MOTIVATED SKEPTICISM IN THE EVALUATION OF POLITICAL BELIEFS

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ABSTRACT: We propose a model of motivated skepticism that helps explain when, how, why and under what conditions citizens are prone to be biased political information processors. We report the results of two experimental studies that explore how citizens evaluate arguments about two political issues – affirmative action and gun control – to test hypotheses predicting motivated reasoning. As predicted, in situations where participants (Ps) are presented with a balanced set of pro and con arguments, we find strong evidence of a prior attitude effect such attitudinally congruent arguments are evaluated as stronger than attitudinally incongruent arguments. When reading the pro and con arguments, Ps counter argue the contrary arguments and uncritically bolster supporting arguments, evidence of a disconfirmation bias. We also find a confirmation bias – the seeking out of confirmatory evidence – when Ps are free to self-select the source of the arguments they read. Both the confirmation and disconfirmation biases lead to attitude polarization – the strengthening of their t_2 over t_1 attitude – especially among those with the strongest priors and highest level of political sophistication. We conclude with a discussion of the normative implications of these findings for rational behavior in a democracy.

So convenient a thing is it to be a rational creature, since it enables us to find or make a reason for everything one has a mind to.

Ben Franklin

Physicists do it (Glanz, 2000). Psychologists do it (Kruglanski & Webster, 1996). Even political scientists do it (cites withheld to protect the guilty among us). Research findings confirming a hypothesis are accepted more or less at face value, but when confronted with contrary evidence, we become "motivated skeptics" (Kunda, 1990), mulling over possible reasons for the "failure", picking apart possible flaws in the study, recoding variables, and only when all the counter arguing fails do we rethink our beliefs. Whether this systematic bias in how we deal with evidence is rational or not is debatable, the philosopher of science (e.g., Popper) saying "no", the good Reverend Bayes saying "yes". One negative consequence of this practice is that bad theories and weak hypotheses, like prejudices, persist longer then they should.

But what about ordinary citizens? Politics is contentious (Iyengar & Kinder, 1987; Newman, Just, & Krigler, 1992). In the marketplace of ideas, citizens are confronted daily with arguments designed to either bolster their opinions or challenge their prior beliefs and attitudes (Gamson, 1992). To the extent that ordinary citizens act similarly to scientists the consequences would be similar — hanging on to one's beliefs and attitudes longer and stronger than warranted. It would be foolish to push this analogy too hard since scientific practice has such built-in safeguards as peer review and double-blind experiments to prevent bad ideas from driving the good ones out of the marketplace; albeit there certainly are fewer and weaker controls to protect ordinary folks from themselves when they think and reason.

Ideally, one's prior beliefs and attitudes – whether scientific or social – should "anchor" the evaluation of new information and then, depending on how credible is some piece of

evidence, impressions should be adjusted upward or downward (Anderson, 1981). The "simple" Bayesian updating rule would be to increment the overall evaluation if the evidence is positive, and decrement the original belief or attitude if the evidence is contrary. Assuming one has established an initial belief (attitude or hypothesis), normative models of human decision-making imply or posit a two-step updating process, beginning with the collection of belief-relevant evidence, followed by the integration of new information with the prior to produce an updated judgment. Critically important in such normative models is the requirement that the collection and integration of new information be kept independent of one's prior judgment (for a useful discussion of this normative requirement in Bayesian theory, see Evans & Over, 1996).

All well and good, and normatively right, but empirically off base if demonstrations in psychology (Lord, Ross, & Lepper, 1979) and behavioral decision theory (Baron, 1994) are to be believed. These studies show repeatedly that one's priors unduly influence what evidence is sought out and how new, particularly contrary, evidence is comprehended, evaluated, and weighted. The basic finding across domains, issues, and situations is that people are "motivated skeptics;" they are prone to accept at face value evidence that is congruent with their prior beliefs but apt to denigrate and hyper-critically evaluate evidence contrary to their priors (Ditto & Lopez, 1992; Koehler, 1993). The result is anchoring with insufficient adjustment to contrary information.

In this paper we report the results of two experiments showing that citizens are prone to overly accommodate supportive evidence while dismissing out of hand evidence that challenges their prior attitudes. On reading a balanced set of pro and con arguments about affirmative action or gun control, we find that rather than moderating or simply maintaining their original attitudes, citizens – especially those who feel the strongest about the issue and are the most

sophisticated – strengthen their attitudes in ways not warranted by the evidence.

A Theory of Motivated Political Reasoning

Our starting premise (following Kunda, 1987; 1990) is that all reasoning is motivated. While citizens are always constrained in some degree to be accurate, they are typically unable to control their preconceptions, even when encouraged to be objective. This tension between the drives for accuracy and belief perseverance underlies all human reasoning. Keeping it simple and focusing on reasoning about things political, citizens are goal-oriented (Chaiken & Trope, 1999). Their motives fall into two broad categories:

1. Accuracy goals, which motivate them to seek out and carefully consider relevant evidence so as reach a correct or otherwise best conclusion (Baumeister & Newman, 1994; Fiske & Taylor, 1991), and
2. Partisan goals, which motivate them to apply their reasoning powers in defense of a prior, specific conclusion (Kruglanski & Webster, 1996).

Apart from the ideal worlds of philosophy and fiction, neither of these goals is ever entirely independent, so the two dimensions range from weak to strong goals of each type: At one pole on what is surely a motivational continuum is the prototypic "rational decision maker" – someone no doubt like you and me – who on confronting new information is motivated to reach the right conclusion by conducting a thorough search and balanced evaluation of the evidence at hand. "Partisan reasoning", by contrast, occurs when citizens evaluate evidence in ways that allow them to maintain or even bolster their attitudes in the face of contradictory evidence. The critical questions concern when partisan biases will overwhelm the objective quality of the evidence and why it is that many a seemingly good rationalist turns into a motivated skeptic when evaluating political candidates and issues.

Three psychological mechanisms underlie our theory of motivated political reasoning (Lodge & Taber, 2000, forthcoming; Taber, Lodge, & Glathar, 2001). First, the hot cognition hypothesis posits that all social concepts that have been evaluated in the past become "affectively charged," positively or negatively tagged, with the affective charge linked directly to the concept in memory (Bargh, 1997; Fazio, Sanbonmatsu, Powell & Kardes, 1986; Fiske & Newberg, 1990). Accordingly, the sociopolitical world is characterized by affect-laden beliefs, what Abelson (1963) calls "hot cognitions." Our second sub theory, on-line processing, claims that the evaluative affect attached to concepts in memory is updated spontaneously upon exposure to new information about the memory object (Lodge, McGraw & Stroh, 1989; Lodge & Stroh, 1993). When new information is before your eyes so to speak, you spontaneously update your impression of the object – in the normative Bayesian version, by incrementing for positive information and decrementing for negative information (Anderson & Hubert, 1963; Lodge, Steenbergen & Brau, 1995). Finally, our model asserts the primacy of affect, in the sense that it is faster and earlier (both in cognitive and evolutionary time) than cold cognition (Zajonc, 1980, 1984). Neurophysiological evidence suggests that the "affect system" (LeDoux, 1994, 1996; Damasio, 1994, 2002) forms a "quick and dirty" pathway in the service of approach-avoidance behavioral responses. Automatic affective responses come to mind quickly and spontaneously, in all likelihood entering the evaluation process moments before any cognitive considerations, thereby signaling the affective coloration of the object (e.g., Bassili & Roy, 1998; Crites, Cacioppo, Gardner, & Berntson, 1995; Lavine, Thomsen, Zanna, & Borgida, 1998; Marcus, 1988; 2000; Rahn, 2000; Lodge & Taber, 2000, forthcoming).

The problem for normative theory is that one's prior attitudes can easily and unduly direct the collection, comprehension, interpretation, and evaluation of evidence in ways that bias

judgments. If our theory holds true, at the moment of recognizing an object, one's affective tally is automatically called up, triggering a series of largely nonconscious processes that drive the interpretation, comprehension, and evaluation of the evidence (Bargh, 1997; Ditto & Lopez, 1992; Edwards & Smith, 1996; Kunda, 1990).

Surprisingly, given the widespread acceptance of selective attention, exposure, and judgment processes throughout the social sciences, the empirical evidence from social psychology is far more mixed and qualified than is often believed. The empirical status of selective attention and, in particular, selective exposure can best be characterized as uncertain (Abelson, Aronson, McGuire, Newcomb, Rosenberg, & Tannenbaum, 1968; Eagley & Chaiken, 1993, 1998; Freedman & Sears, 1965; Frey, 1986; Greenwald, Banaji, Rudman, Farnham, Nosek, & Mellott, 2002; Kunda, 1990; Lord, 1992; Pomerantz, Chaiken, & Tordesillas, 1995; Wicklund & Brehm, 1976). Certainly one goal of the work we report here is to test experimentally the various selectivity hypotheses within the context of political information processing, though it is important to keep in mind that unlike much of the work in psychology motivated by dissonance theory we explain selective biases as the product of automatic hot cognition.

Selective information processes are particularly important because of their impact on subsequent attitudes and behavior and because of their implications for the distribution of aggregate public opinion (Zaller, 1992). Theoretically, we should expect attitude polarization: those holding strong prior attitudes become attitudinally *more* extreme on reading pro and con arguments because they assimilate congruent evidence uncritically but vigorously counter-argue incongruent evidence (Ditto & Lopez, 1992; Rucker & Petty, 2004). Unfortunately, the empirical pedigree of this classic expectation is even more dubious than the various selectivity hypotheses. The most cited support for attitude polarization comes from the 1979 Lord, Ross,

and Lepper study of attitudes toward the death penalty, but even this evidence is unconvincing because it is based on subjective rather than direct measures of polarization. Rather than comparing t_1 and t_2 measures of attitudes, Lord et al. asked subjects to report subjectively whether their attitudes had become more extreme after evaluating pro and con evidence on the efficacy of capital punishment. Moreover, numerous attempts to replicate polarization using direct t_1 and t_2 measures of social and political attitudes have failed (e.g., Kuhn & Lao, 1996; Miller, McHoskey, Bane, & Dowd, 1993; Pomerantz, Chaiken, & Tordesillas, 1995).[1]

We believe that attitude polarization has been elusive in psychological research for at least two reasons. First, we suspect that the arguments and evidence used in many of these studies failed to arouse sufficient partisan motivation to induce much biased processing. Since most of the work in the cognitive dissonance tradition did not consider the strength of prior affect to be critical, little effort was made to create stimuli that would elicit strong affective responses. Some research, for example, relied on syllogistic arguments that are hard to understand (e.g., Oakhill & Johnson-Laird, 1985); other research used oversimplified policy statements comprised of a single, stylized premise and conclusion. For example (Edwards & Smith, 1996):

PREMISE: Implementing the death penalty means there is a chance that innocent people will be sentenced to death.

CONCLUSION: Therefore, the death penalty should be abolished.

While the conclusion may in some sense follow from the premise, this type of policy argument is not particularly engaging, and hence should be less likely to trigger a defensive response. In our theory, selective biases and polarization are triggered by an initial (and uncontrolled) affective response. That is, motivated reasoning in our view is the result of hot cognition; by contrast,

[1] Rucker and Petty (2004) have recently found polarization of attitude certainty as a result of counter-arguing, but notably they did not find evidence of more extreme attitudes.

most of the work on selectivity and polarization in social psychology uses rather cold arguments and rests on theories of cold cognition (most commonly, dissonance theory).

In our motivated reasoning experiments, we use statements and arguments taken directly from political interest groups, which are far more contentious and more in-line with contemporary political discourse (Ailes, 1995; Ansolabehere & Iyengar, 1995); these arguments often generate strong affective responses (see Figure 1, below, for an example argument).

The second and more difficult problem for those seeking to find attitude polarization is the weak measurement of attitude change and the severe scale constraints that ensue. Researchers have typically (e.g., Edwards & Smith, 1996) relied on a single item, presented pre- and post-task, to measure attitude extremity and change. The problem, of course, in addition to the weak reliability of a single item, is that while the theory holds that those with the most extreme attitudes are the most prone to become even more extreme at t_2, detecting any such change is thwarted by the upper and lower bounds of the scale and by regression to the mean. We employ a six-item additive scale to measure attitudes at t_1 and t_2, which improves measurement reliability and reduces the number of respondents at or near the scale limits at t_1.

Based on our theory of affect-driven motivated reasoning, we posit three mechanisms of partisan or biased processing:

- Hypothesis 1: a prior attitude effect, whereby people who feel strongly about an issue – even when encouraged to be objective and leave their preferences aside – will evaluate supportive arguments as stronger and more compelling than contrary arguments;
- Hypothesis 2: a disconfirmation bias, such that people will spend more time and cognitive resources denigrating and counter-arguing attitudinally incongruent than congruent arguments; and

- Hypothesis 3: a confirmation bias, such that when free to choose what information they will attend to people will seek out confirming over disconfirming arguments.

Because each of these mechanisms deposits more supporting than repudiating evidence in mind, we predict:

- Hypothesis 4: attitude polarization, whereby attitudes will become more extreme, even when people have been exposed to a balanced set of pro and con arguments.

Our theory, at first glance, might suggest we are arguing that people are closed-minded, consciously deceiving themselves to preserve their prior beliefs. On the contrary, a key argument we make (with supporting evidence in Lodge and Taber, forthcoming) is that people are largely unaware of the power of their priors. It is not that they simply lie to themselves. Rather, they try hard to be fair-minded or at least preserve the "illusion of objectivity" (Pyszczynski & Greenberg, 1987), but they are frequently unable to do so. On the other hand, as the persuasion literature clearly shows (Petty & Wegener, 1998) and as attested to in the study of voting behavior (Aldrich, Sullivan, & Borgida, 1989; Rabinowitz & MacDonald, 1989), even those committed to their positions can be persuaded by strong and credible counter-evidence (Festinger, 1957). But the research we report suggests that, once attitudes have become crystallized, persuasion is difficult. We try our best to appear reasonable – to ourselves as well as to others – but as motivated skeptics we frequently fall unsuspecting into the "mind traps" posited in Hypotheses 1-3. This asymmetrical skepticism – as would be reflected in the type of thoughts that come to mind as we read pro and con arguments – deposits in mind all the evidence needed to justify and bolster our priors with a clear conscience (Ditto, Scepansky, Munro, Apanovitch & Lockhart, 1998).

Being a motivated reasoner takes effort (Lavine, Borgida, & Sullivan, 2000; Pomerantz, Chaiken, & Tordesillas, 1995); hence we expect Hypotheses 1-4 to be conditional on the strength of one's prior attitude (motive) and on one's level of political sophistication (opportunity).

- Hypothesis 5: an attitude strength effect, such that those citizens voicing the strongest policy attitudes will be most prone to motivated skepticism; and
- Hypothesis 6: a sophistication effect, such that the politically knowledgeable, because they possess greater ammunition with which to counter-argue incongruent facts, figures, and arguments, will be more susceptible to motivated bias than will unsophisticates.

Of course, because people are arguing with themselves the fight is fixed. An unsophisticated person lacks the cognitive resources to counter-argue and is therefore as likely to stand pat as to be buffeted first by one side then by the other (Zaller, 1992; Zaller & Feldman, 1992) and by both weak and strong arguments (Cobb & Kuklinski, 1997; Petty, Cacioppo, & Goldman, 1981). Should the attitude strength and sophistication hypotheses be supported, we further expect that those who feel the strongest and know the most will also show the strongest attitude polarization.

Experiments on the Mechanisms of Biased Reasoning

Two experiments were carried out to test these six hypotheses. Participants (Ps) were recruited from introductory political science courses at Stony Brook University. Their participation, for which they received course credit, consisted of a single session lasting less than one hour (Study 1: N=126, 59 male, 70 white, 64 Democrat, 34 Republican; Study 2: N=136, 68 male, 64 white, 61 Democrat, 21 Republican). Since the two experiments share the same basic design, differing in but one manipulation, we will describe them together.

On entering the laboratory, Ps were seated individually at computers in separate experimental rooms and instructed that they would be participating in a study of public opinion.

Their first task was to evaluate a number of contemporary political issues, among them a battery of items tapping their attitudes on either affirmative action or gun control (with the sample split into two conditions by random assignment). These items, presented both before and after the experimental task, serve as our basic measures of prior and posterior attitudes. For both affirmative action and gun control, the attitude measures included four items designed to measure attitude strength (recorded on 100 point sliding response scales) and six items that measure attitude position (9 pt. agree/disagree Likert items; see Appendix for the items). Both variables were constructed by summing the items (recoded for direction) and rescaled to [0,1] with responses below the midpoint indicating "weak" or "con" respectively.[2] In keeping with prior research (for an overview, see Petty & Krosnick, 1995), strength and position are independent attitudinal dimensions such that some respondents took extreme positions on the issues without feeling strongly about those positions (and conversely, some moderates rode the fence with conviction).[3]

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[2] Both scales are reliable. The attitude extremity scale produced the following standardized item alphas, with subscripts indicating prior or posterior measurement: for affirmative action in study 1, α_1=.80 and α_2=.87; for gun control in study 1, α_1=.75 and α_2=.72; for affirmative action in study 2, α_1=.82 and α_2=.93; for gun control in study 2, α_1=.77 and α_2=.89. The comparable alphas for the attitude strength scale were: for affirmative action in study 1, α_1=.90 and α_2=.92; for gun control in study 1, α_1=.91 and α_2=.94; for affirmative action in study 2, α_1=.93 and α_2=.93; for gun control in study 2, α_1=.91 and α_2=.90.

[3] The strongest correlation obtained between attitude strength and position (with position folded at the neutral point so higher values indicate more extreme attitudes) was for gun control in study 2: r=.20).

After completing the attitude battery for the first time, Ps were introduced to and given practice using an information board designed to track their search for pro or con information about affirmative action (or gun control in the other condition). They were instructed to view information in an even-handed way so that they could explain the issue to other students (such instructions have been found to enhance accuracy motivation which works against our research hypotheses; see the Appendix for exact wording of instructions). Our information board presented a matrix of 16 hidden policy arguments, which Ps could only view by clicking on a button in the matrix (see Figure 1a). We can be sure that participants knew which arguments would favor and which would oppose the issue since the four arguments in each row of the matrix were clearly attributed to a known source (in these studies, a pro interest group, a con interest group, and the two political parties), and because Ps were explicitly told each group's position on the issue as part of their instructions. Moreover, they were required to correctly place each group on the issues before they could open the information board (errors sent them back to the instructions page where group positions were explained) and at any time while the information board was open Ps could remind themselves of the group positions by hovering over group names with the mouse pointer. Rows and columns were randomized; Ps viewed 8 arguments with no time limit, but could not view the same argument a second time; the computer recorded the order and viewing time for each argument selected.[4] This task provides our test for the confirmation bias – the prediction that people, especially those who feel the strongest and

[4] These restrictions were introduced to ensure that the information environments were comparable across participants. We did not want participants reading all the information on the board (and possibly working systematically from the upper left box); conversely, we did not want participants to opt out after reading a single argument.

know the most, will seek out confirmatory evidence and avoid what they suspect might be disconfirming evidence. All Ps then completed the attitude battery a second time (so as to measure $t_1 \rightarrow t_2$ attitude change).

[Figure 1 about here]

To improve external validity as well as realism, the arguments used in our experiments were drawn from print and on-line publications of real issue-relevant interest groups (including the NRA, NAACP, Brady Anti-Handgun Coalition, and the platforms of the Republican and Democratic parties). To control for such alternative explanations for the prior attitude effect as the "argument length = strength" or "complexity = strength" heuristics (Petty & Cacioppo, 1981; Cobb & Kuklinski, 1997), the arguments were edited such that they had similar complexities (length of sentence, average number of syllables, words per sentence, sentences per argument, reading level, and so forth; see Appendix) and were pre-tested on student samples.

A substantial set of demographic questions followed the information board task, including all the usual suspects: PID, ideological self-placement, race, gender, etc., and most important for our purposes, a 17-item general political knowledge scale (asking, e.g., "What proportion of Congress is needed to override a presidential veto?"). Our measure of political sophistication is the proportion of correct responses, which for many subsequent analyses we subject to a tertile split (so we may contrast the top and bottom thirds of the sample).

The second part of the experiments, testing for a <u>disconfirmation bias</u>, began with a third administration of the attitude battery as described above, but with the issues flipped across conditions. That is, Ps who rated affirmative action for the information board task now rated gun control, and vice versa. After completing the attitude pre-test measures, Ps were asked to rate the strength of eight arguments, four pro and four con (presented sequentially in random order;

see Figure 1b for a sample strength rating box). Again, Ps were instructed to be even-handed and told that they would be asked to explain the controversy to other students (to maximize accuracy goals). This argument strength rating task was followed by the post-test attitude battery and a recognition memory test. In addition – this the only significant difference between Studies 1 and 2 – the Ps in Study 2 completed a thoughts listing task for 2 pro and 2 con affirmative action or gun control arguments. That is, immediately after rating each of these 4 arguments, participants in Study 2 were asked to list the thoughts they had had while rating the strength of that argument.

Results

Judgments of argument strength. Our first hypothesis, the prior attitude effect, points to the difficulty people have in putting aside their prior feelings and prejudices when evaluating evidence, even when pro and con arguments have been presented to them in a balanced manner, and even when, as here, Ps are instructed repeatedly to "set their feelings aside," to "rate the arguments fairly," and to be as "objective as possible."

As an initial test of the prior attitude effect (Hypothesis 1), we compare the average strength ratings for pro-attitudinal and counter-attitudinal arguments, expecting Ps to rate the congruent stronger than the incongruent arguments. Arguments were rated on a [0,100] scale, with larger values denoting stronger ratings.

[Figure 2 about here]

Figure 2 displays the results in sets of four bars, broken down by study, issue, sophistication, and strength of prior attitudes. Dark bars represent average strength ratings for pro arguments, light bars con arguments; the first pair of bars show the responses of proponents of the issue, and the second pair showing responses of opponents. The prior attitude bias is

indicated wherever we see higher ratings for congruent than incongruent arguments. In other words, we expect proponents to rate pro arguments more highly than they rate con arguments (with the opposite pattern for opponents). Clearly, the prior belief effect is systematic and robust among sophisticates and those who feel the strongest, despite our best efforts to motivate even-handedness (and despite the fact that across these samples and prior pretest samples, the 8 arguments for each issue have statistically equivalent average strength ratings). By contrast with the most knowledgeable and most "crystallized" thirds of our sample, the least sophisticated respondents and those with the weakest prior attitudes on these issues show little or no prior belief effect.

[Table 1 about here]

Table 1 reports regression analyses of the impact of prior attitudes on argument strength ratings, with contrasts for the least and most sophisticated thirds of our samples and those with the weakest and strongest priors.[5] Each P's overall rating of the strength of arguments (our dependent variable) was computed as the sum of ratings of the pro arguments minus the sum of ratings of the con arguments, recoded to [0,1]. To test for a prior attitude bias, we regressed these argument strength ratings on attitude extremity at time 1 (as measured by the 6-item Likert scale described above, recoded to [0,1]). Significant, positive coefficients support the hypothesis: Ps

[5] Though we believe the display of contrasts in Table 1 presents our results most transparently, the proper tests are interactive. All of the contrasts for affirmative action shown in Table 1, when run as proper interaction models, yield significant results for the interaction term. The interactions for gun control are (obviously) not significant for Study 1, where both sophisticates and non-sophisticates were biased; the sophistication interaction is marginally significant for gun control in study 2 ($p<.1$), but the attitude strength interaction is not.

who favor gun control or affirmative action rate congruent arguments as stronger than incongruent arguments, while those opposed see the con arguments as stronger. Table 1 shows a strong prior attitude effect in the predicted direction, with only non-sophisticates and those with weak priors failing to show the effect. Both studies suggest that citizens with even modest political knowledge and moderately strong beliefs find it difficult to lay their prior attitudes aside, even when they are asked to be even-handed.[6]

A disconfirmation bias. In addition to the prior belief effect, we predict a disconfirmation bias whereby people will too readily accept confirmatory arguments more or less at face value but actively counter-argue attitudinally incongruent evidence (Hypothesis 2). Moreover, like the prior belief effect we expect this bias to vary with sophistication and strength of prior attitude. Our experimental design allows multiple tests for these predictions. If indeed people actively challenge attitudinally incongruent arguments, we would expect them to take more time processing counter-attitudinal arguments than pro-attitudinal arguments, and to spend the extra time denigrating, deprecating, and counter-arguing the incongruent arguments.

Unbeknownst to the Ps, as they read the 8 arguments the computer kept track of the time that elapsed from when they clicked open an argument until they submitted their strength rating. This reading time variable provides an initial test of the disconfirmation bias. Because the pattern of results is the same for both the affirmative action and gun control arguments, we report analyses for the two issues combined in Figure 3. Clearly, Ps in both studies across both issues did take longer to read and process attitudinally challenging arguments. When averaging across

[6] Note that these findings are not restricted to the elite top strata of the American electorate. To qualify as a sophisticate in our sample, for example, one had only to answer correctly about half of our simple civics-type questions.

all participants this difference was fairly small (on the order of 1-2 seconds), but the contrast becomes significantly greater for sophisticates and those with stronger prior attitudes (4-7 seconds, or a 25-50% increase in processing time for attitudinally incongruent arguments). Finally, it is interesting to note that unsophisticated participants with weak prior attitudes actually spent longer processing congruent arguments, which suggests a confirmatory bias for those participants who lack the resources and motivation to disconfirm challenging arguments.

[Figure 3 about here]

What were the Ps doing with the extra time spent reading the contrary arguments? To explore this question, we asked participants in Study 2 to list their thoughts for 4 of the 8 arguments they rated, 2 pro and 2 con.[7] Our theoretical expectation is that whereas most Ps quickly (and relatively thoughtlessly) assimilate supporting arguments, they more actively process contrary arguments, generating thoughts that denigrate or counter these arguments and bolster their prior convictions. We carried out a direct test of this disconfirmation hypothesis by examining the content of the thoughts Ps listed in response to the 2 pro and 2 con arguments for each issue. We coded each thought into one of 7 categories (following Edwards & Smith, 1996) and then aggregated these codes into 3 basic response types: affect, including general affect for the argument, for the evidence, and for the conclusion; new information, including a new fact not present in the argument or a new argument; and comments about the evidence or about the source. And of course each thought was coded as denigrating or bolstering the presented argument.

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[7] Half performed this task immediately, while the other half did so only after completing the posterior attitude items. This allowed us to see whether the act of listing one's thoughts had any significant impact on polarization. It did not, and we pool all thought-listing data.

[Figure 4 about here]

Figure 4 depicts these data graphically for both issues combined, breaking down the mean number of thoughts by congruence and sophistication. On average, Ps made 2 ½ comments per argument (for a total of 10 thoughts across the 4 arguments), but there were considerable differences across participants. Perhaps not surprisingly, sophisticated participants produced many more thoughts overall than did their less knowledgeable peers. More interesting, as predicted incongruent arguments elicited far more thoughts than did congruent ones, and these were almost entirely denigrating. Both sophisticated and unsophisticated participants showed this basic pattern of bolstering congruent arguments while denigrating incongruent ones, though sophisticates were clearly most biased. Finally, although we had asked Ps to leave their feelings aside and to concentrate on what made the arguments weak or strong, it is interesting that a goodly number of Ps made simple, content free affective statements (the darkest portion of each bar), to the effect "I like (don't like) this argument or conclusion" or simply said they liked or disliked the facts or figures supporting an argument. The more demanding types of thinking responses were the introduction of a new fact or an original argument (medium gray) and a comment on the source or quality of the evidence (light gray). In both instances the new evidence brought to mind was overwhelmingly congruent with their priors. Overall, this pattern perfectly conforms to our expectations about disconfirmation.

We performed a mixed-model ANOVA on the number of thoughts generated, with sophistication as a between subjects variable and argument type (congruent or not) and response type (bolster or denigrate) as within subjects variables. The results from this analysis strongly confirm the pattern reported above, with significant main effects for sophistication, $F(1,89)=6.37$, $p=.013$, and argument congruency, $F(1,88)=4.57$, $p=.045$. Moreover, there was a

highly significant two-way interaction between argument congruency and response type, $F(1,88)=10.05$, $p=.002$, and a significant three-way interaction between congruency, response type, and sophistication, $F(1,88)=4.07$, $p=.047$, such that sophisticates even more than unsophisticates tend to denigrate incongruent arguments and bolster congruent ones.

A confirmation bias. In both experiments, we tested the hypothesis that when given a chance to pick and choose what information to look at – rather than when presented with pro and con arguments – people will actively seek out sympathetic, non-threatening sources (Hypothesis 3). Both in the "real world" (where Volvo owners read Volvo ads) and in the lab using the information board, citizens can simply choose to selectively look or not look at information from the opposing side. It bears repeating that this selective exposure hypothesis has met with mixed empirical results in the psychological literature. We believe that this failure to clearly confirm one of the classic expectations of the cognitive dissonance tradition is at least partly due to the affectively tepid issues and arguments that have often been used to test it (Edwards & Smith, 1996). We expect to find evidence of the confirmation bias with the more contentious and challenging political issues and arguments found in real-world politics.

Recall that in part 1 of both experiments Ps were shown a computerized information board in which each row of a matrix of 16 policy arguments was labeled with a well-known opinion source for the given issue (Figure 1a). As always, instructions were designed to maximize accuracy goals and minimize partisan bias (see Appendix). The most direct measure of bias in search is the proportion of pro-attitudinal hits out of the eight arguments looked at. Figure 5 displays these data graphically by study, issue, and sophistication. For all groups examined, proponents of the issue sought out more supporting than opposing arguments, and this difference was quite substantial for sophisticates in both studies and for both issues. When given

the chance, sophisticated respondents selected arguments from like-minded groups 70-75% of the time. For example, on average sophisticated opponents of stricter gun control sought out 6 arguments of the NRA or the Republican Party and only 2 arguments from the partisan opposition.

Table 2 presents the results from a regression of this bias measure on t_1 attitude extremity for both studies and both issues. The results are straightforward and confirm the pattern in Figure 5: Ps were more likely to read the argument of a sympathetic source than to expose themselves to an opposing point of view. Supporters of gun control or affirmative action were significantly more likely to search out the arguments of "their" issue groups (e.g., Citizens Against Handguns or the NAACP). As expected, these results are particularly pronounced for sophisticates, where, for example, every 10% increase in support for affirmative action in study 1 led to a 7.78% increase in the proportion of pro-affirmative action hits on the information board. By contrast, the results for strength of priors were mixed at best.[8]

As an interesting side note, we also recorded the reading times for Ps in the information board task, expecting a replication of our disconfirmation bias for Ps who did open counter-attitudinal arguments. This is what we found. On average across both experiments, Ps spent about 2 seconds longer reading incongruent arguments, with sophisticates spending more than 5 seconds longer when considering an argument from the opposition.

Attitude polarization. All of these mechanisms – the prior attitude effect, the disconfirmation bias, and the confirmation bias – should theoretically lead to attitude

[8] We also estimated fully interactive regression models to directly test the contrasts in Table 2, finding significant sophistication interactions across the board, but as suggested in Table 2, inconsistent results for the strength of prior attitudes interactions.

polarization, because they deposit more supportive evidence and affect in memory (both in on-line evaluations and in the associated cognitions that may provide the grist for memory-based processing). Our theory suggests that those on either side of the issues should become more attitudinally extreme in their positions, despite the fact that they were exposed to the same balanced stream of information. As we have already noted, concerted efforts by psychologists to find attitude polarization in bias studies have largely failed when they have used the appropriate direct measures of attitude change.

To test the polarization hypothesis, we regressed t_2 attitude extremity on t_1 extremity. Coefficients significantly greater than 1 indicate polarization (that is, each unit movement on the t_1 attitude scale corresponds to more than a unit increase on the t_2 scale).[9] As always, we report contrasts by sophistication and strength of prior attitude; we also consider contrasts of the top and bottom thirds of the sample in degree of bias in the given processing mechanisms. That is, we perform a tertile split on the variables that measure confirmation and disconfirmation biases – the proportion of pro-attitudinal hits in the information board task and the average pro minus average con ratings in the argument strength task, respectively – and contrast the top and bottom thirds.

[Table 3 about here]

[9] If respondents gave the same responses on the post-test as they did on the pre-test, a regression of the form, Posttest = $\beta_o + \beta_1$(Pretest) + ε, would yield $\beta_o = 0$ and $\beta_1 = 1$. $\beta_1 > 1$ provides evidence of polarization. $0 < \beta_1 < 1$ would show moderation – that is, individuals do not change their opinion, but their attitude on the post-test was weaker than on the first query. Finally, $\beta_1 < 0$ would indicate persuasion – people have changed their opinion on the issue.

Pooling the data from both studies (for statistical power), we find strong evidence of attitude polarization for sophisticated participants, those with strong priors, and (most importantly) those who were biased in their information processing. We find polarization across both tasks and both issues (indeed, only one of twelve expected cells in Table 3 fails to achieve significance – strong priors for gun control in the information board task).[10] Looking at the most sophisticated third of the sample who rated affirmative action arguments, for example, the regression slope (1.268) indicates that those with positive priors had even more positive posteriors, while those with negative priors had even more negative posteriors (on average, 27% more extreme). By contrast, unsophisticates and those with weak priors did not polarize (unsophisticates who rated the strength of affirmative action arguments present the one exception to this pattern).

Finally and most important, we find substantial polarization among participants who processed information in a biased manner, but not among those who were less biased. This finding directly and clearly links the processes of motivated skepticism to attitude polarization as our theory predicts, something that previous research has not been able to do. Those participants whose argument strength ratings were most skewed by disconfirmation biases had significantly more extreme attitudes on affirmative action and gun control after rating the arguments, while those whose ratings were more evenhanded showed no significant attitude polarization. Similarly, confirmation biases – seeking out attitudinally consistent arguments while avoiding inconsistent arguments in the information board – led to more extreme attitudes as compared to the least biased participants for both issues.

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[10] As with earlier analyses, fully interactive models confirm the pattern of contrasts shown in Table 3.

In short, despite our best efforts to promote the evenhanded treatment of policy arguments in our studies, we find consistent evidence of directional partisan bias – the prior attitude effect, disconfirmation bias, and confirmation bias – with a substantial attitude polarization as the result. Our participants may have tried to be evenhanded, but they found it impossible to be fair-minded.

General Discussion

Get your facts first, and then you can distort them as much as you please.

Mark Twain

Our studies show that people are unable to escape the pull of their affect; one's prior attitudes guide the processing of new information in predictable and sometimes insidious ways:

- First, people simply see information that they agree with as stronger, more relevant evidence than information with which they disagree (the prior attitude effect);
- Second, when processing pro and con information on an issue, people actively denigrate the information with which they disagree while accepting compatible information almost at face value (the disconfirmation bias);
- Third, when given some control over the source of information, people seek out confirmatory information and avoid that which they expect might challenge their priors (the confirmation bias);
- Fourth, all three of these biases provide pro-attitudinal information to the on-line impression updating process, such that attitudes become more extreme (polarization); the result is that the same stream of balanced pro and con information leads partisans to diverge in their attitudes;

- Finally, all of these biases are particularly pronounced for citizens with knowledge and strong prior attitudes, the very folks on whom democratic theory relies most heavily.

In short, we find evidence of a "dark side" to motivated political reasoning: subtle and not-so-subtle biases that affect how people with strong prior attitudes, especially the most sophisticated, think and reason about political issues.

So what does this mean for citizens in a democracy? From one perspective the average citizen would appear to be both cognitively and motivationally incapable of fulfilling the requirements of rational behavior in a democracy. Far from the rational calculator portrayed in enlightenment prose and spatial equations, *homo politicus* would seem to be a creature of simple likes and prejudices. Can this possibly be rational? Sometimes yes, other times no. Even the most sophisticated among us rely on heuristics and shortcuts (Lau & Redlawsk, 2001; Lupia, 1994; Popkin, 1994; Rahn, 2000; Sniderman, Brody, & Tetlock, 1991), which greatly reduce the amount of information that needs to be processed. But what if, as proposed here, we had a heuristic that provided a summary judgment of things political, one that kept a running tally of most or all of the information we evaluated in the past? That is, what if citizens were capable of "high information rationality" after all (Taber, 2003)? And what if this affective heuristic were "hard wired" into our cognitive architecture (Cacioppo & Gardner, 1999; Damasio, 1994; LeDoux, 1996)? Citizens would have no need to compute a spatial model of preference at the time of voting (our discipline's dominant representation of rationality), but could rely on the much simpler affective tallies that are responsive to the information they attend to (Rabinowitz & MacDonald, 1989).

Unfortunately, though our tripartite model may prove to be a decent portrayal of how summary evaluations are formed, and will hopefully confirm earlier research showing that the

affect deposited in an OL tally is a fair representation of one's prior evaluations (Lodge, Steenbergen, & Brau, 1995), the rationality problem appears to be within the evaluation process itself. Given our results it appears that we are not fair-minded in how we interpret attitude-relevant evidence and not fair-handed in how we integrate that evidence. How rational then is one's attitudinal heuristic? Is it perhaps less responsive to the information environment than to preconception? The normative question, it seems, turns on whether the processing of new information and the updating of one's attitude needs to be independent of one's priors.

From one point of view with which we are sympathetic, it can be argued that the attitude strength effect and disconfirmation bias are rational responses to attitude-relevant information; it is perfectly reasonable to give heavy weight to one's own carefully constructed attitudes. This perspective, which would substitute the word "skepticism" wherever "bias" appears in this paper, suggests that beliefs and attitudes may be thought of metaphorically as possessions to be protected (Abelson & Prentice, 1989). This belief, this feeling, is mine! Like other possessions we paid a purchasing price in terms of time and cognitive resources spent forming and updating our impressions, and as with our worldly possessions we may rationally defend against their loss. Many political attitudes, especially those linked to identity (Conover, 1988), are worthy of such defense in their own right. To the extent one's attitude reflects considerable prior thought, it may well be more trustworthy than new information, especially if – as is so often the case in the political realm – that new information reflects the strategic behavior of political opponents. Simply put, if one thinks (more pointedly, feels) that the veracity of the evidence is dubious, the opposition is wrong, or the media hostile, then why pay them heed? Finally, there is value for democracy in attitude stability, so it also may be possible to defend such skepticism on aggregate grounds.

From another perspective, with which we also have sympathy, Bayesian updating requires independence between priors and new evidence (Evans & Over, 1996; Green & Shapiro, 1994; but see Gerber & Green, 1998). In the extreme, if one distorts new information so that it always supports one's priors, one cannot be rationally responsive to the environment; similarly, manipulating the information stream to avoid any threat to one's priors is no more rational than the proverbial ostrich.

For many citizens, perhaps, the bias may be less extreme, but there are certainly ideologues and bigots who fit both of these descriptions. Luker (1984), for example, found that attitudes among abortion activists are so linked to their beliefs and feelings about sexuality, gender, religion, and family, that they have become completely incapable of entertaining points of view that challenge their own. Sears and Whitney (1973) have found similar stubborn adherence to prior attitudes among those watching a political debate. Our own evidence, presented above, presents a compelling case that motivated biases come to the fore in the processing of political arguments even for non-zealots.

On the other hand and contrary to the intuitions of normative theory (but consistent with the predictions of cognitive psychology), we do find that those with weak and uninformed attitudes show less bias in processing political arguments. This finding may tempt the conclusion that objectivity and moderation (along with tolerance and openness to information) rest more on ignorance and apathy than on the elite skills of ideal citizens. Perhaps we have been looking for rational citizenship in all the wrong places, and it is the great unwashed who might save democracy! Provocative though it may be, this interpretation does not stand up to normative, theoretical, or empirical scrutiny. First, we find no empirical evidence of principled moderation among the bottom or middle thirds of our sample, whose extremity scores were

statistically indistinguishable from those of the most sophisticated participants. Second, our theory predicts less bias for unsophisticated and uncommitted respondents not because they possess a greater sense of even-handedness, but rather because they lack the motivation and ability to engage in attitude defense. Finally, this same lack of motivation and knowledge undermines the ability to apply individual preferences to public policy that underlies a normatively secure democracy, so it would be a dysfunctional objectivity at best.

If we push either side of the rationality argument too strongly we end up playing the clown. So how do we reconcile these positions? Skepticism is valuable and attitudes should have inertia (note that a simple anchoring and adjustment model gives prior beliefs added weight). But skepticism becomes bias when it becomes unreasonably resistant to change and especially when it leads one to avoid information as with the confirmation bias. And polarization seems to us difficult to square with a normatively acceptable model (especially since the supporters and opponents in the policy debate will diverge after processing exactly the same information). Moreover, up to some tipping point for persuasion, our model predicts polarization even from unbalanced and counter-attitudinal streams of information (see also Rahn, Aldrich & Borgida, 1993; Redlawsk, 2002).

How we determine the boundary line between rational skepticism and irrational bias is a critical normative question, but one that empirical research may not be able to address. Research can explore the conditions under which persuasion occurs (as social psychologists have for decades), but it cannot establish the conditions under which it should occur. It is, of course, the latter question that needs answering if we are to resolve the controversy over the rationality of motivated reasoning.

References

Abelson, Robert P. (1963). "Computer Simulation of 'Hot' Cognition." In Tomkins and Messick (Eds.), *Computer Simulation of Personality*. New York: Wiley, 277-298.

Abelson, Robert P., Elliot Aronson, William J. McGuire, Thomas M. Newcomb, M.J. Rosenberg, & P.H. Tannenbaum, eds. (1968). *Theories of Cognitive Consistency: A Sourcebook*. Chicago: Rand McNally.

Abelson, Robert P. & D.A. Prentice (1989). "Beliefs as Possessions: A Functional Perspective." In A.R. Pratkanis, S.J. Breckler, and A.G. Greenwald (Eds.), *Attitude Structure and Function*. Hillsdale, NJ: Erlbaum, pp. 361-381.

Ailes, Roger (1995). *You are the message: Getting what you want by being who you are*. New York: Doubleday.

Aldrich, John, John Sullivan, & Eugene Borgida (1989). "Foreign Affairs and Issue Voting: Do Presidential Candidates 'Waltz before a Blind Audience'?" *American Political Science Review*, 83, 123-142.

Anderson, Norman H. (1981). *Foundations of Information Integration Theory*. San Diego, CA: Academic Press.

Anderson, Norman, & Stephan Hubert (1963). "Effects of Concomitant Recall on Order Effects in Personality Impression." *Journal of Verbal Learning and Verbal Behavior* 2: 379-391.

Ansolabehere, Stephen & Shanto Iyengar (1995). *Going Negative: How Political Advertising Shrinks and Polarizes the Electorate*. New York: Free Press.

Bargh, John (1997). "The Automaticity of Everyday Life." In Robert Wyer (Ed.), *Advances in Social Cognition* (Vol. 10). Mahwah, NJ: Erlbaum.

Baron, Jonathan (1994). *Thinking and Deciding*. New York: Cambridge University Press.

Bassilli, John N. & J.P. Roy (1998). "On the Representation of Strong and Weak Attitudes About Policy in Memory," *Political Psychology* 19: 669-81.

Baumeister, Roy F. & L.S. Newman (1994). "Self-Regulation of Cognitive Inference and Decision Processes." *Personality and Social Psychology Bulletin*, 20(1): 3-19.

Cacioppo, John & Wendi Gardner (1999). "Emotion." *Annual Review of Psychology*, 50: 191-214.

Chaiken, Shelly & Yaacov Trope, eds. (1999). *Dual Process Theories in Social Psychology*. New York: Guilford Press.

Cobb, Michael D. & James H. Kuklinski (1997). "Changing Minds: Political Arguments and Political Persuasion." *American Journal of Political Science* 41: 88-121.

Conover, Pamela Johnston (1988). "The Role of Social Groups in Political Thinking." *British Journal of Political Science* 18(1): 51-76.

Crites, Stephen L., John T. Cacioppo, Wendi Gardner, & G.G. Berntson (1995). "Bioelectrical Echoes from Evaluative Categorization." *Journal of Personality and Social Psychology*, 68: 997-1013.

Damasio, Antonio (1994). *Descartes' Error: Emotion, Reason and the Human Brain*. New York: Grosset/Putnam.

Damasio, Antonio (2002). *Looking for Spinoza: Joy, Sorrow, and the Feeling Brain*. New York: Harcourt.

Ditto, P.H., & D.F. Lopez (1992). "Motivated Skepticism: Use of Differential Decision Criteria for Preferred and Nonpreferred Conclusions." *Journal of Personality and Social Psychology*, 63(4), p. 568-584.

Ditto, P. H., J.A. Scepansky, G.D. Munro, A.M. Apanovitch, & L.K. Lockhart (1998).

"Motivated Sensitivity to Preference-Inconsistent Information." *Journal of Personality and Social Psychology*, 75: 53-69.

Eagly, Alice H., & Shelly Chaiken (1993). *The Psychology of Attitudes*. Fort Worth, TX: Harcourt Brace Jovanovich,

Eagly, Alice H. & Shelly Chaiken (1998). "Attitude Structure and Function." In Daniel T. Gilbert, Susan T. Fiske, and Gardner Lindzey (Eds.), *The Handbook of Social Psychology* (4th edition). Boston: McGraw-Hill.

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

Evans, Jonathan St.B.T. & David E. Over (1996). *Rationality and Reasoning*. Hove: Psychology Press.

Fazio, Russell, David Sanbonmatsu, Martha Powell & Frank Kardes (1986). "On the Automatic Activation of Attitudes," *Journal of Personality and Social Psychology*, 50(2): 229-238.

Festinger, Leon (1957). *A Theory of Cognitive Dissonance*. Stanford, CA: Stanford University Press.

Fiske, Susan T. & S.L. Neuberg (1990). "A Continuum of Impression Formation, From Category-Based to Individuating Processes: Influences of Information and Motivation on Attention and Interpretation." In Mark P. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 23). San Diego, CA: Academic Press, 1-74.

Fiske, Susan & Shelley Taylor (1991). *Social Cognition* (2nd Ed.). New York: McGraw-Hill.

Freedman, Jonathan L. & David O. Sears (1965). "Selective Exposure." In Leonard Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. 2). San Diego, CA: Academic Press, 57-97.

Frey, D. (1986). "Recent Research on Selective Exposure to Information." In Leonard Berkowitz, ed., *Advances in Experimental Social Psychology* (Vol 19, pp. 41-80). New York: Academic Press.

Gamson, William (1992). *Talking Politics*. Cambridge, : Cambridge University Press.

Gerber, Alan & Donald Green (1998). "Misperceptions about Perceptual Bias." Paper presented at 1998 Annual Meeting of the Midwest Political Science Association, Chicago, Illinois.

Glanz, James (2000). "Survey Finds Support is Strong for Teaching 2 Origin Theories," *The New York Times*, p. A-1, March 11.

Green, Donald & Ian Shapiro (1994). *Pathologies of Rational Choice Theory: A Critique of Applications in Political Science*. New Haven, CT: Yale.

Greenwald, A.G., Banaji, M.R., Rudman, L.A., Farnham, S.D., Nosek, B.A., & Mellott, D.S. (2002). A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept. Psychological Review, 109, 3-25.

Iyengar, Shanto & Donald Kinder (1987). *News That Matters: Television and American Opinion*. Chicago: University of Chicago Press.

Koehler, Jonathan J. (1993). "The Base Rate Fallacy Myth." Psycoloquy: 4,#49.

Kruglanski, Arie & Donna Webster (1996). "Motivated Closing of the Mind: 'Seizing' and 'Freezing'." *Journal of Personality and Social Psychology,* 103(2): 263-283.

Kuhn, D., & J. Lao (1996). "Effects of Evidence on Attitudes: Is Polarization the Norm?" *Psychological Sciences* 7:115-120.

Kunda, Ziva (1987). "Motivated inference: Self-serving generation and evaluation of causal theories." *Journal of Personality and Social Psychology*, 53: 636-647.

Kunda, Ziva (1990). The Case for Motivated Reasoning. *Psychological Bulletin* 108(3): 480-

498.

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

Lavine, Howard, Eugene Borgida , & John L. Sullivan (2000). "On the Relationship between Attitude Involvement and Attitude Accessibility: Toward a Cognitive-Motivational Model of Political Information Processing." *Political Psychology*, 21: 81-106.

Lavine, Howard, Cynthia J. Thomsen, Mark P. Zanna, & Eugene Borgida (1998). "On the Primacy of Affect in the Determination of Attitudes and Behavior: The Moderating Role of Affective-Cognitive Ambivalence." *Journal of Experimental Social Psychology* 34: 398-421.

LeDoux, Joseph E. (1994). "Emotion, Memory and the Brain." *Scientific American*, 270: 50-57.

LeDoux, Joseph E. (1996). *The Emotional Brain: The Mysterious Underpinnings of Emotional Life*. New York: Simon & Schuster.

Lodge, Milton, Marco Steenbergen, & Shawn Brau (1995). "The Responsive Voter: Campaign Information and the Dynamics of Candidate Evaluation." *American Political Science Review* 89: 309-326.

Lodge, Milton & Patrick Stroh (1993). "Inside the Mental Voting Booth: An Impression-driven Model." In Shanto Iyengar & William McGuire (Eds.), *Explorations in Political Psychology*. Durham, NC: Duke University Press.

Lodge, Milton, Kathleen McGraw & Patrick Stroh (1989). "An Impression Driven Model of Candidate Evaluation." *American Political Science Review*, 83, 99-119.

Lodge, Milton, & Charles Taber (2000). "Three Steps Toward a Theory of Motivated Political

Reasoning." In Arthur Lupia, Mathew McCubbins, & Samuel Popkin (Eds.), *Elements of Reason: Cognition, Choice, and the Bounds of Rationality*. New York: Cambridge University Press, pp. 183-213.

Lodge, Milton, & Charles Taber (forthcoming). "Implicit Affect for Political Candidates, Parties, and Issues: An Experimental Test of the Hot Cognition Hypothesis." *Political Psychology*.

Lord, Charles, Ross, M., & Mark Lepper (1979). "Biased Assimilation and Attitude Polarization: the Effects of Prior Theories on Subsequently Considered Evidence." *Journal of Personality and Social Psychology* 27: 2098-2109.

Lord, Charles G. (1992). "Was Cognitive Dissonance Theory a Mistake?" *Psychological Inquiry* 3: 339-342.

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

Luker, K. (1984). *Abortion and the Politics of Motherhood*. Berkely: University of California Press.

Marcus, George (1988). "The Structure of Emotional Response*." American Political Science Review* 82: 737-761.

Marcus, George (2000). "Emotions in Politics*," Annual Review of Political Science*, 3: 221-250.

Miller, Arthur G., John W. McHoskey, Cynthia M. Bane, & Timothy G. Dowd (1993). "The Attitude Polarization Phenomenon: Role of Response Measure, Attitude Extremity, and Behavioral Consequences of Reported Attitude Change." *Journal of Personality and Social Psychology* 64: 561-574.

Newman, Russel, Marion Just, & Ann Crigler (1992). *Common Knowledge: News and the*

Construction of Political Meaning. Chicago: University of Chicago Press.

Oakhill, J., & P.N. Johnson-Laird (1985). "The Effect of Belief on the Spontaneous Production of Syllogistic Conclusions." *Quarterly Journal of Experimental Psychology*, 37A, 553-570.

Petty, Richard E. & John T. Cacioppo (1981). *Attitudes and Persuasion: Classic and Contemporary Approaches*. Dubuque, IA: Brown.

Petty, Richard E. & John T. Cacioppo (1986). *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*. New York: Springer-Verlag.

Petty, Richard E., John T. Cacioppo, & R. Goldman (1981). "Personal Involvement as a Determinant of Argument-Based Persuasion. *Journal of Personality and Social Psychology* 41: 847-855.

Petty, Richard E., and Jon Krosnick, eds. (1995). *Attitude Strength: Antecedents and Consequences*. Hillsdale, NJ: Lawrence Erlbaum.

Petty, Richard E., and Duane T. Wegener (1998). "Attitude Change: Multiple Roles for Persuasion Variables." In Daniel T. Gilbert, Susan T. Fiske, and Gardner Lindzey (Eds.), *The Handbook of Social Psychology* (4th edition). Boston: McGraw-Hill.

Pomerantz, Eva M., Shelly Chaiken, & Rosalind S. Tordesillas. (1995). "Attitude Strength and Resistance Processes." *Journal of Personality and Social Psychology* 69: 408-419.

Popkin, Samuel (1994). *The Reasoning Voter: Communication and Persuasion in Presidential Campaigns*. Chicago: University of Chicago Press.

Pyszczynski, Thomas & Jeffrey Greenberg (1987). "Self-regulatory Perseveration and the Depressive Focusing Style: A self-awareness Theory of Reactive Depression." *Psychological Bulletin*, 102: 122–138.

Rabinowitz, George & Stuart MacDonald (1989). "A Directional Theory of Issue Voting. *American Political Science Review*, 83, 93-121.

Rahn, Wendi (2000). "Affect as Information: The Role of Public Mood in Political Reasoning." In Arthur Lupia, Mathew McCubbins, & Samuel Popkin (Eds.), *Elements of Reason: Cognition, Choice, and the Bounds of Rationality.* New York: Cambridge University Press, pp. 130-150.

Rahn, Wendy, John Aldrich, & Eugene Borgida (1993). "Individual and Contextual Variations in Political Candidate Appraisal." *American Political Science Review*, 88: 193-199.

Redlawsk, David (2001). "Hot Cognition or Cool Consideration: Testing the Effects of Motivated Reasoning on Political Decision Making." *Journal of Politics*, 64: 1021-1044.

Sears, David O., and R. E. Whitney (1973). *Political Persuasion*. Morristown, NJ: General Learning Press.

Sniderman, Paul, Richard Brody & Philip Tetlock (1991). *Reasoning and Choice: Explorations in Political Psychology*. New York: Cambridge University Press.

Taber, Charles S. (2003). "Information Processing and Public Opinion." In David O. Sears, Leonie Huddy, and Robert Jervis (Eds.), *The Handbook of Political Psychology*.

Taber, Charles, Milton Lodge, & Jill Glather (2001). "The Motivated Construction of Political Judgments." In James Kuklinski (Ed.), *Citizens and Politics: Perspectives from Political Psychology*. New York: Cambridge University Press, pp. 198-226.

Wicklund, R.A., & J.W. Brehm. (1976). *Perspectives on Cognitive Dissonance*. Hillsdale, NJ: Erlbaum.

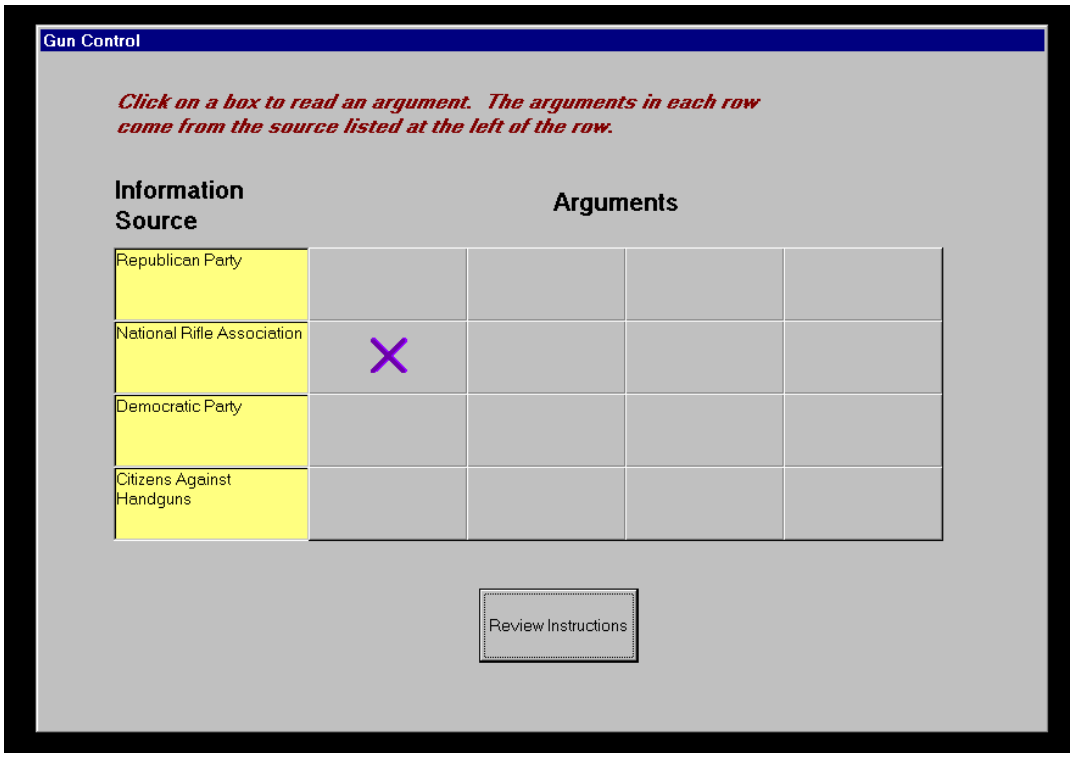
Zajonc, Robert (1980). "Feeling and Thinking: Preferences Need No Inferences. American Psychologist, 39: 151-175.

Zajonc, Robert (1984). “On the Primacy of Affect.” *American Psychologist* 39: 117-123.

Zaller, John (1992). *The Nature and Origins of Mass Publics*. Cambridge, Cambridge University Press.

Zaller, John & Stanley Feldman (1992). “A Simple Theory of the Survey Response: Answering Questions Means revealing Preferences. *American Journal of Political Science* , 36: 579-618.

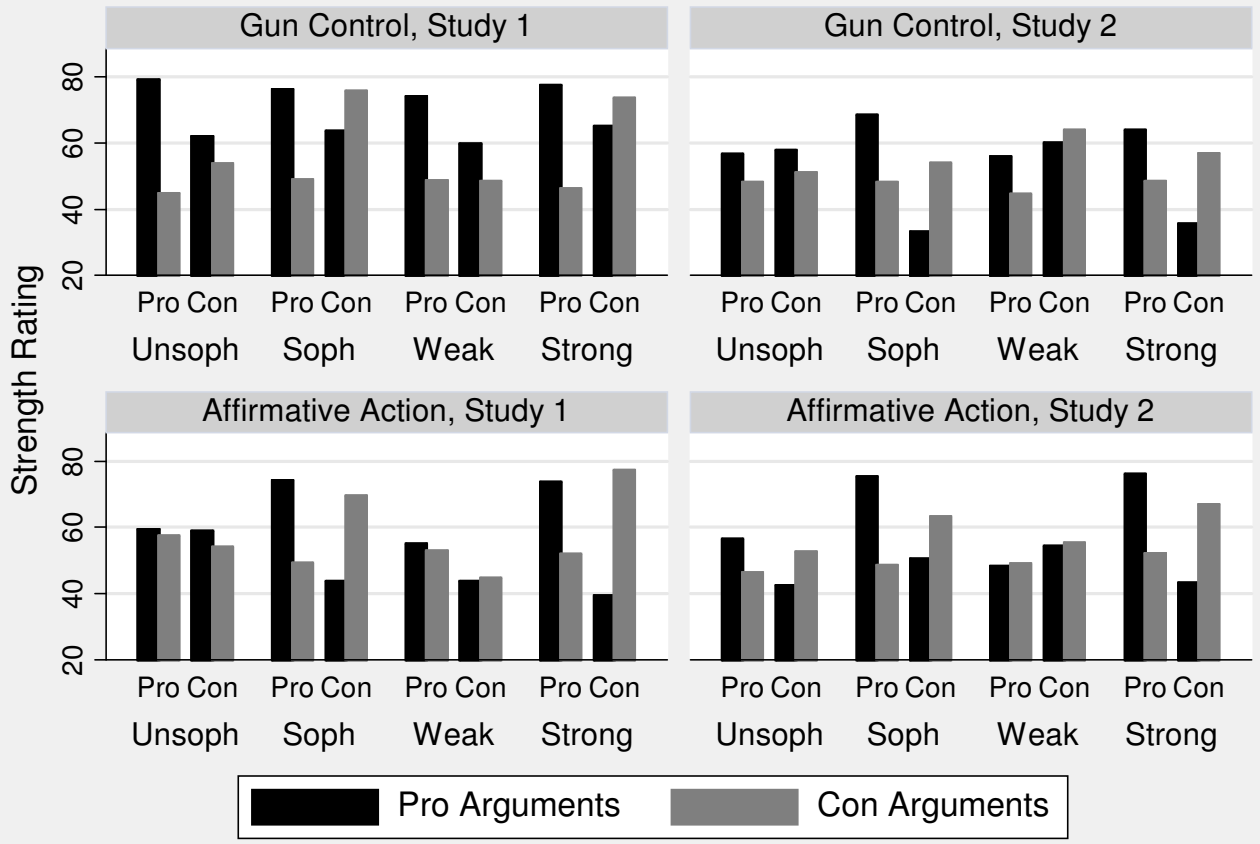
Figure 1: The Primary Experimental Tasks



(a) Information Board

(b) Argument Strength Rating Box

Figure 2: Argument Strength Ratings, by Sophistication and Strength of Prior



Data from both studies

Figure 3: Read Times for Argument Strength Ratings

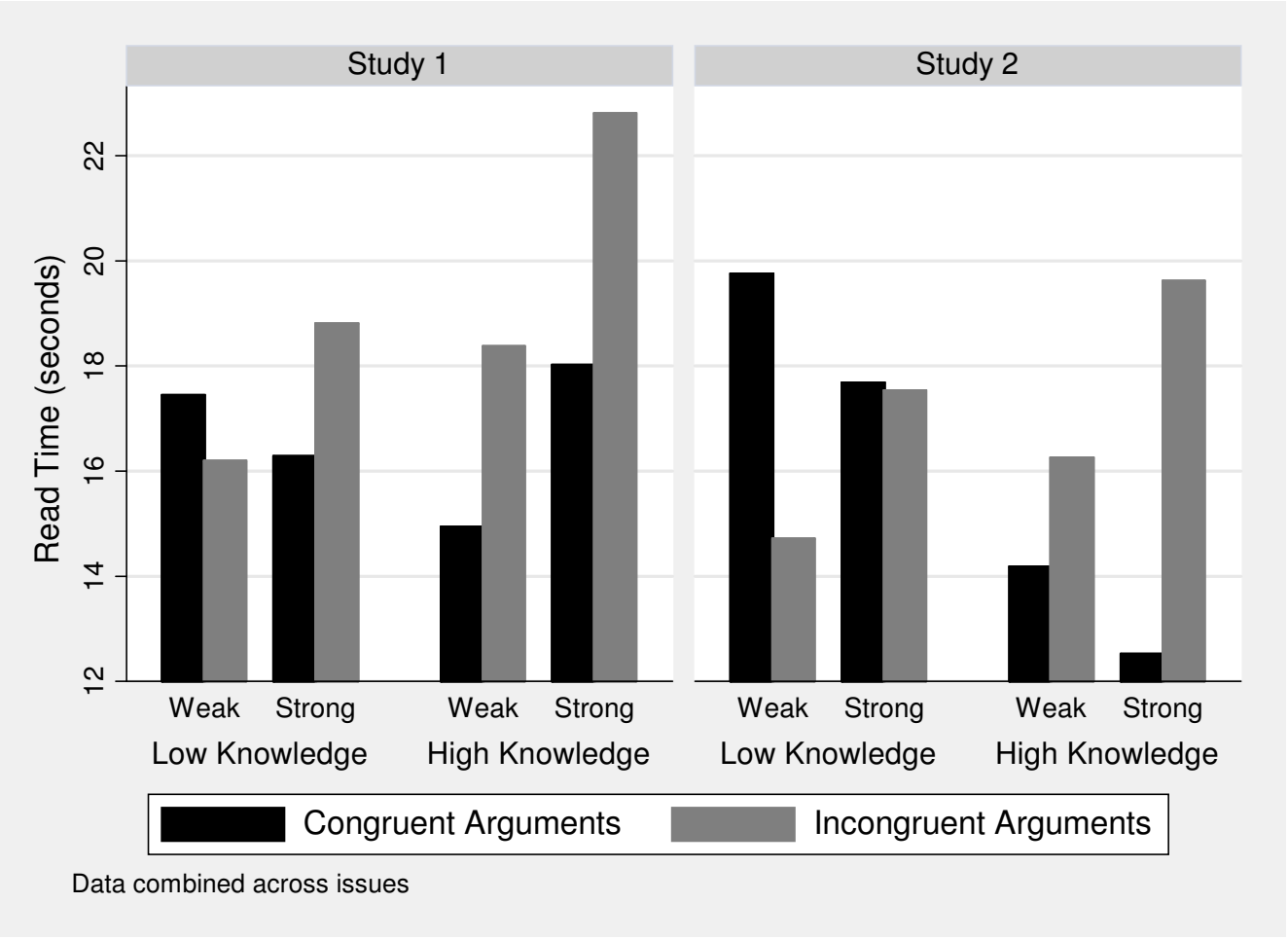
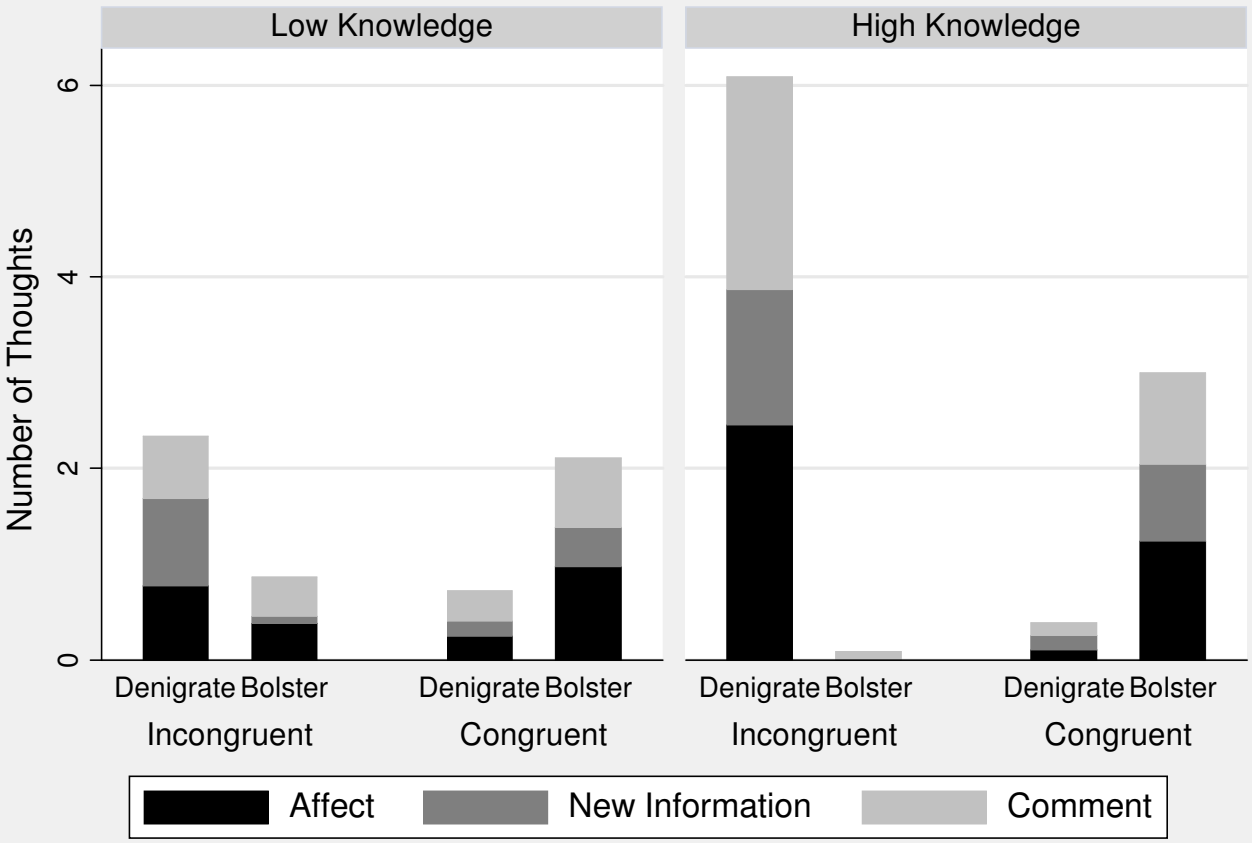


Figure 4: Mean Number of Thoughts for Congruent and Incongruent Arguments



Data from Study 2 across both issues

Figure 5: Proportion of Pro-Attitudinal Hits in Free Search

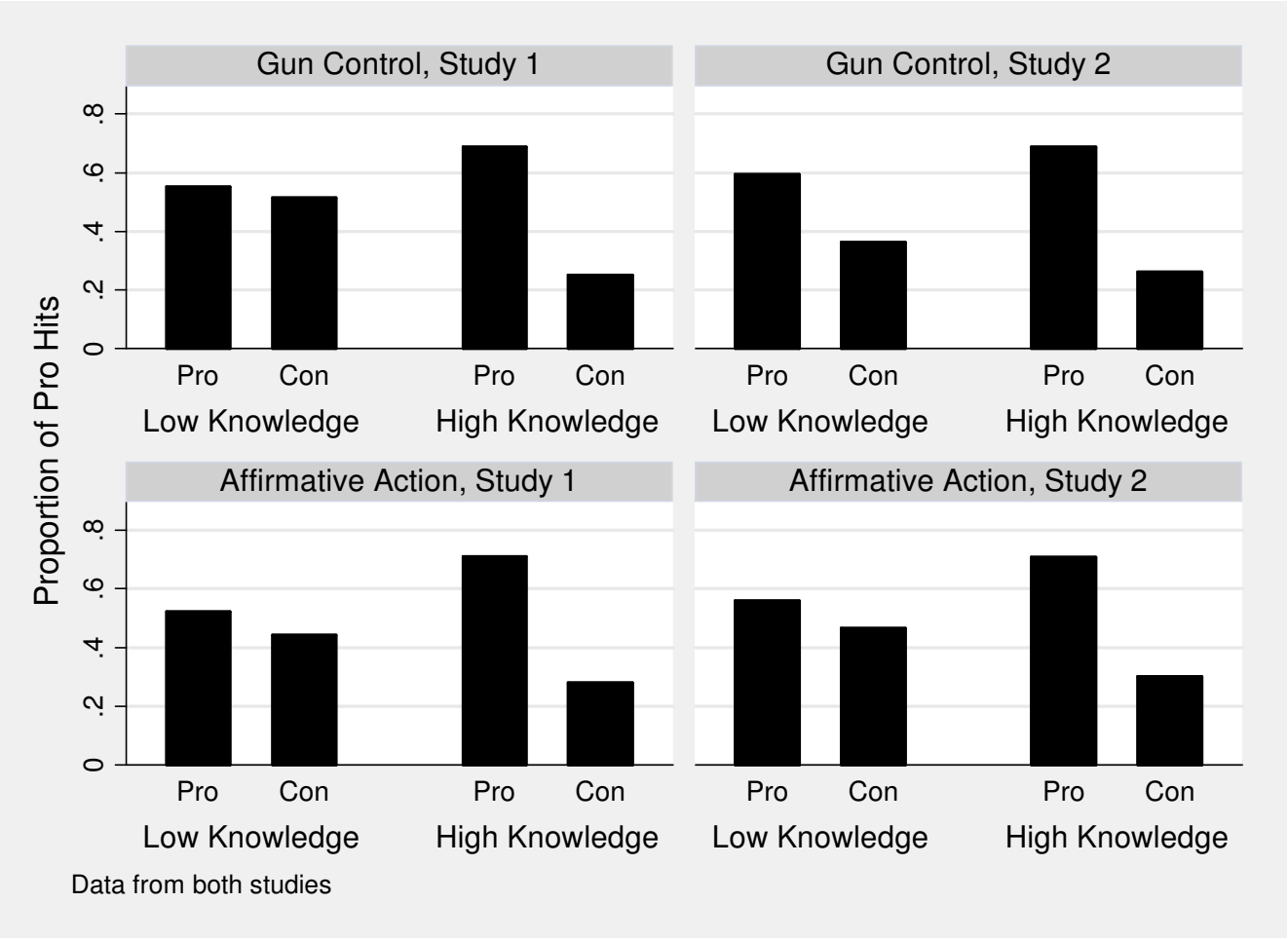


Table 1: Regressions of Argument Strength Ratings on Prior Attitudes

		All Participants	Least Sophisticated	Most Sophisticated	Weak Priors	Strong Priors
Study 1: Affirmative Action	R^2	.232	.075	.527	.006	.510
	B	**.415(.102)*** **	-.234(.212)	**.667(.135)*** **	.078(.250)	**.646(.164)*** **
	N	57	17	24	19	17
Gun Control	R^2	.302	.390	.535	.054	.335
	B	**.471(.093)*** **	**.691(.204)** **	**.632(.143)*** **	**.479(.154)** **	**.537(.161)** **
	N	61	20	19	19	24
Study2: Affirmative Action	R^2	.282	.255	.322	.009	.511
	B	**.381(.075)*** **	.257(.172)	**.513(.114)*** **	.047(.117)	**.494(.104)*** **
	N	67	20	24	20	22
Gun Control	R^2	.195	.023	.333	.084	.220
	B	**.331(.083)*** **	.103(.143)	**.477(.151)** **	.261(.199)	**.289(.116)* **
	N	68	24	22	21	24

Note: This table reports unstandardized coefficients with standard errors in parentheses.
** significant at the .05 level*
*** significant at the .01 level*
**** significant at the .001 level*

Table 2: Regressions of Proportion of Pro-Attitudinal Hits on Prior Attitudes

		All Participants	Least Sophisticated	Most Sophisticated	Weak Priors	Strong Priors
Study 1: Affirmative Action	R^2	.106	.114	.605	.003	.162
	B	**.326(.107)***	.338(.284)	**.778(.116)*****	.055(.247)	.402(.161)
	N	54	17	18	18	23
Gun Control	R^2	.130	.029	.352	.002	.481
	B	**.360(.099)****	.170(.171)	**.594(.099)****	.041(.218)	**.693(.106)*****
	N	61	18	24	20	19
Study2: Affirmative Action	R^2	.107	.051	.520	.059	.151
	B	**.328(.074)****	.226(.080)	**.721(.146)*****	.242(.143)	.389(.137)
	N	69	24	22	24	23
Gun Control	R^2	.313	.164	.505	.293	.249
	B	**.560(.072)*****	.406(.164)	**.711(.089)*****	**.541(.113)****	**.499(.148)***
	N	67	20	24	23	22

Note: This table reports unstandardized coefficients with standard errors in parentheses.
** significant at the .05 level*
*** significant at the .01 level*
**** significant at the .001 level*

Table 3: Attitude Polarization, Studies Combined

		Least Sophisticated	Most Sophisticated	Weak Priors	Strong Priors	Least Biased	Most Biased
Argument Strength Task: Affirmative Action	R^2	.818	.860	.813	.853	.681	.852
	C	-.091(.056)	**-.148(.047)*** **	-.013(.050)	**-.165(.058)*** **	-.021(.068)	**-.137(.052)***
	B	**1.195(.090)****	**1.268(.079)*** **	1.024(.079)	**1.297(.091)*** **	1.072(.114)	**1.237(.082)*** **
	N	41	44	41	37	43	42
Gun Control	R^2	.358	.816	.680	.673	.459	.805
	C	.175(.110)	-.074(.066)	.076(.067)	-.129(.094)	.122(.092)	-.056(.063)
	B	.755(.158)	**1.149(.086)***	.907(.098)	**1.214(.132)***	.805(.146)	**1.164(.086)***
	N	43	41	42	43	38	46
Info Board Task: Affirmative Action	R^2	.716	.912	.770	.870	.680	.888
	C	.013(.056)	**-.169(.044)*** **	-.044(.060)	**-.107(.041)****	-.080(.124)	-.055(.049)
	B	.933(.094)	**1.330(.068)*** **	1.097(.097)	**1.177(.068)****	1.031(.189)	**1.191(.073)****
	N	41	39	40	47	16	36
Gun Control	R^2	.726	.709	.744	.725	.169	.805
	C	-.045(.070)	**-.133(.082)***	-.076(.072)	-.103(.077)	.274(.321)	**-.168(.067)***
	B	1.044(.153)	**1.223(.121)***	1.142(.140)	1.177(.115)	.626(.492)	**1.277(.094)*** **
	N	42	44	42	42	10	47

Note: This table presents regressions of t2 attitude extremity on t1 extremity. Unstandardized coefficients are presented. C indicates the constant. Significance of coefficients is computed relative to a slope of 1.0.

** significant at the .10 level*

*** significant at the .05 level*

**** significant at the .01 level*

Appendix for the Reviewers (To be provided on-line for others)

The Arguments Used[11]

Affirmative Action (Pro):

*Some whites claim to be victims of affirmative action programs. Nonsense! White Americans have long benefited from a society biased toward white interests, so any current preferences for minorities are only fair. There are no innocent victims of affirmative action. Therefore, we should all support affirmative action programs.

The largest group of Americans to benefit from affirmative action thus far are women. Before 1964, women were excluded from many higher paying occupations and professions based on stereotype, custom and law. There were virtually no women police officers, lawyers, or doctors, for example. Progress has been made, but women still need affirmative action programs.

*Nothing in the Constitution prohibits affirmative action. In fact, the Supreme Court upheld affirmative action programs in education in a landmark case. In this case, the Court explicitly stated that "affirmative action is consistent with the Constitution."

When a company with a history of past discrimination passes over a white man and hires a qualified minority or woman instead, that isn't "reverse discrimination." When black professional athletes were first hired, breaking the "color barrier" in sports, some white ballplayers lost job opportunities. But that was not "reverse discrimination," it was a first step toward ending discrimination.

In the historic words of one African-American leader, "America has given the Negro people a bad check marked insufficient funds." It is about time that America makes good on its promise of opportunity for all. Affirmative action programs are a necessary first step toward racial equality in America.

In 1990, the average black male worker earned just $731 for every $1,000 earned by a white male worker in a comparable position. Moreover, though white males make up only 43% of the workforce, they occupy 97% of America's top executive positions. After decades of discrimination, only tough affirmative action programs can level the playing field.

Affirmative action programs are very effective. A study from the Clinton administration shows that the percentage of blacks entering the fields of law and medicine has increased from less than 2% to over 10% in the past 20 years. Affirmative action is working.

Who says racism is dead in America? Far from it. Surveys show that a majority of white Americans still believe that African- and Latino Americans are less intelligent, less hard working and less patriotic than whites. Affirmative action programs are an important step toward changing these racist attitudes.

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[11] An asterisk indicates the argument was used for the thoughts listing task in study 2.

Affirmative Action (Con):
*Affirmative action plans treat people based on race, not past or present circumstances. Middle class blacks are given preferences while lower class whites are not! This is unfair reverse discrimination and is itself a form of racism. Affirmative action programs must stop.

Many of the victims of affirmative action are Asian-Americans who have been excluded from top schools due to racial quotas. But they had no role at all in the country's history of discrimination against blacks and they are truly innocent victims! Affirmative action programs are doing more harm than good.

According to a prominent African-American economist, under affirmative action, blacks often get admitted into schools and programs even though they have worse credentials than most white applicants. As a result, their dropout rate is higher. Affirmative action plans harm both blacks and whites and should be stopped.

*The Constitution absolutely prohibits racial discrimination, including affirmative action. As one landmark case declared, "our Constitution is color-blind, and neither knows nor tolerates classes among citizens." Therefore, affirmative action plans are unconstitutional.

The preeminent African-American leader of all time put it best: "Men should be judged by the content of their character, not the color of their skin." Clearly this statement recognizes the injustice of any form of racial preferences. In other words, even the most famous black leader in American history opposed affirmative action!

Merit has always been the most important factor determining success in this country. People of all races and classes can get ahead if they are willing to work. Unfortunately, some Americans expect to be handed a free lunch. Opportunities exist for all, but you have to be willing to pull your weight. Affirmative action violates the merit principle and should be ended.

In a recent national poll, 50% of Americans said they oppose affirmative action. It seems that most of our laws these days favor minorities, and Americans are getting fed up. If a majority of American citizens believe that affirmative action programs are unfair, then why have these laws not been repealed? End affirmative action now!

Affirmative action programs at American universities "stigmatize" African Americans and other minority students who are assumed to be incompetent because they were admitted based on color, not on merit. Individuals, whether black or white, are far more likely to be successful if they prove their abilities in equal competition rather than receiving unfair and unearned advantages. Affirmative action works to the disadvantage of minorities.

Gun Control (Pro):
*A study in a prominent medical journal found that you or a member of your family are 43 times more likely to be killed by your own gun than by an intruder's. Guns aren't the protection many people think they are. We need stricter gun control.

Self-defense arguments for the need of guns are silly: guns only become necessary for self-defense because there are so many guns out there. Thus, guns should be outlawed outright -- then we won't need to worry about self-defense.

The United States has the highest murder rate of all industrialized nations. It is also the only industrialized country that has lenient gun laws. We therefore say: bring down the number of guns, bring down the murder rate.

*Several recent school tragedies highlight the fact that guns have become a menace to our children. It's very simple: our schoolyards should not be battlefields. We need to reduce access to guns; we need stricter gun control.

In one poll of imprisoned felons, only 27% report buying guns on the black market; the rest got their weapons through legal channels. Obviously, tougher gun controls are needed to keep these 'legal' guns out of criminal hands.

Recent trials against gun manufacturers have consistently found them guilty, and have forced the gun industry to pay out huge sums of money. If the courts can find good reason to rein in the gun industry, then it is high time for Congress to follow suit.

A study of 743 gunshot deaths reports that 398 occurred in a home where a gun was kept. Only 9 of the 743 were deemed to be justified by the police. It follows that gun owners are not as responsible as they claim to be.

A gun should only be fired if one's life is in danger and all other options have been exhausted. Most 'self-defense' shootings do not meet these criteria. Thus use of guns in self-defense only contributes to the crime rate.

Gun Control (Con):
*A main reason why our murder rate is so high is that most crime victims do not resist. These victims are twice as likely to be injured compared to those who defend themselves. Carrying a gun is thus one's ultimate protection against violent crime.

The liberal media distorts gun issues: they only talk about tragedies involving guns. Yet guns were used defensively 2.5 million times last year. The real tragedy would be to outlaw guns -- crime would spiral out of control.

*The Bill of Rights guarantees the right of all citizens to bear arms. Quite simply, gun control measures are unconstitutional infringements on a basic right of citizenship.

Most privately-owned guns in American are owned by sportsmen and are used for completely peaceful purposes. These guns pose no risk to society, but they are unfairly targeted by gun control legislation.

Stricter gun control laws have not passed Congress, reflecting serious misgivings the American people have about gun control. However, the courts have repeatedly ignored the will of the people, finding gun manufacturers in the wrong. We need to limit the power of the courts in gun control cases.

A national council reported in 1991 that handgun accidents killed less than 15 children under the age of 6. This number is minuscule when compared to the total number of accidental deaths of young children. It simply is not worth outlawing guns to save just a handful of lives.

Laws that require guns to be locked up defeat the purpose of gun ownership: how can I protect my family if I must first retrieve my gun from its locker? We thus need to repeal laws regulating guns in private homes.

Gun control legislation can only regulate guns sold through legal outlets. But these days, many criminals buy their guns illegally. Gun control legislation therefore cannot regulate the most dangerous guns in society.

General Instructions

In this experiment, we will be asking you about your opinions on a number of political issues. There will be several parts to the experiment and we will give you instructions for each part as you come to it. The most important thing is for you to relax and take your time. For most of the questions, there are no right or wrong answers, only opinions, and it is your personal opinions that we are interested in.

Instructions for the Information Board Task

Now that you have finished with the practice screen, we ask you to read several arguments on affirmative action. At the conclusion of the experiment, you will be asked to explain the affirmative action debate to a group of interested students. The arguments presented on the following screen will give you a chance to prepare to do this. We understand that you may already have an opinion about affirmative action, but we would like you to set your feelings aside and consider the arguments fairly. Please be as objective as possible. The arguments we have selected were sampled from the public statements of two interest groups and two political parties. These groups are listed below along with a brief summary of their general position on affirmative action. To read an argument from one of these groups, just click one of the boxes in the row for that group. The argument will appear on the screen. There is just one catch: you will only able to view 8 arguments in total. Once you have reached that number the information board will disappear and you will move on to the next part of the study. If you do not understand these instructions, please ask the experimenter to explain.

NAACP: The National Association for the Advancement of Colored People is the oldest and largest Civil Rights Organization in the United States. The NAACP supports affirmative action programs
Committee to End Preferences: A citizen group devoted to ending racial and gender preferences, quotas and set-asides. The Committee to End Preferences opposes affirmative action programs.
Democratic Party: We provide a sampling of statements made by Democratic politicians on the issue. Historically, the Democratic Party has supported affirmative action programs.
Republican Party: We provide a sampling of statements made by Republican politicians on the issue. Historically, the Republican Party has opposed affirmative action programs.

National Rifle Association: The largest organization of gun owners and advocates in the United States. The NRA opposes gun control.

Citizens Against Handguns: A Maryland-based group devoted to the elimination of handgun sales in the U.S. Citizens Against Handguns favors gun control.
Democratic Party: We provide a sampling of statements made by Democratic politicians on the issue. Historically, many Democrats have favored gun control.
Republican Party: We provide a sampling of statements made by Republican politicians on the issue. Historically, many Republicans have opposed gun control.

Instructions for Argument Strength Task

In this section, we will ask you to read a set of arguments on gun control and tell us how WEAK or STRONG you believe each argument is. At the conclusion of the experiment, you will be asked to explain the gun control debate to a group of interested students. The arguments presented will give you a chance to prepare to do this.

PLEASE NOTE: We want to know how WEAK or STRONG you believe the argument is, NOT WHETHER YOU AGREE OR DISAGREE WITH THE ARGUMENT. Please try to leave your feelings about affirmative action aside and indicate how strong or weak you feel the argument is. Please be as objective as possible.

REMEMBER: whether you agree or disagree with the conclusion of an argument is not the same thing as whether you think the argument is weak or strong.

If you do not understand these instructions, please ask the experimenter to explain.

Attitude Measures

Extremity/Position (9 pt. Likert type agree-disagree response options)
Equal opportunity for African-Americans is very important but it's not really the government's job to guarantee it.
Generations of slavery and discrimination have created conditions that make it difficult for blacks to work their way out of the lower class.
It's really a matter of some people not trying hard enough; if blacks would only try harder they could be just as well off as whites.
Over the past few years blacks have gotten less than they deserve.
Affirmative action helps to level the playing field, giving blacks an equal chance.
Blacks do not help themselves by pushing in where they're not wanted.

Curbing gun violence is very important, but limiting the right to bear arms is not really an effective way to do this.
Everyone's rights and freedoms are important, but sometimes, as with gun control, it is necessary to limit freedom for the greater public good.
Guns, like cars, should only be used by responsible citizens. Gun control laws just insure that responsible people are using guns in a responsible manner.
Over the past few years our right to bear arms has been eroding. This encroachment on our rights must be stopped.
There should be no limits on the number of guns someone can own.
It is not the government's job to pick and choose the types of weapons it finds acceptable for citizens to own.

Attitude Strength ***(continuous sliding response scale)***

How much do you personally care about the issue of affirmative action?
Compared to how you feel about other public issues, how strong are your feelings regarding the issue of affirmative action?
Some people report that they are very certain of their feelings on the issue of affirmative action. Others say they are not certain at all. How certain are you of your feelings on the issue of affirmative action?
People have told us they have thought a lot about some issues and haven't thought at all about some other issues. How would you rate the amount of thinking you have done about the issue of affirmative action?

How much do you personally care about the issue of gun control?
Compared to how you feel about other public issues, how strong are your feelings regarding the issue of gun control?
Some people report that they are very certain of their feelings on the issue of gun control. Others say they are not certain at all. How certain are you of your feelings on the issue of gun control?
People have told us they have thought a lot about some issues and haven't thought at all about some other issues. How would you rate the amount of thinking you have done about the issue of gun control?

Strength X position correlations

.146 for aa study 1
.176 for gc study 1
.076 for aa study 2
.203 for gc study 2