, edited by Arthur Lupia, Mathew D. McCubbins and Samuel L. Popkin (pp. 183-213). Cambridge ; New York: Cambridge University Press.
- Miller, Melissa K., and Shannon K. Orr. 2008. "Experimenting with a "Third Way" in Political Knowledge Estimation." *Public Opinion Quarterly* 72(4): 768-780.
- Mondak, Jeffery J., and Belinda Creel Davis. 2001. "Asked and Answered: Knowledge Levels When We Will Not Take 'Don't Know' for an Answer." *Political Behavior* 23(3): 199-224.

- Naylor, John C., and Adrian F. M. Smith. 1982. "Applications of a Method for the Efficient Computation of Posterior Distributions." *Applied Statistics* 31: 214-225.
- Nir, Lilach. 2011. "Motivated Reasoning and Public Opinion Perception." *Public Opinion Quarterly* 75(3): 504-532.
- Nyhan, Brendan, and Jason Reifler. 2010. "When Corrections Fail: The Persistence of Political Misperceptions." *Political Behavior* 32(2): 303-330.
- Rabe-Hesketh, Sophia, Anders Skrondal, and Andrew Pickles. 2002. "Reliable Estimation of Generalized Linear Mixed Models Using Adaptive Quadrature." *The Stata Journal* 2(1): 1-21.
- Rabe-Hesketh, Sophia, Anders Skrondal, and Andrew Pickles. 2004a. "Generalized Multilevel Structural Equation Modeling." *Psychometrika* 69(2): 167-190.
- Rabe-Hesketh, Sophia, Anders Skrondal, and Andrew Pickles. 2004b. *GLLAMM Manual*. London: Tech. Rep. 2001/01, Department of Biostatistics and Computing, Institute of Psychiatry, King's College, University of London.
- Rabe-Hesketh, Sophia, Anders Skrondal, and Andrew Pickles. 2005. "Maximum Likelihood Estimation of Limited and Discrete Dependent Variable Models with Nested Random Effects." *Journal of Econometrics* 128(2): 301-323.
- Rahn, Wendy M. 1993. "The Role of Partisan Stereotyping in Information Processing About Political Candidates." *American Journal of Political Science* 37(2): 472-496.
- Redlawsk, David. 2002. "Hot Cognition or Cool Consideration? Testing the Effects of Motivated Reasoning on Political Decision Making." *Journal of Politics* 64(4): 1021-1044.
- Shani, Danielle. 2006. *Knowing Your Colors: Can Knowledge Correct for Partisan Bias in Political Perceptions?* Paper presented at the annual meeting of the Midwest Political Science Association, Chicago.
- Shapiro, Robert Y., and Yaeli Bloch-Elkon. 2008. "Do the Facts Speak for Themselves? Partisan Disagreement as a Challenge to Democratic Competence." *Critical Review* 20(1-2): 115-139.

Stroud, Natalie Jomini. 2011. *Niche News: The Politics of News Choice*. New York: Oxford University Press.

Taber, Charles S., and Milton Lodge. 2006. "Motivated Skepticism in the Evaluation of Political Beliefs." *American Journal of Political Science* 50(3): 755-769.

Zaller, John. 1992. *The Nature and Origins of Mass Opinion*. New York: Cambridge University Press.

Supporting Information: Part A

Survey Instructions for Knowledge Questions

In the 2004 study, respondents saw this common introduction:

In the next part of this study, you will be asked 14 questions about politics, public policy, and economics. Many people don't know the answers to these questions, but it is helpful for us if you answer, even if you're not sure what the correct answer is. We encourage you to take a guess on every question. At the end of this study, you will see a summary of how many questions you answered correctly.

In this paper, we only use the five questions about economic conditions. The common introduction in 2008 was similar:

In the next part of the study, you will be asked five questions about how well the economy is doing.

You will have 45 seconds to answer each question. If you are not entirely sure which answer is correct, please mark your best guess.

In the 2004 study, respondents in the pay conditions received the following instructions:

We will pay you for answering questions correctly. You will earn 1,000 bonus points (\$1) for every correct answer you give. So, if you answer 3 of the 14 questions correctly, you will earn 3,000 bonus points (\$3). If you answer 7 of the 14 questions correctly, you will earn 7,000 bonus points (\$7). The more questions you answer correctly, the more you will earn.

Administration of Incentive Payments

Respondents received credit for correct answers in the form of “bonus points.” Knowledge Networks sends their panelists checks for \$25 when they reach 25,000 points (which they can also earn in other surveys they take). For all practical purposes, our incentives can be seen as direct cash rewards. The instructions in the pay conditions mentioned the bonus points as well as their dollar equivalents. Respondents in the pay conditions were reminded on every screen with a knowledge question that a correct answer would earn them a specific monetary reward.

To facilitate payment for open-ended questions in the relevant experimental conditions, we specified in advance a range of answers (e.g., “within X percentage points of the true percentage”) that would earn compensation. These ranges were never revealed to the respondents. At the very end of the interview, they learned the number of questions they had answered correctly (and the rewards they earned).

No Treatment Effects on Question Completion

We examined whether assignment to the experimental conditions affected completion rates (i.e., whether paying respondents for correct answers would affect the likelihood that they complete the entire interview). If it did, then we must estimate this indirect effect of the experimental manipulations as well as their direct effects. Part of this complication is avoided because the assignment of the experimental condition occurred only when respondents reached the knowledge section of the interview. Respondents who quit the survey before that point could not have been affected by the monetary incentive as we had not yet revealed that aspect of the survey. After respondents learned about the experimental condition they were assigned to, only 7 respondents in 2004 and 8 respondents in 2008 quit the interview. Furthermore, the drop-out was roughly evenly distributed across conditions (2004: 4 in the ‘pay’ condition, 3 in the control; 2008: 2 in ‘pay’, 4 in ‘accuracy appeal’, 2 in the control.) Hence, selection effects are very unlikely. Therefore, we consider experimental differences between respondents who completed the interview as valid estimates of the true treatment effects.

Table A1: Economic Knowledge Questions

Question ID	Question wording	Response options (Correct response in bold)
Unemployment rate, 2004	The U.S. Bureau of Labor Statistics counts a person as unemployed if they are not employed at any job and are looking for work. By this definition, what percentage of Americans was unemployed in August of 2004?	<ul style="list-style-type: none"> • around 11 percent • around 9 percent • around 7 percent • around 5 percent • around 3 percent
Unemployment rate, 2008	The U.S. Bureau of Labor Statistics counts a person as unemployed if the person is not employed at any job and is looking for work. By this definition, 4.7 percent of Americans were unemployed in 2001 [at the beginning of President Bush's first term in office]. What percentage of Americans are currently unemployed?	open-ended, correct: 4.8
Uninsured Americans, 2004	In August 2004, the United States Census Bureau reported an estimate of the number of Americans without health insurance. The Census Bureau classified people as uninsured if they were not covered by any type of health insurance at any time in 2003. By this definition, what percentage of Americans did not have health insurance in 2003?	open-ended, correct: 15.6
Uninsured Americans, 2008	Each year, the United States Census Bureau reports an estimate of the number of Americans without health insurance. The Census Bureau classifies people as uninsured if they were not covered by any type of health insurance at any time during the year. By this definition, 14.1 percent of Americans did not have health insurance in 2001[, the year President Bush took office]. According to the latest estimate (for 2006), what percentage of Americans do not have health insurance?	open-ended, correct: 15.8

Table A1 (cont.): Economic Knowledge Questions

Question ID	Question wording	Response options (Correct response in bold)
Estate tax, 2004	There is a federal estate tax – that is, a tax on the money people leave to others when they die. What percentage of Americans leaves enough money to others for the federal estate tax to kick in?	<ul style="list-style-type: none"> • About 95 percent of all Americans • About 70 percent of all Americans • About 50 percent of all Americans • About 25 percent of all Americans • Less than 5 percent of all Americans
Estate tax, 2008	There is a federal estate tax – that is, a tax on the money people leave to others when they die. [President Bush has repeatedly proposed to eliminate the estate tax.] What percentage of Americans leave enough money to others for the federal estate tax to kick in?	<ul style="list-style-type: none"> • About 95 percent of all Americans • About 70 percent of all Americans • About 50 percent of all Americans • About 25 percent of all Americans • Less than 5 percent of all Americans
Federal Debt, 2004	The outstanding public debt of the United States is the total amount of money owed by the federal government. Every year the government runs a deficit, the size of the public debt grows. Every year the government runs a surplus, the size of the public debt shrinks. In January of 2001, when President Bush took office, the outstanding public debt of the United States was approximately 5.7 trillion dollars. Which of the following responses is closest to the outstanding public debt today?	<ul style="list-style-type: none"> • Less than 3.5 trillion dollars • 4.5 trillion dollars • 5.5 trillion dollars • 6.5 trillion dollars • 7.5 trillion dollars • 8.5 trillion dollars • More than 9.5 trillion dollars
Federal Debt, 2008	The outstanding public debt of the United States is the total amount of money owed by the federal government. Every year the government runs a deficit, the size of the public debt grows. Every year the government runs a surplus, the size of the public debt shrinks. In January of 2001, [when President Bush took office,] the outstanding public debt of the United States was approximately 5.7 trillion dollars. Which of the following responses is closest to the outstanding public debt today?	<ul style="list-style-type: none"> • Less than 5.5 trillion dollars • 6.5 trillion dollars • 7.5 trillion dollars • 8.5 trillion dollars • 9.5 trillion dollars • 10.5 trillion dollars • More than 11.5 trillion dollars

Table A1 (cont.): Economic Knowledge Questions

Question ID	Question wording	Response options (Correct response in bold)
Poverty rate, 2004	In August 2004, the Census Bureau reported how many Americans live in poverty. The poverty threshold depends on the size of the household. For example, a person under age 65 is considered to live in poverty if his or her 2003 income was below \$9,573 and a family of four is considered to live in poverty if its 2003 income was below \$18,810. By this definition, what percentage of Americans lived in poverty in 2003?	open-ended, correct 12.5
Gas price, 2008	According to the American Automobile Association (AAA), the national average price for a gallon of regular gasoline was \$1.49 in January 2001 [at the beginning of George W. Bush's presidency in January 2001]. What is the current national average price for a gallon of regular gasoline?	open-ended, correct \$3.27 (average during field period)

Note: For 2008 items, phrases in parentheses were randomly shown for half the sample.

Table A2: General Political Knowledge Questions (Study 2)

Question wording	Response options (Correct response in bold)
Who is the current secretary of defense?	Donald Rumsfeld, John Ashcroft, Robert Gates , Colin Powell
Who is the current Speaker of the U.S. House of Representatives?	Nancy Pelosi , Dana Perino, Barbara Boxer, Elizabeth Edwards
Who is the Chief Justice on the U.S. Supreme Court?	William Rehnquist, John Roberts , Antonin Scalia, Samuel Alito
Who is the President of Iran?	Mahmoud Ahmadinejad , Nouri al-Maliki, Hamid Karzai, Pervez Musharraf
What office is currently held by Condoleezza (“Condi”) Rice?	Director of the Central Intelligence Agency, National Security Adviser, Secretary of State , White House Chief of Staff
What position is currently held by Ben Bernanke?	Treasury Secretary, Chairman of the Federal Reserve , Secretary of Homeland Security, Chairman of the National Economic Council
What position is currently held by Michael Mukasey?	U.S. Attorney General , President’s General Counsel, Senate Majority Leader, Supreme Court Justice
What position is currently held by Nicolas Sarkozy?	President of France , Foreign Minister of the European Union (EU), Prime Minister of Turkey, UN Secretary General
For each of the following politicians, please indicate to which party they belong (Republican, Democrat, Green Party, Reform Party):	Bill Richardson, Fred Thompson, Mike Huckabee, Ron Paul
Of the 100 members of the U.S. Senate, how many are members of the Democratic [Republican] party?	51 [49]

Note: As part of an independent study, the first twelve questions randomly varied whether names, faces, or names and faces were shown. The design was balanced so that all respondents answered some questions in all three modalities. The randomization was orthogonal to the randomization for this study.

Supporting Information: Part B

Table B1 below displays the results from using a variety of screen completion time cutoffs. Our results are robust to using cutoffs of 30, 40, 45, and 60 seconds, making it unlikely that our findings can be explained by respondents looking up answers to our questions.

Table B1. Robustness of Column (2), Table 1 to Different Completion Time Cutoffs

	All	(1) < 60 seconds	(2) < 45 seconds	(3) < 40 seconds	(4) < 30 seconds
Monetary	.36** (.13)	.33** (.14)	.33* (.14)	.31* (.15)	.42* (.17)
Appeal	.27* (.13)	.23+ (.13)	.25+ (.14)	.23 (.14)	.19 (.15)
Partisanship (Democrat)	.86** (.12)	.85** (.12)	.89** (.13)	.87** (.13)	.69** (.14)
Monetary × Partisanship	-.47** (.17)	-.44* (.17)	-.49** (.18)	-.53** (.18)	-.53* (.21)
Appeal × Partisanship	-.37* (.16)	-.32+ (.17)	-.41* (.17)	-.34+ (.18)	-.27 (.20)
σ^2	.24 (.05)	.25 (.05)	.27 (.06)	.25 (.06)	.22 (.07)
# Responses	4965	4660	4245	3896	2865
# Respondents	1002	999	993	981	864
Log-Likelihood	-4845	-4252	-4115	-3770	-2759

** p<.10, * p<.05, + p<.10 (two-tailed)

Table B2 below displays our main results when we include conflicted partisans in the analysis. We define conflicted partisans as Republicans who disapprove of President Bush’s handling of the economy and Democrats who approve of President Bush’s handling of the economy. Including these respondents (which we can only do in Study 2) reduces partisan bias in the control condition, which is evident from the decreased coefficients for partisanship (e.g. from 0.86 to 0.49 in Study 2). This confirms our expectation that ambiguous consistency pressures reduce partisan bias in the first place. Including conflicted partisans also attenuates the effect of both kinds of accuracy incentives, though they remain in the predicted direction and are marginally significant ($p < .10$). As partisans with countervailing consistency pressures are less likely to give partisan congenial answers in the first place, it is unsurprising that accuracy incentives have less of an effect on them.

Table B2: Robustness of Table 1 Results to Including Conflicted Partisans

	(1)	(2)
	Studies 1 & 2	Study 2
Monetary	.15 (.09)*	.16 (.10)
Appeal		.14 (.10)
Partisanship (Democrat)	.62 (.08)**	.49 (.09)**
Monetary×Partisanship	-.20 (.12)*	-.23 (.12)*
Appeal×Partisanship		-.23 (.12)*
σ_1^2	.25 (.05)	.24 (.04)
# Responses	6280	6506
# Respondents	1274	1316
Log-Likelihood	-5828	-6423

** $p < .05$, * $p < .10$ (two-tailed)

Supporting Information: Part C

The proportional odds model assumes that intercepts depend on the category, but slopes are equal across categories. Relaxing this assumption by letting the slopes vary transforms the ordered logistic model into a multinomial logistic model. Keeping the same notation,

$$\log\left(\frac{\Pr(y_{ij} \leq c)}{1 - \Pr(y_{ij} \leq c)}\right) = \kappa_c - [X_i\beta_c + \alpha_i + I_j]$$

Table C1 below shows results for the multinomial logistic model for column (1) in Table 1. Results below indicate that both the main effect of partisanship and the reduction in this effect through incentives are stronger for the comparison between “less than” and “greater than” than between “less than” and “correct”. Importantly, the sign on all coefficients is the same for both comparisons, indicating that the proportional odds assumption does not lead us astray. It is not the case that the difference between Republicans and Democrats increases between one set of categories but contracts between another.

Table C1. Robustness of Results to Multinomial Specification

	Correct	Greater Than
Monetary	.29 ⁺ (.17)	.46 ^{***} (.16)
Partisanship (Democrat)	.41 ^{***} (.15)	1.03 ^{***} (.15)
Monetary × Partisanship	-.41 ⁺ (.22)	-.49 ^{**} (.21)
σ_1^2		.31 (.14)
# Responses		5575
# Respondents		1131
Log-Likelihood		-4711

*** p<.001, ** p<.01, * p<.05, + p<.10 (two-tailed)

Note: Entries are multinomial logistic coefficients (standard errors in parentheses). Reference category is “Less Than Correct”.