When Corrections Fail:
The persistence of political misperceptions

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Abstract

An extensive literature addresses citizen ignorance, but very little research focuses on *misperceptions*. Can these false or unsubstantiated beliefs about politics be corrected? Previous studies have not tested the efficacy of corrections in a realistic format. We conducted four experiments in which subjects read mock news articles that included either a misleading claim from a politician, or a misleading claim and a correction. Results indicate that corrections frequently fail to reduce misperceptions among the targeted ideological group. We also document several instances of a "backfire" effect in which corrections actually *increase* misperceptions among the group in question.

> "It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so."
> -Mark Twain

A substantial amount of scholarship in political science has sought to determine whether citizens can participate meaningfully in politics. Recent work has shown that most citizens appear to lack factual knowledge about political matters (see, e.g., Delli Carpini and Keeter 1996) and that this deficit affects the issue opinions that they express (Althaus 1998, Kuklinski et al 2000, Gilens 2001). Some scholars respond that citizens can successfully use heuristics, or information shortcuts, as a substitute for detailed factual information in some circumstances (Popkin 1991; Sniderman, Brody and Tetlock 1991, Lupia 1994; Lupia and McCubbins 1998).[1]

However, as Kuklinski et al point out (2000: 792), there is an important distinction between being *un*informed and being *mis*informed. Advocates of heuristics typically assume that voters know they are uninformed and respond accordingly. But many citizens may base their policy preferences on false, misleading, or unsubstantiated information that they believe to be true (see, eg, Kuklinski et al 2000: 798). Frequently, such misinformation is related to one's political preferences. For instance, after the U.S. invasion of Iraq, the belief that Iraq had weapons of mass destruction before the invasion was closely associated with support for President Bush (Kull, Ramsay, and Lewis 2003).

From a normative perspective, it is especially important to determine whether misperceptions, which distort public opinion and political debate, can be *corrected*. Previous research in political science has found that it is possible to change issue opinions by directly providing relevant facts to subjects (Kuklinski et al 2000, Gilens

[1] Kuklinski and Quirk (2000) and Lau and Redlawsk (2001) make a compelling argument that citizens are likely to fail to use heuristics correctly in even modestly complex situations.

2001). However, such authoritative statements of fact (such as those provided by survey interviewer to a subject) are not reflective of how citizens typically receive and process information. Instead, people typically receive corrective information within "objective" news reports pitting two sides of an argument against each other, which is significantly more ambiguous than receiving a correct answer from an omniscient source. In such cases, citizens are likely to resist or reject arguments and evidence contradicting their opinions – a view that is consistent with a wide array of research (e.g. Lord, Ross, and Lepper 1979; Edwards and Smith 1996; Redlawsk 2002; Taber and Lodge 2006).

In this paper, we report the results of two rounds of experiments investigating the extent to which corrective information embedded in realistic news reports succeeds in reducing prominent misperceptions about contemporary politics. In each of the four experiments, which were conducted in fall 2005 and spring 2006, ideological subgroups failed to update their beliefs when presented with corrective information that runs counter to their predispositions. Indeed, in several cases, we find that corrections actually *strengthened* misperceptions among the most strongly committed subjects.

DEFINING MISPERCEPTIONS

To date, the study of citizens' knowledge of politics has tended to focus on questions like veto override requirements for which answers are clearly true or false (e.g. Delli Carpini and Keeter 1996). As such, studies have typically contrasted voters who lack factual knowledge (i.e. the "ignorant") with voters who possess it (e.g. Gilens 2001). But as Kuklinski et al (2000) note, some voters may unknowingly hold *incorrect* beliefs,

especially on contemporary policy issues on which politicians and other political elites may have an incentive to misrepresent factual information.

In addition, the factual matters that are the subject of contemporary political debate are rarely as black and white as standard political knowledge questions. As Gaines et al write, "Very often such factual representations [about public policy] are not prior to or independent of the political process but arise within it. Consequently, very few factual claims are beyond challenge; if a fact is worth thinking about in making a policy choice, it is probably worth disputing" (1998: 148). We must therefore rely on a less stringent standard in evaluating people's factual knowledge about politics in a contemporary context. One such measure is the extent to which beliefs about controversial factual matters square with the best available evidence and expert opinion. Accordingly, we define misperceptions as cases in which people's beliefs about factual matters are not supported by clear evidence and expert opinion – a definition that includes both false *and* unsubstantiated beliefs about the world.

To illustrate the point, it is useful to compare our definition with Gaines et al (2007), an observational study that analyzed how students update their beliefs about the war in Iraq over time. They define the relevant fact concerning Iraqi WMD as knowing that weapons were not found and describe the (unsupported) belief that Iraq hid or moved its WMD before the U.S. invasion as an "interpretation" of that fact. Our approach is different. Based on the evidence presented in the Duelfer Report, which was not directly disputed by the Bush administration, we define the belief that Saddam moved or hid WMD before the invasion as a misperception.

PREVIOUS RESEARCH ON CORRECTIONS

Surprisingly, only two major studies in political science consider the effects of attempts to correct factual ignorance or misperceptions. First, Kuklinski et al (2000) conducted two experiments attempting to counter misperceptions about federal welfare programs. In the first, which was part of a telephone survey of Illinois residents, randomly selected treatment groups were given either a set of relevant facts about welfare or a multiple-choice quiz about the same set of facts. These groups and a control group were then asked for their opinions about two welfare policy issues. Kuklinski and his colleagues found that respondents had highly inaccurate beliefs about welfare generally; that the least informed people expressed the highest confidence in their answers; and that providing the relevant facts to respondents had no effect on their issue opinions (nor did it in an unreported experiment about health care). In a later experiment conducted on college students, they asked subjects how much of the national budget is spent on welfare and how much *should* be spent. Immediately afterward, the experimental group was provided with the correct answer to the first question. Unlike the first experiment, this more blunt treatment did change their opinions about welfare policy.

Gilens (2001) also conducted an experiment in which survey interviewers provided relevant facts to subjects before asking about their opinions on topical issues (crime and foreign aid). Like the second Kuklinski et al experiment (but unlike the first one), he found that this manipulation significantly changed respondents' issue opinions. (His study focused on factual ignorance and did not investigate misinformation as such.)

While both studies make significant contributions to our understanding of the effect of factual corrections on issue opinions, neither considers the effectiveness of

corrective information in causing subjects to revise their factual beliefs. In addition, the corrective information in both studies was presented directly to subjects as truth. Under normal circumstances, however, citizens are rarely provided with such definitive corrections. Instead, they typically receive corrective information in news reports that are less authoritative and direct. As a result, we believe it is imperative to study the effectiveness of corrections in news reports, particularly given the increasing demands from press critics for a more aggressive approach to fact-checking (e.g. Cunningham 2003). While it is important to establish that preference change *can* happen after an authoritative correction, we seek to investigate a more fundamental question – do citizens revise their factual beliefs after receiving corrective information in a realistic format?

THEORETICAL EXPECTATIONS

A wide array of research indicates that the way citizens process information frequently varies depending on their previous beliefs. In particular, information that is perceived to be incongruent with subjects' views is likely to be resisted. For instance, numerous studies in psychology have shown that people display biases in evaluating arguments and evidence, favoring those that reinforce their existing views and disparaging those that contradict their existing views (see, e.g., Lord, Ross, and Lepper 1979; Edwards and Smith 1996). Similarly, subjects with high levels of belief in a just world (the belief that people get what they deserve) are more likely to see innocent victims as responsible for bad outcomes (see Furnham 2003 for a review). Communications research on the "hostile media effect" shows that people routinely see news reports as biased against their own point of view (Arpan and Raney 2003; Schmitt, Gunther and Liebhart 2004; Gunther and

Schmitt 2004; Tsfati and Cohen 2005). Finally, in political science, Taber and Lodge (2006) found that subjects tended to rate attitudinally congruent arguments as stronger than incongruent ones and spent more time counter-arguing incongruent arguments.

In addition, numerous studies show that subjects who are exposed to information that runs counter to their political preferences frequently come to support their original opinion even more strongly – a "backlash" effect. For instance, in a dynamic process tracing experiment, Redlawsk (2002) finds that subjects who were not given a memory-based processing prime came to view their preferred candidate even more positively after being exposed to negative information about the candidate. Peffley and Hurwitz (2007) find that when whites are told that the death penalty is applied in a discriminatory faction against blacks, they actually become *more* supportive of it. Finally, Howell and Kriner (n.d.) find that hearing a Democrat argue against using military force in some cases causes Republicans to become *more* supportive of doing so. We expect that such a backlash will take place on some questions of fact as well. In other words, citizens who received a correction that conflicts with their political views may actually shift their factual beliefs in the *wrong* direction in response.[2]

We thus have three hypotheses about the effect of corrections on misperceptions:

Hypothesis 1: Motivated reasoning

The effect of corrections on misperceptions will be moderated by ideology.

[2] It may be noted that our theory appears to correspond in some respects to that of Zaller (1992), who proposed the Receive-Accept-Sample model of the survey response. In particular, our discussion of resistance to contradictory evidence is analogous to his discussion of whether subjects accept a frame. However, his model does not predict the potential backlash effect we describe above. The inclusion of a correction after a misleading statement corresponds to what Zaller describes as a shift from a one-sided to a two-sided information flow, but his model would predict that new information should decrease misperceptions among the group that is ideologically favorable to the correction, not cause a backlash among those who dislike it for ideological reasons (185-215).

Hypothesis 2a: Resistance to corrections

Corrections will fail to reduce misperceptions among the ideological subgroup that is likely to hold the misperception.

Hypothesis 2b: Correction backfire

In some cases, the interaction between corrections and ideology will be so strong that misperceptions will *increase* for the ideological subgroup in question.

To fix ideas, define our dependent variable Y as a measure of misperceptions (in practice, a five-point Likert scale in which higher values indicate greater levels of agreement with a statement of the misperception). We wish to estimate the effect of a correction treatment to see if it will reduce agreement with the misperception. However, we expect that the marginal effect of the correction will vary with ideology, which we define as the relevant measure of predispositions in a general political context (in practice, a a seven-point Likert scale from "very liberal" to "very conservative"). Thus, we must include an interaction between ideology and the correction in our specification. Finally, we include a control variable for political knowledge, which is likely to be negatively correlated with misperceptions, to improve the efficiency of our statistical estimation. We therefore estimate the following equation:

$$Y = \beta_0 + \beta_1 * \text{Correction} + \beta_2 * \text{Ideology} + \beta_3 * \text{Correction} * \text{Ideology} + \beta_4 * \text{Knowledge} \quad (1)$$

Using Equation 1, we can formalize the three hypotheses presented above. Hypothesis 1, which predicts that the effect of the correction will be moderated by ideology, implies that the coefficient for the interaction between correction and ideology will not equal zero ($\beta_3 \neq 0$).[3] Hypothesis 2a, which predicts that the correction will fail to reduce misperceptions among the ideological subgroup that is likely to hold the misperception, implies that the marginal effect of the correction will not be statistically distinguishable from zero for the subgroup ($\beta_1 + \beta_3 * \text{Ideology} = 0$ for liberals or conservatives). Alternatively, Hypothesis 2b predicts that the correction will sometimes *increase* misperceptions for the ideological subgroup in question, implying that the marginal effect will be greater than zero for the subgroup ($B_1 + B_3 * \text{Ideology} > 0$).[4]

All of these hypotheses are problematic from the perspective of democratic theory, but the prospect that corrections can backfire is especially troubling. As shown below, this threat is very real when salient issues and realistic stimuli are employed.

RESEARCH DESIGN

To evaluate the effects of corrective information, we conducted four experiments in which subjects read mock newspaper articles containing a statement from a political figure that reinforces a widespread misperception. Participants were randomly assigned to read articles that either included or did not include corrective information immediately after a false or misleading statement (see appendix for the full text of all four articles). They were then asked to answer a series of factual and opinion questions.

[3] The signs of the coefficients will vary in practice depending on whether misperceptions are more likely among liberals or conservatives.

[4] Specifically, we expect that the 95% confidence interval for the marginal effect will not include zero. Its standard error is $\sqrt{\text{var}(\hat{\beta}_1) + \text{Ideology}^2 * \text{var}(\hat{\beta}_3) + 2 * \text{Ideology} * \text{cov}(\hat{\beta}_1 \hat{\beta}_3)}$ (Brambor, Clark, and Golder 2006).

Because so little is known about the effectiveness of corrective information in contemporary politics, we designed the experiments to maximize external validity. First, we focus on controversial political issues from contemporary American politics (the war in Iraq, tax cuts, and stem cell research) rather than the hypothetical stories commonly found in psychology research (e.g. Johnson and Seifert 1994). As a result, our experiments seek to correct pre-existing misperceptions rather than constructing them within the experiment. While this choice is likely to make misperceptions more difficult to change, it increases our ability to address the motivating concern of this research – correcting misperceptions in the real world. In addition, we test the effectiveness of corrective information in the context of news reports, one of the primary mechanisms by which citizens acquire information. In order to maximize realism, we constructed the mock news articles using text from actual articles whenever possible.

Given our focus on pre-existing misperceptions, it is crucial to use experiments, which allow us to escape the endogeneity between factual beliefs and opinion that plagues survey research on real-world misperceptions (e.g. Kull, Ramsay, and Lewis 2003). For instance, rather than simply noting that misperceptions about Iraqi WMD are high among conservatives, we can randomize subjects across conditions (avoiding estimation problems due to pre-existing individual differences in knowledge, ideology, etc.) and test the effectiveness of corrections for that group and for subjects as a whole.

A final research design choice was to use a between-subjects design in which we compared misperceptions across otherwise identical subjects who were randomly assigned to different experimental conditions. This decision was made to maximize the effect of the corrections. A within-subjects design in which we compared beliefs in

misperceptions before and after a correction would anchor subjects' responses on their initial response, weakening the potential for an effective correction or a backlash.

The experiments we present in this paper were all conducted in the Viewsflash online survey environment with undergraduates at a Catholic university in the Midwest.[5] Study 1, conducted in the Fall 2005 semester, tests the effect of a correction on the misperception that Iraq had WMD immediately before the war in Iraq. Study 2, which was conducted in the Spring 2006 semester, includes a second version of the Iraq WMD experiment as well as experiments attempting to correct misperceptions about the effect of tax cuts on revenue and federal policy toward stem cell research.

As noted above, we define misperceptions to include both false *and* unsubstantiated beliefs about the world. We therefore consider two issues (the existence of Iraqi WMD and the effect of tax cuts on revenue) in which misperceptions are contradicted by the best available evidence, plus a third case (the belief that President Bush "banned" stem cell research) in which the misperception is demonstrably incorrect.

STUDY 1: FALL 2005

The first experiment we conducted, which took place in fall 2005, tested the effect of a correction embedded in a news report on beliefs that Iraq had weapons of mass destruction immediately before the U.S. invasion. One of the primary rationales for war

[5] Participants, who received course credit for participation, signed up via an online subject pool management system for students in psychology courses and were provided with a link that randomly assigned them to treatment conditions. Standard caveats about generalizing from a convenience sample apply. In terms of external validity, college students are more educated than average and may thus be more able to resist corrections (Zaller 1992). However, college students are also known to have relatively weak self-definition, poorly formed attitudes, and to be relatively easily influenced (Sears 1986) – all characteristics that would seem to reduce the likelihood of resistance and backfire effects. In addition, as Druckman and Nelson note (2003: 733), the related literatures on framing, priming and agenda-setting have found causal processes that operate consistently in student and non-student samples (Kühberger 1998: 36, Miller and Krosnick 2000: 313).

offered by the Bush administration was Iraq's alleged possession of biological and chemical weapons. Perhaps as a result, many Americans failed to accept or did not find out that WMD were never found inside the country. This misperception, which persisted long after the evidence against it had become overwhelming, was closely linked to support for President Bush (Kull, Ramsay, and Lewis 2003).[6] One possible explanation for the prevalence of the WMD misperception is that journalists failed to adequately fact-check Bush administration statements suggesting the U.S. *had* found WMD in Iraq (e.g. Allen 2003). As such, we test a correction condition (described below) in which a news report on a statement by President Bush that could be interpreted to suggest that Iraq did have WMD is followed by a clarification that WMD had not been found.

Another plausible explanation for why Americans were failing to update their beliefs about Iraqi WMD is fear of death in the wake of September 11, 2001 terrorist attacks. To test this possibility, we drew on terror management theory (TMT), which researchers have suggested may help explain responses to 9/11 (Pyszczynski, Solomon, and Greenberg 2003). TMT research shows that reminders of death create existential anxiety that subjects manage by becoming more defensive of their cultural worldview and hostile toward outsiders. Previous studies have found that increasing the salience of subjects' mortality increased support for President Bush and for U.S. military interventions abroad among conservatives (Cohen et al 2005, Landau et al 2004, Pyszczynski et al 2006) and created increased aggressiveness toward people with differing political views (McGregor et al 1998), but the effect of mortality salience on both support for misperceptions about Iraq and the correction of them has not been tested.

[6] Evidence on WMD did not change appreciably after the October 2004 release of the Duelfer Report. No other relevant developments took place until June 2006, when two members of Congress promoted the discovery of inactive chemical shells from the Iran-Iraq War as evidence of WMD (see footnote 2).

We therefore employed a mortality salience manipulation to see if it increased WMD misperceptions or reduced the effectiveness of the correction treatment.

Method

130 participants[7] were randomly assigned to one of four treatments in a 2 (correction condition) x 2 (mortality salience) design.[8] The appendix provides the full text of the article that was used in the experiment. Subjects in the mortality salience condition are asked to "Please briefly describe the emotions that the thought of your own death arouses in you" and to "Jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead." (Controls were asked versions of the same questions in which watching television is substituted for death.)

After a distracter task, subjects were then asked to read a mock news article attributed to the Associated Press that reports on a Bush campaign stop in Wilkes-Barre, PA during October 2004. The article describes Bush's remarks as "a rousing, no-retreat defense of the Iraq war" and quotes a line from the speech he actually gave in Wilkes-Barre on the day the Duelfer Report was released (Priest and Pincus 2004): "There was a risk, a real risk, that Saddam Hussein would pass weapons or materials or information to terrorist networks, and in the world after September the 11th, that was a risk we could not afford to take." Such wording may falsely suggest to listeners that Saddam Hussein did have WMD that he could have passed to terrorists after September 11, 2001. In the

[7] 68 percent of respondents in Study 1 were female; 62 percent were white; 56 percent were Catholic. For a convenience sample, respondents were reasonably balanced on both ideology (48 percent left of center, 27 percent centrist, 25 percent right of center) and partisanship (27 percent Republican or lean Republican, 25 percent independent, 48 percent Democrat or lean Democrat).

[8] The experiment was technically a 3 x 2 design with two types of corrections, but we omit the alternative correction condition here for ease of exposition. Future research will present the "causal" correction approach we have developed based on Johnson and Seifert (1994, 1998). Excluding these data does not substantively affect the key results presented in this paper.

correction condition, the story then discusses the release of the Duelfer Report, which documents the lack of Iraqi WMD stockpiles or an active production program immediately prior to the US invasion.[9]

After reading the article, subjects were asked to state whether they agreed with this statement: "Immediately before the U.S. invasion, Iraq had an active weapons of mass destruction program, the ability to produce these weapons, and large stockpiles of WMD, but Saddam Hussein was able to hide or destroy these weapons right before U.S. forces arrived." Responses were measured on a five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5).

Results

The results from Study 1 largely support the backfire hypothesis, as shown by two ordered probit models that are presented in Table 1.

[Table 1]

Model 1 estimates the effect of the correction treatment; a centered seven-point ideology scale ranging from strongly liberal (-3) to strongly conservative (3); an additive five-question scale measuring political knowledge using conventional factual questions (Delli Carpini and Keeter 1996); and the mortality salience manipulation. As expected, more knowledgeable subjects were less likely to agree that Iraq had WMD ($p < .01$) and conservatives were more likely to agree with the statement ($p < .01$). We also find that

[9] While President Bush argued that the report showed that Saddam "retained the knowledge, the materials, the means and the intent to produce" WMD, he and his administration did not dispute its conclusion that Iraq did not have WMD or an active weapons program at the time of the U.S. invasion (Balz 2004).

correction treatment did not reduce overall misperceptions and the mortality salience manipulation was statistically insignificant.[10]

In Model 2, we test whether the effect of the correction is moderated by subjects' political views by including an interaction between ideology and the treatment condition. As stated earlier, our hypothesis is that the correction will be increasingly ineffective as subjects become more conservative (and thus more sympathetic to the claim that Iraq had WMD). When we estimate the model, the interaction term is significant ($p < .01$), suggesting that the effect of the correction does vary by ideology.

Because interaction terms are often difficult to interpret, we follow Brambor, Clark, and Golder (2006) and plot the estimated marginal effect of the correction and the 95% confidence interval over the range of ideology in Figure 1.

[Figure 1]

For very liberal subjects, the correction worked as expected, making them more likely to disagree with the statement that Iraq had WMD compared with controls. The correction did not have a statistically significant effect on individuals who described themselves as liberal, somewhat left of center, or centrist. But most importantly, the effect of the correction for individuals who placed themselves to the right of center ideologically is statistically significant and *positive*. In other words, the correction backfired – conservatives who received a correction telling them that Iraq did not have WMD were *more* likely to believe that Iraq had WMD than those in the control condition. (The interpretation of other variables does not change in Model 2.)

[10] In addition, interactions between mortality salience and the correction condition were not statistically significant (results available upon request). As such, we do not discuss it further.

To illustrate the substantive effects of the correction/ideology interaction, Figure 2 plots predicted response probabilities across the dependent variable for four groups: self-identified liberals (ideology = -2) and conservatives (ideology = 2) who received the correction and those that do not.[11]

[Figure 2]

It is clear that responses to the correction differed dramatically by ideology. For liberals, the correction increased the predicted probability that subjects would "strongly disagree" that Saddam had WMD from .46 to .67 ($p < .10$). By contrast, the predicted probability that conservatives would "somewhat agree" with the misperception increased from .30 to .52 ($p < .01$) and the predicted probability that they would "somewhat disagree" decreased from .22 to .08 ($p < .01$).

STUDY 2: SPRING 2006

In spring 2006, we conducted a series of additional experiments designed to extend our findings and test the generality of the backfire effect found in Study 1. We sought to assess whether it generalizes to other issues as well as other ideological subgroups (namely, liberals). The latter question is especially important for the debate over whether conservatism is uniquely characterized by dogmatism and rigidity (Greenberg and Jonas 2003; Jost et al 2003a, 2003b).

Another goal was to test whether the backfire effect was the result of perceived hostility on the part of the news source. Though we chose the Associated Press as the

[11] Subjects are assumed to have mean knowledge levels and to not have received the mortality salience manipulation. All predicted probabilities are calculated using S-Post (Long 1997). Confidence intervals on changes in predicted probabilities are estimated using the delta method in S-Post (Xu and Long 2005).

source for Study 1 due to its perceived neutrality, it is possible that conservatives felt that the correction was a reflection of media bias. There is an extensive literature showing that partisans and ideologues tend to view identical content as biased against them (Arpan and Raney 2003; Christen, Kannaovakun and Gunther 2002; Gunther and Chia 2001; Gunther and Schmitt 2004; Gussin and Baum 2004, 2005; Lee 2005; Vallone, Ross, and Lepper 1985). Perceptions of liberal media bias are especially widespread in the U.S., where 50 percent of the public recently described the media as liberal (Pew 2005). As such, we manipulated the news source as described below.

In Study 2, we used a 2 (correction) x 2 (media source) design to test corrections of three possible misperceptions: the beliefs that Iraq had WMD when the U.S. invaded, that tax cuts increase government revenue, and that President Bush banned on stem cell research. (The appendix presents the wording of all three experiments.) By design, the first two tested misperceptions held predominantly by conservatives and the third tested a possible liberal misperception.[12] In addition, we varied the source of the news articles, attributing them to either the New York Times (a source many conservatives perceive as biased) or FoxNews.com (a source many conservatives perceive as favorable). 196 respondents participated in Study 2.[13]

[12] We also conducted an experiment correcting a claim made by Michael Moore in the movie "Fahrenheit 9/11" that the war in Afghanistan was motivated by Unocal's desire to build an natural gas pipeline through the country. All results of substantive importance to this paper were insignificant. The full wording and results of this experiment are available upon request.

[13] 62 percent of respondents to Study 2 were women; 59 percent were Catholic; and 65 percent were white. The sample was again reasonably balanced for a convenience sample on both ideology (52 percent left of center, 17 percent centrist, 31 percent right of center) and partisanship (46 percent Democrat or lean Democrat, 20 percent independent, 33 percent Republican or lean Republican).

Method – Iraq WMD

In our second round of data collection, we conducted a modified version of the experiment from Study 1 to verify and extend our previous results. For the sake of clarity, we simplified the stimulus and manipulation for the Iraq WMD article, changed the context from a 2004 campaign speech to a 2005 statement about Iraq, and used a simpler question as the dependent variable (see appendix for exact wording).

Results – Iraq WMD

Ordered probit analyses for the second version of the Iraq WMD experiment, which are presented in Table 2, differ substantially from the previous iteration.

[Table 2]

Interestingly, we could not reject the null hypothesis that the news source did not change the effect of the correction in this or the two following experiments (results available upon request). As such, it is excluded from all reported results.[14]

Model 1 indicates that the WMD correction again fails to reduce overall misperceptions. However, we again add an interaction between the correction and ideology in Model 2 and find a statistically significant result. This time, however, the interaction term is *negative* – the opposite of the result from Study 1. Figure 3 plots the marginal effect of the correction over the range of ideology.

[Figure 3]

[14] Three-way interactions between news source, the correction, and ideology were also insignificant (results available upon request).

Unlike the previous experiment, the marginal effect of the correction is negative for individuals who placed themselves to the right of center, meaning that the correction made conservatives more likely to believe that Iraq did *not* have WMD.[15]

It is unclear why the correction was effective for conservatives in this experiment. One possibility is that conservatives may have shifted their grounds for supporting the war in tandem with the Bush administration, which sought to distance itself over time from the WMD rationale for war. The correlation between belief that George Bush "did the right thing" in invading Iraq and belief in Iraqi WMD among conservatives declined from .68 in Study 1 to .35 in Study 2. This was driven by the reaction to the correction; the correlation increased in Study 1 from .41 among controls to .72 in the correction condition, whereas in Study 2 it decreased from .54 to .10.[16] The second possibility is that the shift in the context of the article from the 2004 campaign to a 2005 statement by Bush (which are reflected in the wording of the manipulation) made ideology less salient in answering the question about Iraqi WMD. Finally, it is possible that the simpler wording of the dependent variable reduced ambiguity that previously allowed for counter-arguing.

Even though a backfire effect did not take place among conservatives, we conducted a post hoc analysis to see if conservatives who are the most intensely committed to Iraq would still persist in resisting the correction. Model 3 therefore includes a dummy variable for those respondents who rated Iraq as the most important problem facing the country today as well as the associated two- and three-way interactions with ideology and the correction condition. This model pushes the data to the

[15] Figure 3 suggests that the correction slightly increased misperceptions among individuals who rated themselves as very liberal, but this appears to be an anomaly – all four "very liberal" subjects who received the correction strongly disagreed with the claim that Iraq had WMD before the invasion.
[16] 65 subjects from Study 1 were asked this question, which was added to the instrument partway through its administration.

limit since only 34 respondents rated Iraq the most important issue (including eight who placed themselves to the right of center ideologically). However, the results are consistent with our expectations – there is a positive, statistically significant interaction between ideology, the correction, and issue importance ($p < .02$), indicating that the correction failed for conservatives who viewed Iraq as most important. Thus, even an effective correction may be resisted by highly committed subgroups.

Figure 4 illustrates this finding using predicted response probabilities from model 3 for liberals and conservatives with mean knowledge levels.

[Figure 4]

The predicted probability that conservatives who chose other issues as most important would "somewhat agree" with the misperception that Iraq had WMD before the invasion decreased from .46 to .25 ($p < .05$). However, the predicted probabilities of responding "somewhat agree" among those who viewed Iraq as most important *increased* from .25 to .47 ($p < .01$) – another backfire effect. Thus, while the correction was more effective than in Study 1, its effects were reversed for the most strongly committed subjects.

Method – Tax cuts

The second experiment in Study 2 tests subjects' responses to the claim that cutting taxes stimulates so much economic growth that it actually has the effect of increasing government revenue over what it would otherwise be. The claim, which originates in supply-side economics and is frequently made by Bush administration officials, Republican members of Congress, and conservative elites, implies that tax cuts literally pay for themselves. However, the overwhelming consensus among professional

economists – including current and former Bush administration officials – is that this claim is implausible in the U.S. context (Hill 2006, Mankiw 2003, Milbank 2003).

Subjects read an article on the tax cute debate attributed to either the New York Times or FoxNews.com (see appendix for text). In all conditions, it included a passage in which President Bush said "The tax relief stimulated economic vitality and growth and it has helped increase revenues to the Treasury." As in Study 1, this quote – which implies that tax cuts increase revenue over what would have otherwise been received – is taken from an actual Bush speech. Subjects in the correction condition received an additional paragraph clarifying that tax revenues declined sharply as a proportion of GDP between 2001 and 2005 (Bush passed major tax cuts in 2001 and 2003). The dependent variable is agreement with the claim that "President Bush's tax cuts have increased government revenue" on a Likert scale ranging from strongly disagree (1) to strongly agree (5).

Results – tax cuts

The two ordered probit models in Table 3 indicate that the tax cut correction generated another backfire effect.

[Table 3]

In Model 1, we find (as expected) that conservatives are more likely to believe that tax cuts increase government revenue ($p < .01$) and more knowledgeable subjects are less likely to do so ($p < .05$). More importantly, the correction again fails to cause a statistically significant decline in overall misperceptions. As before, we again estimate an interaction between the treatment and ideology in Model 2. The effect is positive and statistically significant ($p < .05$), indicating that conservatives who received the treatment

were significantly *more* likely to agree with the statement that tax cuts increased revenue than conservatives in the non-correction condition.

Figure 5 displays how the marginal effect of the correction varies by ideology.

[Figure 5]

As in the first Iraq experiment, the correction *increases* misperceptions among conservatives, with a positive and statistically significant marginal effect for self-described conservative and very conservative subjects ($p < .05$). Figure 6 illustrates this effect by plotting the predicted response probabilities for liberals and conservatives with mean knowledge levels.

[Figure 6]

The predicted probabilities are virtually identical for liberals across the control and correction conditions, while the predicted probability that conservatives will "somewhat agree" that tax cuts increase revenue increasing from .35 to .48 ($p < .01$). This finding provides additional evidence that efforts to correct misperceptions can backfire. Conservatives presented with evidence that tax cuts do not increase government revenues ended up believing this claim more fervently than those who did not receive a correction.

Method – Stem cell research

While previous experiments considered issues on which conservatives are more likely to be misinformed, our expectation was that many liberals hold a misperception about the existence of a "ban" on stem cell research, a claim that both Senator John Kerry and Senator John Edwards made during the 2004 presidential campaign (Weiss and

Fitzgerald 2004). In fact, while federal funding of stem cell research is limited to stem cell lines that had been created before August 2001, no limitations have been placed on privately funded research (Fournier 2004).

In the experiment, subjects read a mock news article attributed to either the New York Times or FoxNews.com that reported statements by Edwards and Kerry suggesting the existence of a stem cell research "ban." In the treatment condition, a corrective paragraph was added to the end of the news story explaining that Bush's policy does not limit privately funded stem cell research. The dependent variable is agreement that "President Bush has banned stem cell research in the United States" on a scale ranging from "strongly disagree" (1) to "strongly agree" (5). (See appendix for wording.)

Results – Stem cell research

Table 4 reports results from two ordered probit models that offer support for the resistance hypothesis.

[Table 4]

In Model 1, we find a negative overall correction effect ($p < .07$), indicating that subjects who received the correction were less likely to believe that Bush banned stem cell research. We also find that subjects with more political knowledge were less likely to agree that a ban existed ($p < .07$). In Model 2, we again interact the correction treatment with ideology. The interaction is in the expected direction (negative) but just misses statistical significance ($p < .16$). However, as Brambor, Clark, and Golder point out (2006: 74), it is not sufficient to consider the significance of an interaction term on its own. The marginal effects of the relevant independent variable need to be calculated for

substantively meaningful values of the modifying variable in an interaction. Thus, as before, we estimate the marginal effect of the correction by ideology in Figure 7.

[Figure 7]

The figure shows that the stem cell correction has a negative and statistically significant marginal effect on misperceptions among centrists and individuals to the right of center, but fails to significantly reduce misperceptions among those to the left of center. Thus, the correction works for conservatives and moderates, but not for liberals.

In addition, we plot the substantive effects of the correction in Figure 8, which plots the predicted responses for liberals and conservatives with mean knowledge levels.

[Figure 8]

We find that the predicted probability that subjects "strongly disagree" with the stem cell misperception increases from .09 to .23 for conservatives ($p < .05$), but predicted responses do not change appreciably for liberals. While in this case we do not find a backfire effect, the effect of the correction is again *neutralized* for the relevant ideological subgroup. This finding provides additional evidence that the effect of corrections is likely to be conditional on one's political predispositions.

Conclusion

The experiments reported in this paper help us understand why factual misperceptions about politics are so persistent. We find that responses to corrections in mock news articles differ significantly according to subjects' ideological views. As a result, the corrections fail to reduce misperceptions for the most committed participants. Even

worse, they actually *strengthen* misperceptions among ideological subgroups in several cases. Additional results indicate that these conclusions are not specific to the Iraq war; not related to the salience of death; and not a reaction to the source of the correction.

Our results thus contribute to the literature on correcting misperceptions in three important respects. First, we provide the first direct test of corrections on factual beliefs about politics. Second, we show that corrective information in news reports may fail to reduce misperceptions and can sometimes even increase them. Finally, we establish these findings in the context of contemporary political issues that are salient to ordinary voters.

These findings seem to provide further support for the growing literature showing that citizens engage in motivated reasoning. While our experiments focused on assessing the effectiveness of corrections, the results show that ideological commitments can override direct factual contradictions – an empirical finding with important theoretical implications. Previous research on motivated reasoning has largely focused on the evaluation and usage of factual evidence in constructing opinions and evaluating arguments (e.g. Taber and Lodge 2006). By contrast, our research – the first to directly measure the effectiveness of corrections in a realistic context – suggests that it would be valuable to directly study the cognitive and affective processes that take place when subjects are confronted with discordant factual information. Gaines et al (2007) take an important first step in this direction by highlighting the construction of *interpretations* of relevant facts, including those that may be otherwise discomforting, as a coping strategy.

It would also be helpful to test additional corrections of liberal misperceptions. Currently, all of our backfire results come from conservatives – a finding that may provide support for the hypothesis that conservatives are especially dogmatic (Greenberg

and Jonas 2003; Jost et al 2003a, 2003b). However, without conducting more studies, it is impossible to determine if the results we observe are systematic or the result of the specific misperceptions tested.

In addition, it would be valuable to replicate these findings with non-college students or a representative sample of the general population. Testing the effectiveness of corrections using a within-subjects design would also be worthwhile, though achieving meaningful results may be difficult for reasons described above. In either case, researchers must be wary of changing political conditions. Unlike other research topics, contemporary misperceptions about politics are a moving target that can change quickly (as the difference between the Iraq WMD experiments in Study 1 and Study 2 suggests).

Most importantly, however, future work should seek to distinguish the conditions under which corrections reduce misperceptions from those under which they fail or backfire. Many citizens seem or unwilling to revise their beliefs in the face of corrective information, and attempts to correct those mistaken beliefs may only make matters worse. Determining the best way to provide corrective information will advance understanding of how citizens process information and help to strengthen democratic debate and public understanding of the political process.

Works cited

Allen, Mike. 2003. “Bush: 'We Found' Banned Weapons.” *Washington Post*. May 31, 2003. Page A1.

Althaus, Scott L. 1998. “Information Effects in Collective Preferences.” *American Political Science Review*, 92(3): 545-558.

Arpan, Laura M., and Arthur A. Raney. 2003. “An experimental investigation of news source and the Hostile Media Effect.” *Journalism and Mass Communication Quarterly*, 80(2): 265-281.

Balz, Dan. “Candidates Use Arms Report to Make Case.” *Washington Post*, October 8, 2004.

Brambor, Thomas, William Roberts Clark, and Matt Golder. 2006. “Understanding Interaction Models: Improving Empirical Analyses.” *Political Analysis*, 14: 63-82.

Christen, Cindy T., Prathana Kannaovakun, and Albert C. Gunther. 2002. “Hostile Media Perceptions: Partisan Assessments of Press and Public during the 1997 United Parcel Service Strike.” *Political Communication*, 19(4): 423-436.

Cohen, Florette, Daniel M. Ogilvie, Sheldon Solomon, Jeff Greenberg, and Tom Pyszczynski. 2005. “American Roulette: The Effect of Reminders of Death on Support for George W. Bush in the 2004.” *Analyses of Social Issues and Public Policy*, 5(1): 177-187.

Cunningham, Brent. 2003. “Re-thinking objectivity.” *Columbia Journalism Review*, July/August 2003, 24-32.

Delli Carpini, Michael X. and Scott Keeter. 1996. *What Americans Know about Politics and Why It Matters*. New Haven: Yale University Press.

Druckman, James N. and Kjersten R Nelson. 2003. “Framing and Deliberation: How Citizens' Conversations Limit Elite Influence.” *American Journal of Political Science*, 47(4): 729–745.

Edwards, Kari, and Edward E. Smith. 1996. “A Disconfirmation Bias in the Evaluation of Arguments.” *Journal of Personality and Social Psychology*, 71(1): 5-24.

Fournier, Ron. 2004. “First Lady Bashes Kerry Stem Cell Stance.” *Associated Press*, August 9, 2004.

Furnham, Adrian. 2003. “Belief in a just world: research progress over the past decade.” *Personality and Individual Differences*, 34(5):795-817.

Gaines, Brian J., James H. Kuklinski, Paul J. Quirk, Buddy Peyton and Jay Verkuilen. 2007. “Interpreting Iraq: Partisanship and the Meaning of Facts.” *Journal of Politics*, 69(4): 957-974.

Gilens, Martin. 2001. “Political Ignorance and Collective Policy Preferences.” *American Political Science Review*, 95(2):379-396.

Greenberg, Jeff, and Eva Jonas. 2003. “Psychological Motives and Political Orientation – The Left, the Right, and the Rigid: Comment on Jost et al. (2003).” *Psychological Bulletin*, 129(3): 376-382.

Gunther, Albert C. and Stella Chih-Yun Chia. 2001. “Predicting Pluralistic Ignorance:

The Hostile Media Perception and Its Consequences." *Journalism and Mass Communication Quarterly*, 78(4): 688-701.

Gunther, Albert C. and Kathleen Schmitt. 2004. "Mapping Boundaries of the Hostile Media Effect." *Journal of Communication*, 54(1): 55-70.

Gussin, Phil and Matthew A. Baum. 2004 "In the Eye of the Beholder: An Experimental Investigation into the Foundations of the Hostile Media Phenomenon." Paper presented at 2004 Meeting of the American Political Science Association, Chicago, IL.

Gussin, Phil and Matthew A. Baum. "Issue Bias: How Issue Coverage and Media Bias Affect Voter Perceptions of Elections." Paper presented at 2005 Meeting of the American Political Science Association, Washington D.C.

Harris Poll. 2006. "Belief that Iraq Had Weapons of Mass Destruction Has Increased Substantially." Poll conducted July 5-11 and released July 21, 2006. Downloaded June 12, 2007 from http://www.harrisinteractive.com/harris_poll/index.asp?PID=684

Hill, Patrice. 2006. "House or Senate shake-up likely to end tax cuts." *Washington Times*, October 5, 2006.

Howell, William and Douglas Kriner. N.d. "Political Elites and Public Support for War." Unpublished manuscript.

Johnson, Holly M. and Colleen M. Seifert. 1994. "Sources of the Continued Influence Effect: When Misinformation in Memory Affects Later Inferences." *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 20(6): 1420-1436.

Johnson, Holly M. and Colleen M. Seifert. 1998. "Updating Accounts Following a Correction of Misinformation." *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 24(6): 1483-1494.

Jost, John T., Jack Glaser, Arie W. Kruglanski, and Frank J. Sulloway. 2003a. "Political conservatism as motivated social cognition." *Psychological Bulletin*, 129(3): 339-375.

Jost, John T., Jack Glaser, Arie W. Kruglanski, and Frank J. Sulloway. 2003b. "Exceptions That Prove the Rule-Using a Theory of Motivated Social Cognition to Account for Ideological Incongruities and Political Anomalies: Reply to Greenberg and Jonas (2003)." *Psychological Bulletin*, 129(3): 383-393.

Koriat, Asher, Morris Goldsmith, and Ainat Pansky. 2000. "Toward a Psychology of Memory Accuracy." *Annual Review of Psychology*, 51:481-537.

Kühberger, Anton. 1998. "The Influence of Framing on Risky Decisions: A Meta-analysis." *Organizational Behavior and Human Decision Processes*, 75(1): 23-55.

Kuklinski, James H. and Paul J. Quirk. 2000. "Reconsidering the rational public: cognition, heuristics, and mass opinion." In Arthur Lupia, Mathew D. McCubbins, and Samuel L. Popkin, eds., *Elements of Reason: Understanding and Expanding the Limits of Political Rationality*. London: Cambridge University Press.

Kuklinski, James H., Paul J. Quirk, David Schweider, and Robert F. Rich. 1998. "'Just the Facts, Ma'am': Political Facts and Public Opinion." *Annals of the American Academy of Political and Social Science*, 560: 143—154.

Kuklinski, James H., Paul J. Quirk, Jennifer Jerit, David Schweider, and Robert F. Rich.

2000. "Misinformation and the Currency of Democratic Citizenship." *The Journal of Politics*, 62(3):790-816.

Kull, Steven, Clay Ramsay, and Evan Lewis. 2003. "Misperceptions, the Media, and the Iraq War." *Political Science Quarterly*, 118(4):569-598.

Landau, Mark J., Sheldon Solomon, Jeff Greenberg, Florette Cohen, Tom Pyszczynski, Jamie Arndt, Claude H. Miller, Daniel M. Ogilvie and Alison Cook. "Deliver Us From Evil: The Effects of Mortality Salience and Reminders of 9/11 on Support for President George W. Bush." *Personality and Social Psychology Bulletin*, 30(9): 1136-1150.

Lau, Richard R. and David Redlawsk. 2001. "Advantages and Disadvantages of Cognitive Heuristics in Political Decision Making." *American Journal of Political Science*. 45(4):951-971.

Lee, Tien-Tsung. 2005. "The Liberal Media Myth Revisited: An Examination of Factors Influencing Perceptions of Media Bias." *Journal of Broadcasting & Electronic Media*, 49(1): 43-64.

Lodge, Milton, and Charles S. Taber. 2000. "Three Steps Toward a Theory of Motivated Political Reasoning." In Arthur Lupia, Mathew D. McCubbins, and Samuel L. Popkin, eds., *Elements of Reason: Understanding and Expanding the Limits of Political Rationality*. London: Cambridge University Press.

Lodge, Milton, and Charles S. Taber. 2005. "The Automaticity of Affect for Political Leaders, Groups, and Issues: An Experimental Test of the Hot Cognition Hypothesis." *Political Psychology*, 26 (3): 455-482.

Long, J. Scott. 1997. *Regression Models for Categorical and Limited Dependent Variables*. Thousand Oaks, CA: Sage Publications.

Lord, Charles G., Lee Ross, and Mark R. Lepper. 1979. "Biased Assimilation and Attitude Polarization: The Effects of Prior Theories on Subsequently Considered Evidence." *Journal of Personality and Social Psychology*, 37(11): 2098-2109.

Lupia, Arthur. 1994. "Shortcuts Versus Encyclopedias: Information and Voting Behavior in California Insurance Reform Elections." *American Political Science Review*, 88(1), 63-76.

Lupia, Arthur and Matthew D. McCubbins. 1998. *The Democratic Dilemma: Can Citizens Learn What They Need to Know?* New York: Cambridge University Press.

Mankiw, Greg. 2003. Testimony before the U.S. Senate Committee on Banking, Housing, and Urban Affairs. May 13, 2003.

Mayo, Ruth, Yaacov Schul and Eugene Burnstein. 2004. "'I am not guilty' vs 'I am innocent': Successful negation may depend on the schema used for its encoding." *Journal of Experimental Social Psychology*, 40(4): 433-449.

McGregor, Holly A., Joel D. Lieberman, Jeff Greenberg, Sheldon Solomon, Jamie Arndt, Linda Simon, and Tom Pyszczynski. 1998. "Terror Management and Aggression: Evidence That Mortality Salience Motivates Aggression Against Worldview-Threatening Others." *Journal of Personality & Social Psychology*. 74(3):590-605,

Milbank, Dana. 2003. "For Bush Tax Plan, A Little Inner Dissent." *Washington Post*,

February 16, 2003. Page A4.

Miller, Joanne M. and Jon A. Krosnick. 2000. "News Media Impact on the Ingredients of Presidential Evaluations: Politically Knowledgeable Citizens Are Guided by a Trusted Source." *American Journal of Political Science*, 44 (2): 301-315.

Peffley, Mark and Jon Hurwitz. 2007. "Persuasion and Resistance: Race and the Death Penalty in America." *American Journal of Political Science*, 51(4): 996-1012.

Pew Research Center for the People & the Press. 2005. "Public More Critical of Press, But Goodwill Persists: Online Newspaper Readership Countering Print Losses." Poll conducted June 8-12, 2005 and released June 26, 2005. Results downloaded June 8, 2007 from http://people-press.org/reports/print.php3?PageID=972

Popkin, Samuel. 1991. *The Reasoning Voter*. Chicago: University of Chicago Press.

Priest, Dana and Walter Pincus. "U.S. 'Almost All Wrong' on Weapons." *Washington Post*, October 7, 2004.

Pyszczynski, Tom, Abdolhossein Abdollahi, Sheldon Solomon, Jeff Greenberg, Florette Cohen, and David Weise. 2006. "Mortality Salience, Martyrdom, and Military Might: The Great Satan Versus the Axis of Evil." *Personality and Social Psychology Bulletin*, 32(4): 525-537.

Pyszczynski, Tom, Sheldon Solomon, and Jeff Greenberg. 2003. *In the Wake of 9/11: The Psychology of Terror*. Washington, DC: American Psychological Association.

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.

Schacter, Daniel L. 1999. "The Seven Sins of Memory: Insights From Psychology and Cognitive Neuroscience." *American Psychologist*, 54(3): 182-203.

Schmitt, Kathleen M., Albert C. Gunther, and Janice L. Liebhart. 2004. "Why Partisans See Mass Media as Biased." *Communication Research*, 31(6): 623-641.

Sears, David O. 1986. "College sophomores in the laboratory: Influences of a narrow data base on social psychology's view of human nature." *Journal of Personality and Social Psychology* 51 (3): 515-30.

Sniderman, Paul M., Richard A. Brody, and Philip E. Tetlock. 1991. *Reasoning and Choice: Explorations in Political Psychology*. New York: Cambridge University Press.

Taber, Charles, Milton Lodge, and Jill Glather. 2001. "The Motivated Construction of Political Judgments." In James H. Kuklinski, ed., *Citizens and Politics: Perspectives from Political Psychology*. New York: Cambridge 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.

Task Force on Campaign Reform. 1998. "Campaign Reform: Insights and Evidence."

Tsfati, Yariv and Jonathan Cohen. 2005. "Democratic Consequences of Hostile Media Perceptions: The Case of Gaza Settlers." *The Harvard International Journal of Press/Politics*, 10(4): 28-51.

Vallone, Robert P., Lee Ross, and Mark R. Lepper. 1985. "The Hostile Media

Phenomenon: Biased Perception and Perceptions of Media Bias in Coverage of the 'Beirut Massacre.'" *Journal of Personality and Social Psychology*, 49(3): 577-585.

Weiss, Rick, and Mary Fitzgerald. 2004. "Edwards, First Lady at Odds on Stem Cells." *Washington Post*, August 10, 2004.

Wilkes, A.L., and M. Leatherbarrow. 1988. "Editing episodic memory following the identification of error." *Quarterly Journal of Experimental Psychology: Human Experimental Psychology*. 40(A): 361-387.

Wilkes, A.L. and D.J. Reynolds. 1999. "On Certain Limitations Accompanying Readers' Interpretations of Corrections in Episodic Text." *Quarterly Journal of Experimental Psychology: Human Experimental Psychology*, 52A(1): 165-183.

Xu, Jun and J. Scott Long. 2005. "Confidence Intervals for Predicted Outcomes in Regression Models for Categorical Outcomes." *The Stata Journal,* 5(4): 537-559.

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

Appendix

Study 1 (WMD): News text

Wilkes-Barre, PA, October 7, 2004 (AP) -- President Bush delivered a hard-hitting speech here today that made his strategy for the remainder of the campaign crystal clear: a rousing, no-retreat defense of the Iraq war.

Bush maintained Wednesday that the war in Iraq was the right thing to do and that Iraq stood out as a place where terrorists might get weapons of mass destruction.

"There was a risk, a real risk, that Saddam Hussein would pass weapons or materials or information to terrorist networks, and in the world after September the 11th, that was a risk we could not afford to take," Bush said.

[Correction]

While Bush was making campaign stops in Pennsylvania, the Central Intelligence Agency released a report that concludes that Saddam Hussein did not possess stockpiles of illicit weapons at the time of the U.S. invasion in March 2003, nor was any program to produce them under way at the time. The report, authored by Charles Duelfer, who advises the director of central intelligence on Iraqi weapons, says Saddam made a decision sometime in the 1990s to destroy known stockpiles of chemical weapons. Duelfer also said that inspectors destroyed the nuclear program sometime after 1991.

[All subjects]

The President travels to Ohio tomorrow for more campaign stops.

Study 1 (WMD): Dependent variable

Immediately before the U.S. invasion, Iraq had an active weapons of mass destruction program, the ability to produce these weapons, and large stockpiles of WMD, but Saddam Hussein was able to hide or destroy these weapons right before U.S. forces arrived.

-Strongly disagree [1]
-Somewhat disagree [2]
-Neither agree nor disagree [3]
-Somewhat agree [4]
-Strongly agree [5]

Study 2, Experiment 1 (WMD): News text

[New York Times/FoxNews.com]
December 14, 2005

During a speech in Washington, DC on Wednesday, President Bush maintained that the war in Iraq was the right thing to do and that Iraq stood out as a place where terrorists might get weapons of mass destruction.

"There was a risk, a real risk, that Saddam Hussein would pass weapons or materials or information to terrorist networks, and in the world after September the 11th, that was a risk we could not afford to take," Bush said.

[Correction]

In 2004, the Central Intelligence Agency released a report that concludes that Saddam Hussein did not possess stockpiles of illicit weapons at the time of the U.S. invasion in March 2003, nor was any program to produce them under way at the time.

[All subjects]

The President travels to Ohio tomorrow to give another speech about Iraq.

Study 2, Experiment 1 (WMD): Dependent variable

Immediately before the U.S. invasion, Iraq had an active weapons of mass destruction program and large stockpiles of WMD.

-Strongly disagree [1]
-Somewhat disagree [2]
-Neither agree nor disagree [3]
-Somewhat agree [4]
-Strongly agree [5]

Study 2, Experiment 2 (Tax cuts): News text

[New York Times/FoxNews.com]
August 6, 2005

President George W. Bush urged Congress to make permanent the tax cuts enacted during his first term and draft legislation to bolster the Social Security program, after the lawmakers return from their August break.

"The tax relief stimulated economic vitality and growth and it has helped increase revenues to the Treasury," Bush said in his weekly radio address. "The increased revenues and our spending restraint have led to good progress in reducing the federal deficit."

The expanding economy is helping reduce the amount of money the U.S. government plans to borrow from July through September, the Treasury Department said on Wednesday. The government will borrow a net $59 billion in the current quarter, $44 billion less than it originally predicted, as a surge in tax revenue cut the forecast for the federal budget deficit.

The White House's Office of Management and Budget last month forecast a $333 billion budget gap for the fiscal year that ends Sept. 30, down from a record $412 billion last year.

[Correction]

However, even with the recent increases, revenues in 2005 will remain well below previous projections from the Congressional Budget Office. The major tax cut of 2001 and further cuts in each of the last three years were followed by an unprecedented three-year decline in nominal tax revenues, from $2 trillion in 2000 to $1.8 trillion in 2003. Last year, revenues rebounded slightly to $1.9 trillion. But at 16.3 percent of the gross domestic product, last year's revenue total, measured against the size of the economy, was the lowest level since 1959.

Study 2, Experiment 2 (Tax cuts): Dependent variable

President Bush's tax cuts have increased government revenue.

-Strongly disagree [1]
-Somewhat disagree [2]
-Neither agree nor disagree [3]
-Somewhat agree [4]
-Strongly agree [5]

Study 2, Experiment 3 (Stem cell research): News text

[New York Times/FoxNews.com]
August 10, 2004

Sen. John Edwards (D-N.C.) yesterday slammed President Bush and promised that a Kerry administration would support the promising young field of embryonic stem cell research.

The vice presidential contender's comments came on the third anniversary of President Bush's televised address to the nation announcing a funding policy for the controversial research, which relies on human embryos as a source of cells.

The much-debated but still experimental field of study has become an unanticipated wedge issue in this fall's election. Edwards's running mate on the Democratic ticket, Sen. John F. Kerry (Mass.), mentioned the topic in a number of speeches last week. Kerry also devoted a large chunk of the Democrats' weekly radio address Saturday to it, saying that science should not be sacrificed for ideology.

"We're going to lift the ban on stem cell research," Kerry said. "We're going to listen to our scientists and stand up for science. We're going to say yes to knowledge, yes to discovery and yes to a new era of hope for all Americans."

[Correction]

However, experts pointed out that Bush's action does not limit private funding of stem cell research. He is actually the first president to allow the use of federal funds to study human embryonic stem cells, but his policy limits federal support of such research to colonies derived from embryos already destroyed by August 2001.

Study 2, Experiment 3 (Stem cell research): Dependent variable

President Bush has banned stem cell research in the United States.

-Strongly disagree [1]
-Somewhat disagree [2]
-Neither agree nor disagree [3]
-Somewhat agree [4]
-Strongly agree [5]

Figure 1

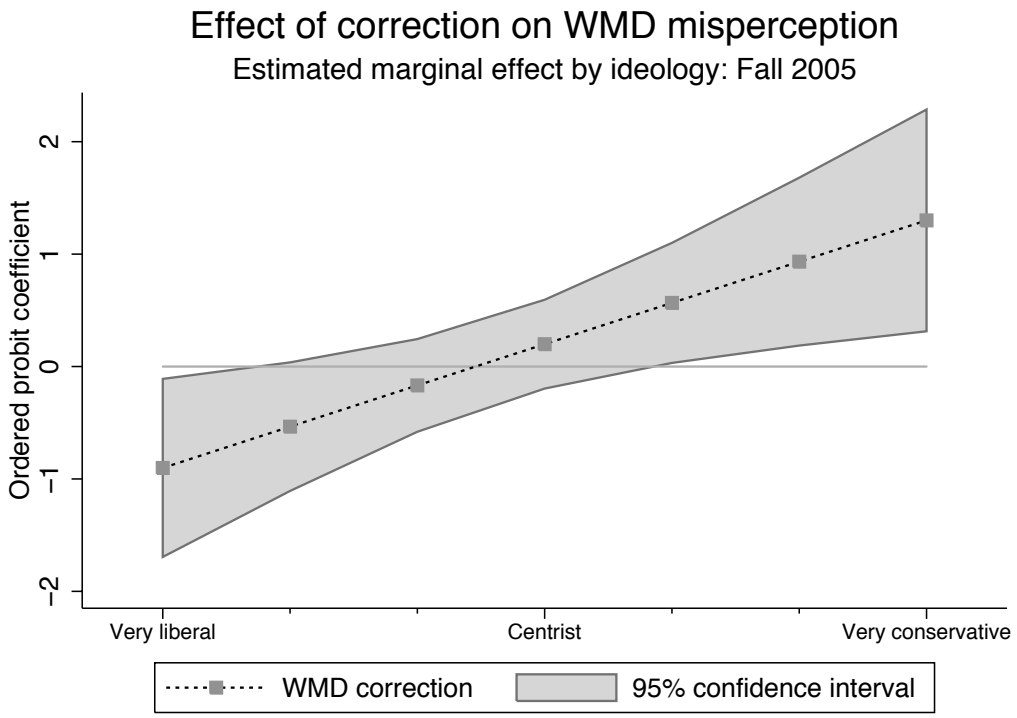
Effect of correction on WMD misperception
Estimated marginal effect by ideology: Fall 2005
Ordered probit coefficient
−2
−1
0
1
2
Very liberal
Centrist
Very conservative
WMD correction
95% confidence interval

Figure 2

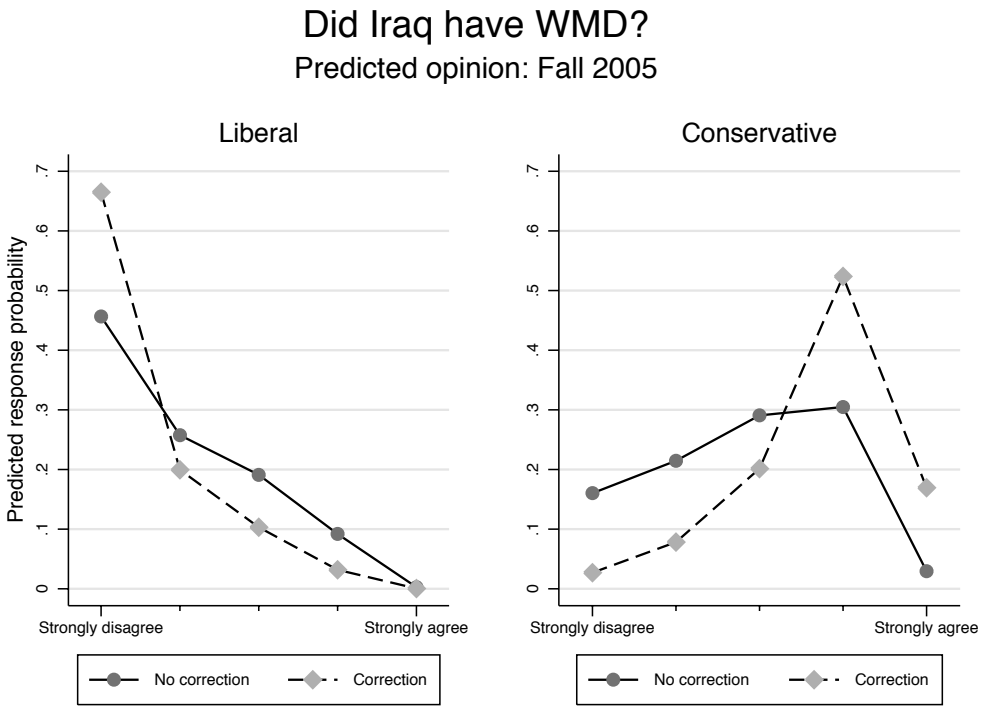
Did Iraq have WMD?
Predicted opinion: Fall 2005
Liberal
Conservative
Predicted response probability
0
.1
.2
.3
.4
.5
.6
.7
Strongly disagree
Strongly agree
No correction
Correction

Figure 3

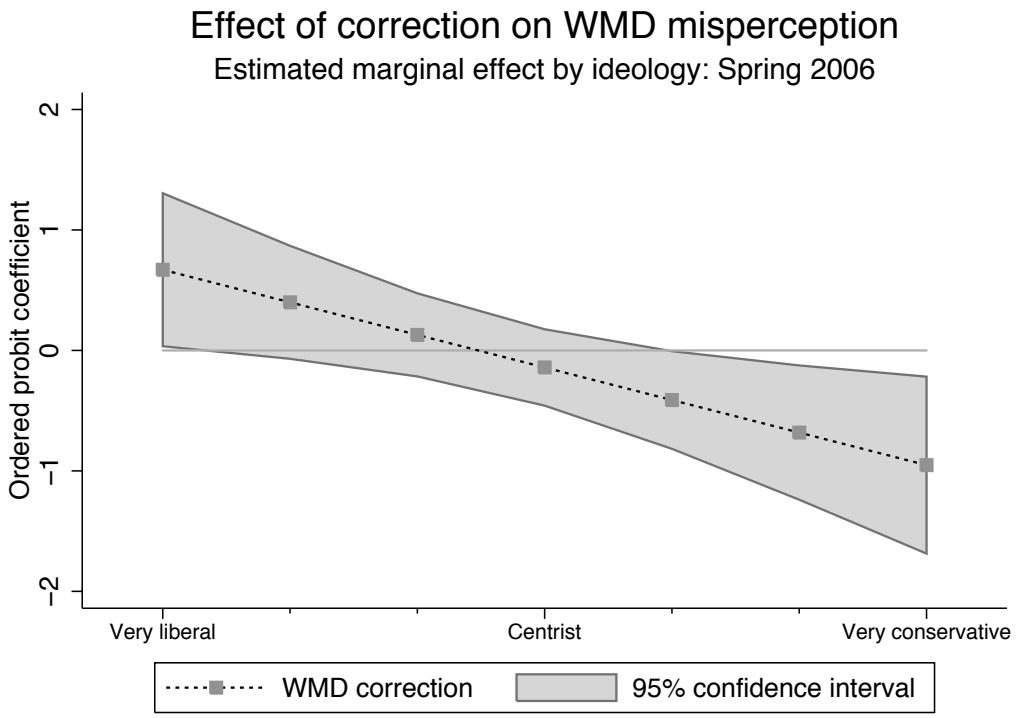
Effect of correction on WMD misperception
Estimated marginal effect by ideology: Spring 2006
Ordered probit coefficient
2
1
0
−1
−2
Very liberal
Centrist
Very conservative
WMD correction
95% confidence interval

Figure 4

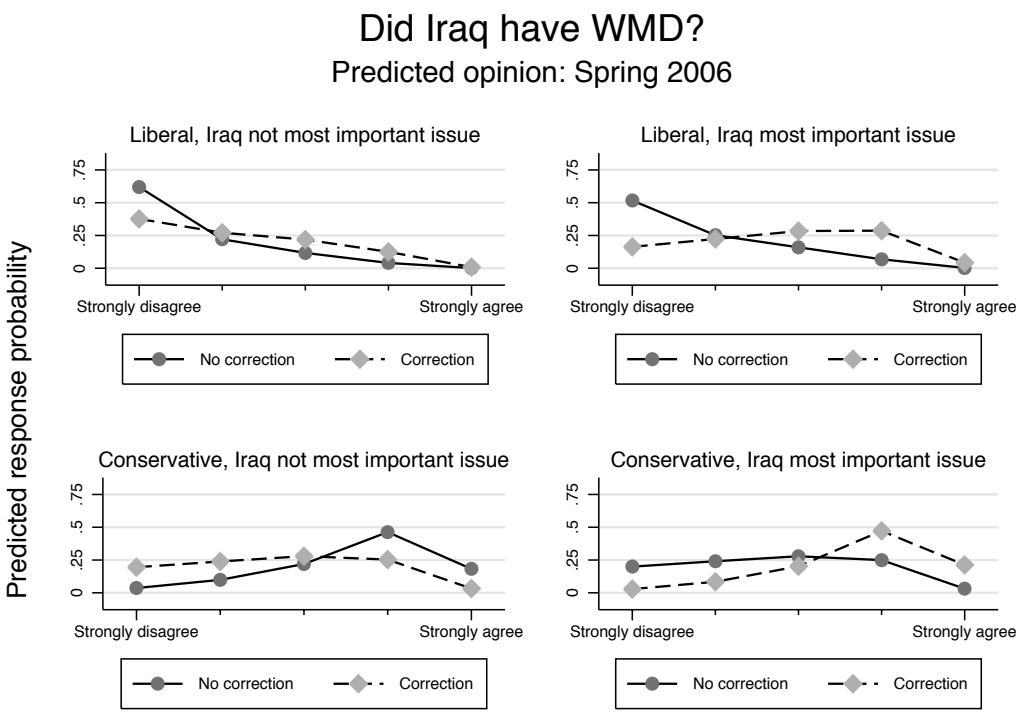
Did Iraq have WMD?
Predicted opinion: Spring 2006
Predicted response probability
Liberal, Iraq not most important issue
Liberal, Iraq most important issue
Conservative, Iraq not most important issue
Conservative, Iraq most important issue
0
.25
.5
.75
Strongly disagree
Strongly agree
No correction
Correction

Figure 5

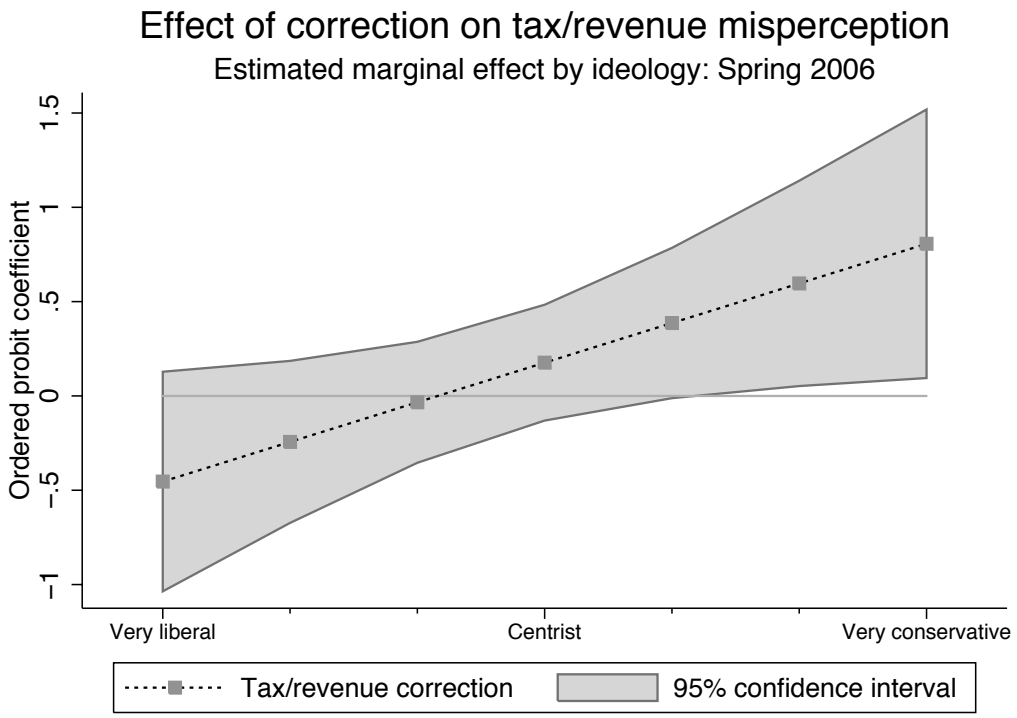
Effect of correction on tax/revenue misperception
Estimated marginal effect by ideology: Spring 2006
Ordered probit coefficient
−1
−.5
0
.5
1
1.5
Very liberal
Centrist
Very conservative
Tax/revenue correction
95% confidence interval

Figure 6

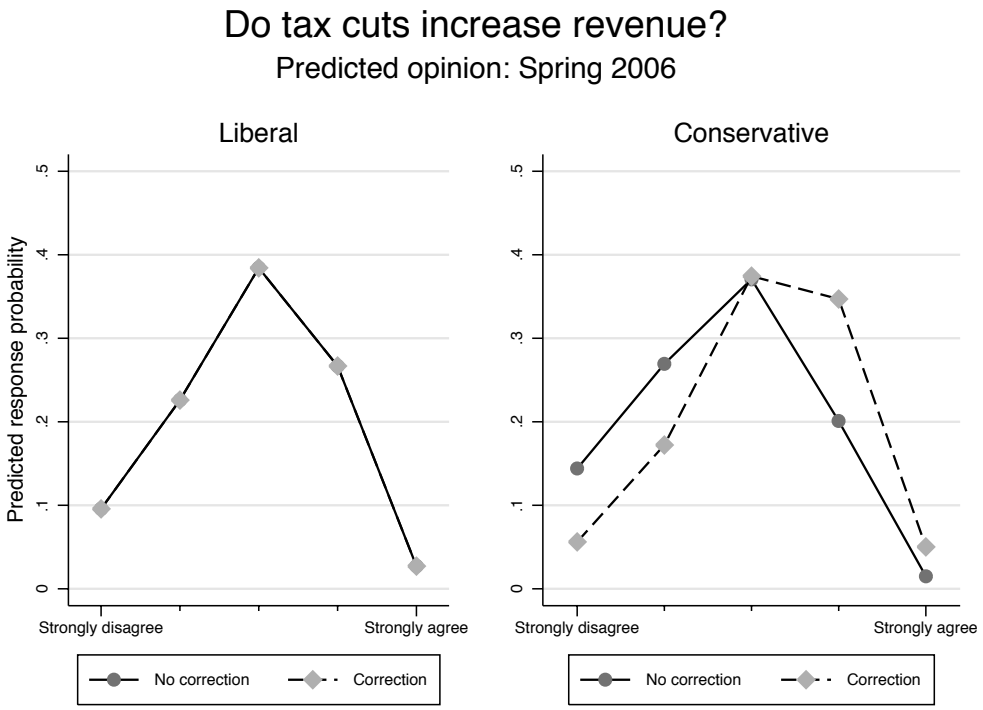
Do tax cuts increase revenue?
Predicted opinion: Spring 2006
Liberal
Conservative
Predicted response probability
0
.1
.2
.3
.4
.5
Strongly disagree
Strongly agree
No correction
Correction

Figure 7

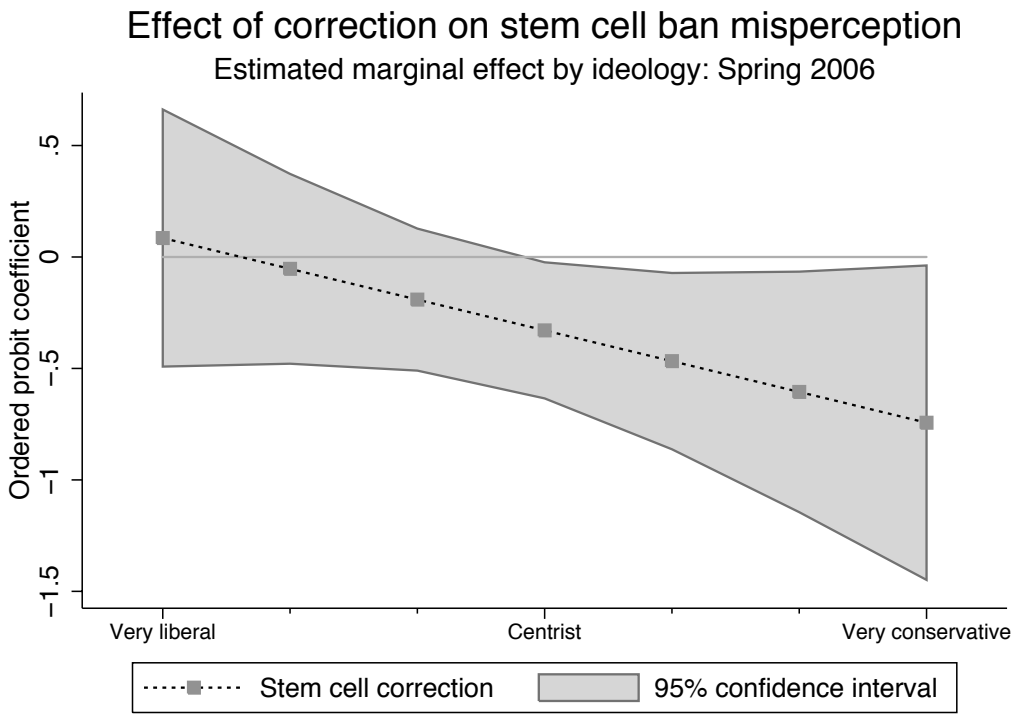
Effect of correction on stem cell ban misperception
Estimated marginal effect by ideology: Spring 2006
Ordered probit coefficient
.5
0
−.5
−1
−1.5
Very liberal
Centrist
Very conservative
Stem cell correction
95% confidence interval

Figure 8

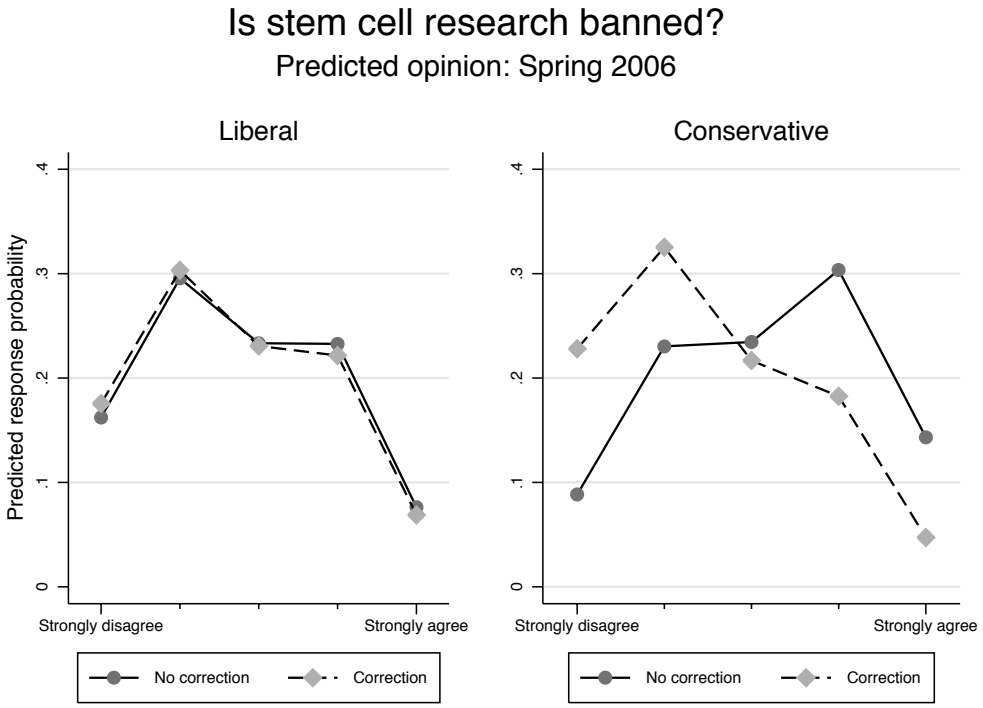
Is stem cell research banned?
Predicted opinion: Spring 2006
Liberal
Conservative
Predicted response probability
0
.1
.2
.3
.4
Strongly disagree
Strongly agree
No correction
Correction

Table 1 – Ordered probit models of WMD misperception (fall 2005)

	Model 1	Model 2
Correction	0.050	0.199
	(0.193)	(0.201)
Ideology	0.358***	0.221***
	(0.068)	(0.084)
Political knowledge	-1.138***	-1.122***
	(0.376)	(0.377)
Mortality salience	0.278	0.275
	(0.194)	(0.195)
Correction * ideology		0.367***
		(0.136)
(Cutpoint 1)	-1.392***	-1.373***
	(0.346)	(0.347)
(Cutpoint 2)	-0.739**	-0.699**
	(0.336)	(0.338)
(Cutpoint 3)	-0.029	0.048
	(0.334)	(0.337)
(Cutpoint 4)	1.377***	1.509***
	(0.386)	(0.393)
Log-likelihood	-172.24	-168.59
N	130	130

* $p < .10$, ** $p < .05$, *** $p < .01$ (two-sided)

Table 2 – Ordered probit models of WMD misperception (spring 2006)

	Model 1	Model 2	Model 3
Correction	-0.069	-0.141	-0.159
	(0.159)	(0.162)	(0.177)
Ideology	0.356***	0.487***	0.525***
	(0.053)	(0.074)	(0.078)
Political knowledge	-1.287***	-1.247***	-1.290***
	(0.325)	(0.327)	(0.335)
Correction * ideology		-0.270***	-0.389***
		(0.104)	(0.112)
Iraq most important			-0.346
			(0.324)
Correction * most important			0.405
			(0.455)
Ideology * most important			-0.304
			(0.237)
Correction * ideology * most important			0.797**
			(0.321)
(Cutpoint 1)	-1.628***	-1.659***	-1.767***
	(0.296)	(0.297)	(0.318)
(Cutpoint 2)	-0.961***	-0.985***	-1.074***
	(0.285)	(0.286)	(0.307)
(Cutpoint 3)	-0.269	-0.278	-0.344
	(0.280)	(0.281)	(0.301)
(Cutpoint 4)	0.910***	0.973***	0.935***
	(0.306)	(0.311)	(0.327)
Log-likelihood	-255.59	-252.17	-248.06
N	195	195	195

* $p < .10$, ** $p < .05$, *** $p < .01$ (two-sided)

Table 3 – Ordered probit models of tax cut/revenue misperception (spring 2006)

	Model 1	Model 2
Correction	0.096	0.176
	(0.152)	(0.157)
Ideology	0.180***	0.070
	(0.049)	(0.071)
Political knowledge	-0.634**	-0.596*
	(0.317)	(0.318)
Correction * ideology		0.210**
		(0.097)
(Cutpoint 1)	-1.959***	-1.919***
	(0.305)	(0.306)
(Cutpoint 2)	-1.128***	-1.076***
	(0.288)	(0.290)
(Cutpoint 3)	-0.141	-0.071
	(0.282)	(0.284)
(Cutpoint 4)	1.230***	1.312***
	(0.299)	(0.301)
Log-likelihood	-265.5	-263.18
N	195	195

* $p < .10$, ** $p < .05$, *** $p < .01$ (two-sided)

Table 4 – Ordered probit models of stem cell ban misperception (spring 2006)

	Model 1	Model 2
Correction	-0.276*	-0.329**
	(0.151)	(0.156)
Ideology	0.027	0.091
	(0.048)	(0.066)
Political knowledge	-0.578*	-0.555*
	(0.311)	(0.312)
Correction * ideology		-0.138
		(0.096)
(Cutpoint 1)	-1.590***	-1.607***
	(0.288)	(0.288)
(Cutpoint 2)	-0.712***	-0.728***
	(0.275)	(0.275)
(Cutpoint 3)	-0.112	-0.123
	(0.272)	(0.272)
(Cutpoint 4)	0.810***	0.809***
	(0.282)	(0.282)
Log-likelihood	-296.65	-295.62
N	195	195

* $p < .10$, ** $p < .05$, *** $p < .01$ (two-sided)