



## Citizens' Perceptions of Ideological Bias in Research on Public Policy Controversies

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*How do ordinary citizens react to new policy-relevant findings that they learn about from media mentions or word of mouth? We conducted an experiment embedded in a random-digit-dial (RDD) telephone survey of 1,050 California adults. Respondents heard a description of a hypothetical study on one of four politicized topics or a politically neutral topic (nutrition) and were asked to describe their reactions to the study's main finding. As in prior research, citizens were more skeptical when the findings contradicted their prior beliefs about the topic. But, we also found effects of partisanship and ideology even after controlling for specific issue attitudes. Citizens, especially those holding conservative beliefs, tended to attribute studies with liberal findings to the liberalism of the researcher, but citizens were less likely to attribute conservative findings to the conservatism of the researcher.*

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Controversial policy disputes involve a complex mix of ideological conflicts and empirical uncertainties. Social scientists seek to inform these debates by clarifying the empirical issues, but it is rare for empirical research to bring about consensus in the short run. One reason is that research is rarely conclusive. But citizens may be especially reluctant to accept research evidence when it conflicts with previously held beliefs (Lord, Ross, & Lepper, 1979; MacCoun, 1998). Traditional norms of science like disinterestedness and organized skepticism are designed to make the identity of the researcher irrelevant (Merton, 1973). Even when policy researchers perceive themselves to be neutral, the public may perceive us as adversarial advocates for positions we prefer.

In the traditional experimental paradigm to study biased interpretation of research, participants are randomly assigned one of several versions of a study (Lord et al., 1979; Mahoney, 1977). Participants in these studies—usually undergraduates in the social sciences—are more persuaded by findings that support their own previously assessed political views, even when the methodology is identical (Lord et al., 1979). These “biased assimilation” results have been widely replicated (see MacCoun, 1998, for a review).

But ordinary citizens—even well-educated ones—rarely have methodological training or receive enough information about research findings to carefully scrutinize them. Citizens usually learn about policy research via the mass media and word of mouth, but these sources are likely to provide little detail about study methodologies (Pellachia, 1997; Singer & Endreny, 1993). Even when the media do report on scientific research, much of the coverage undermines citizen perception of the unbiased, disinterested scientist. Citizens routinely hear stories about fabricated or fraudulent research findings (Judson, 2004; White, 2005) and researchers with conflicts of interest (Moore, Cain, Lowenstein, & Bazerman, 2005). Conservative commentators have recently decried evidence that Democrats outnumber Republicans among American university faculty, especially in the humanities and social sciences (Klein & Stern, 2005; Rothman, Lichter, & Nevitte, 2005; but see Zipp & Fenwick, 2006).

### Theoretical Background and Hypotheses

In this study, we examined how ordinary citizens respond to brief accounts of hypothetical new research findings on controversial topics. We organize our hypotheses around two dimensions of citizen response to research findings: their inferences about the authors of the research, and their skepticism toward new findings. Our six hypotheses are conceptually distinct but not mutually exclusive, though we argue that some of them qualify or suggest exceptions to others.

#### *Inferences about Researchers' Ideologies*

“*Social scientist = liberal.*” We expected citizens to be more likely to label researchers as liberals than as conservatives. Academic social science is a domain where base-rate data and popular stereotypes probably converge on a common picture of the average researcher as being more liberal than the average citizen (see Gross & Simmons, 2006; Klein & Stern, 2005; Rothman et al., 2005; but compare Zipp & Fenwick, 2006). But we expected this general perception to be moderated by the effects of the study’s findings and the respondents’ own views, as described below.

*The attitude attribution effect.* At least in North America, observers tend to attribute an actor’s behavior more readily to internal, dispositional causes like motives and traits than to external, situational influences (see Gilbert & Malone,

1995). One example is the “attitude attribution” effect.<sup>1</sup> In the classic demonstration (Jones & Harris, 1967), students inferred that an American arguing in support of Fidel Castro genuinely held that attitude (a very unpopular position), even when debating positions were assigned by a public coin toss. Subsequent research shows that this bias is fairly robust, at least among North Americans (Masuda & Kitayama, 2004). However, studies in this tradition have examined source messages on issues that are strongly opinion or value oriented (e.g., political positions, abortion rights). We are interested in whether citizens infer a researcher’s ideological leanings from his or her research findings, which are ostensibly fact based—a “shoot the messenger” type of effect (MacCoun, 1998).<sup>2</sup> This is particularly pressing given evidence that a third of liberals and nearly half of conservatives see “political bias in the classroom” as a serious problem (Gross & Simmons, 2006). Thus, we hypothesize that previous attitude attribution results will generalize to inferences about social scientists, such that participants will believe that the researcher’s attitudes are in line with their study’s findings.

*Naïve realism.* People tend to adopt a naïve realist stance, such that they believe a true reality “out there” produces their perceptions (Pronin, Gilovich, & Ross, 2004). When we encounter others with different viewpoints, we then tend to assume that they must be biased, since we assume our own views reflect objective reality. Thus, we expect citizens to be less likely to view a study as “biased,” and less likely to speculate about an author’s ideology, when the study’s finding matches their own attitude. On the other hand, when the finding conflicts with their own attitude, we expect citizens to be more likely to view the study as biased and to infer that the author holds an ideology that would “explain away” the discrepant finding.

### *Skepticism about Research Findings*

*Assimilation hypothesis.* As in past research (e.g., Lord et al., 1979), we expected citizens to express greater skepticism toward research findings that conflicted with their prior attitudes. But heightened skepticism toward findings that contradict one’s prior views is not necessarily a bias (MacCoun, 1998). Some political scientists contend that such assimilation effects reflect rational Bayesian updating (see Bartels, 2002; Gerber & Green, 1999).

Gerber and Green (1999) cite evidence that Democrats, Republicans, and Independents “move together in their evaluations of which party was best able to handle the nation’s economy,” a result they take to support Bayesian learning. Bartels (2002) has taken issue with their account, arguing that “it is quite difficult

<sup>1</sup> This should not be confused with the occasional use of the term “attitude attribution” to refer to citizens’ inferences about the beliefs of social and political groups (Brady & Sniderman, 1985).

<sup>2</sup> Lord et al. (1979, fn. 2) note in passing that their students inferred an author’s beliefs about the death penalty from his or her findings, but this is not necessarily ideological and could simply indicate that researchers believe and are influenced by their own results.

to produce parallel opinion shifts in a Bayesian framework—*unless* partisan bias is built into different groups' selection or interpretation of politically relevant information" (p. 121). This conclusion rests heavily on several assumptions of his model. First, he assumes that Democrats and Republicans differ only in their priors, not in the new data they sample. Second, he assumes that additional evidence will always reduce variance around the true value. But because citizens receive such spotty samples of the underlying distribution, it seems likely that new evidence will sometimes create perceptions of increased uncertainty.

Even under ideal circumstances, it may take a large body of studies to overturn beliefs. There is no single way to construct a Bayesian model of belief updating; much depends on assumptions about how evidence is represented in likelihood ratios and the way in which priors and posteriors are distributed. For example, citizens could engage in a simple "box score" process of Bayesian updating, basing their belief in a proposition on the proportion of known studies that support that proposition.<sup>3</sup> Assuming Beta-distributed priors and posteriors, two observers with prior beliefs of .25 and .75 in a proposition would hold posterior beliefs of .67 and .89 after five new studies all supporting the proposition. But in a more extreme example, observers with prior beliefs of .05 and .95 would have posteriors of .22 and .96 after 10 new studies all supporting the proposition. Our claim is not that this is the correct model of how citizens update their beliefs, but rather that it is possible to construct a Bayesian process that involves no selective use or interpretation of data and nevertheless fails to produce a rapid convergence of views.

There are laboratory methods that one might deploy to assess coherence with Bayesian norms (e.g., Schum & Martin, 1982), though even laboratory tests remain controversial (cf. Gigerenzer & Hoffrage, 1995; Kahneman & Tversky, 1996). We expected to replicate the finding that people would find evidence more credible when it was consistent with their own issue attitudes. But because we have little hope of providing a definitive test of Bayesian process in a telephone survey, this finding should be characterized more neutrally as "assimilation" rather than "biased assimilation."

*Ideological and/or partisan bias.* On the other hand, a phone survey of a representative sample of the population may provide one way to get new leverage on the Bayesian debate. Contrary to widespread assumptions, specific issue attitudes on topics like gun control map only weakly onto more abstract dimensions like self-reported liberalism-conservatism or political party identification (Carsey & Layman, 2006; Goren, 2005). Once one's specific issue beliefs are statistically controlled, any residual heightened skepticism toward certain findings on the basis of general political ideology might be more difficult to explain under a Bayesian

<sup>3</sup> This kind of vote counting was typical of scientific literature reviews until the advent of meta-analysis (see Hedges & Olkin, 1980) and characterizes the way some policy makers use evidence (Weiss & Bucuvalas, 1980).

model, at least one that assumes citizens are trying to update their beliefs about the effectiveness of a policy. In the biased assimilation literature, the Bayesian account is not a model of how people predict others' views; rather, it is an epistemic account of how citizens update their *own* views on an issue (Bartels, 2002; Gerber & Green, 1999; Koehler, 1993). A conservative who thinks gun control probably works might expect other conservatives to disagree, but under a Bayesian epistemic account, there is no reason why she should be more skeptical of results that actually support her own empirical beliefs. Such skepticism is easier to explain on a motivational account, in which the pro-gun-control finding might be seen as "aiding and abetting the enemy" (liberals). Because we believe this motivational account is consistent with both dissonance theory (Berkowitz & Devine, 1989) and other work in political psychology (Brady & Sniderman, 1985; Marcus & MacKuen, 1993), we predicted that citizens would be more skeptical of findings in tension with their ideology and their political party, even after controlling for the effects of their specific issue beliefs.

*Resistance to persuasion.* Resistance to persuasion is stronger for important topics and also when the speaker is thought to have a vested interest in the topic (Eagly & Chaiken, 1993). Thus we expected citizens to be more wary of research findings involving highly politicized topics than findings involving innocuous topics, and we expected greater skepticism when studies claimed that an intervention was effective, since claims of effectiveness may imply that the researcher is allied with the program or will otherwise profit from the finding.

### Realism and Generalizability

As with past research on biased research assimilation (e.g., Lord et al., 1979), this study used a scenario method involving fictitious research studies. A key difference is that our study explicitly asked respondents to "imagine" the study; unlike most previous studies, we did not lead respondents (by commission or omission) to believe the study we described was real. We could have deceived participants by implying that the "new study" was real, but given that the study method consisted of one survey embedded in a set of unrelated questionnaires, the type of thorough debriefing necessary for a deception study could not have been assured. And if we had referred to actual studies on each side of the issues, we would have introduced confounds due to specific study characteristics. Our decision to identify the studies as being hypothetical leaves open the possibility that the participants misjudged how they would react to actual study findings, although the direction of such a misjudgment is not obvious.<sup>4</sup> But our approach has been used for decades in judgment and decision research, for example with mock jury

<sup>4</sup> Some previous studies on the assimilation effect report that participants were debriefed (Lord et al., 1979; Mahoney, 1977; Plous, 1991), but these studies do not report any attempt to control for suspicion or discard data from suspicious participants.

studies and scenario studies about political candidates (e.g., see MacCoun, 1989, 2005).

While our stimulus materials were explicitly hypothetical, our study offers greater external validity in a second dimension. We felt it was very important to test for assimilation, attitude attribution, and naïve realism effects in a general population survey. Almost every published study of these topics has used undergraduates as respondents, and the exceptions involve convenience samples (e.g., graduate students and parapsychologists in Koehler, 1993; psychology journal reviewers in Mahoney, 1977) rather than general population surveys.

For many psychological questions, student samples are both efficient and informative. But there are reasons why student samples could distort our understanding of how ordinary citizens respond to research evidence (Peterson, 2001; Sears, 1986). University students are younger, better educated, and more susceptible to attitude change (see Visser & Krosnick, 1998); they have chosen to be in a university environment, and they are rewarded for critical thinking and argumentation. These differences do not produce clear net predictions, but they do provide grounds for concern about the generalizability of widely publicized laboratory results on biased assimilation, attitude attribution, and naïve realism. By focusing exclusively on California, the results may not directly generalize to other regions of the United States or to other countries. Still, California is the most populous state in the United States, and the sample provided us with considerable demographic and political diversity.

## Method

### *Survey Collection and Participants*

The study was a module in the Golden Bear Omnibus Survey, a Computer-Assisted Telephone Interviewing (CATI) survey of the State of California, conducted by the Survey Research Center, University of California, Berkeley. The sample was a cross-sectional random digit dialed (RDD) sample covering residential telephone exchanges in California generated using list-assisted random-digit sampling. There were 5,417 selected phone numbers, 3,225 eligible households, and 1,050 completed cases, with a nonresponse rate (refusals + never at home) of 23.8% of eligible households and 42.2% of selected respondents. Sampling weighting was used to adjust for probability of selection, and poststratification weighting was used to adjust for differential nonresponse and telephone ownership rates across demographic groups.

In each selected household, an attempt was made to interview one person. The sample of telephone numbers for this survey was generated using list-assisted random-digit sampling, which preserves the characteristics of a simple random sample but uses computer algorithms to reduce the number of unproductive calls to nonworking telephone numbers and to obtain a higher proportion of households

than one would achieve by simple random-digit dialing. The data collection period ran from September 17, 2003, to November 22, 2003. The total interview (including the other modules not reported here) ranged from 11 to 110 minutes (mean = 38 minutes). There were nine modules in total; the policy attitude data presented here are from Module Three and the demographic data are from Modules Five and Nine.

The sample was 55% female. Ages ranged from 18 to 103 years old ( $M = 46$ ,  $SD = 16$ ). Sixty-two percent were White/Caucasian, 6% were Black/African-American, 18% were Hispanic/Latino, 4% were Asian, and the remaining 10% selected other racial or ethnic categories. Ninety-two percent of the respondents were interviewed in English and 8% were interviewed in Spanish. Ninety-two percent had graduated from high school and 39% had graduated from college. Twenty-two percent identified themselves as politically conservative, 14% as moderate-leaning-conservative, 24% as moderate, 16% as moderate-leaning-liberal, and 23% as liberal.

### Experimental Design

Respondents were randomly assigned to one cell of a 5 (Study Topic)  $\times$  2 (Study Outcome, effective vs. ineffective)  $\times$  2 (Question Order, background attitudes first vs. evaluation of study first) between-respondent factorial design (see Table 1). Two of the topics—gun control (Adams, 2004) and medical marijuana (Marshall, 2005)—involved interventions more likely to be favored by liberals and Democrats; the other two—the death penalty and school vouchers (K. Jost, 2002, 2005)—involved interventions more likely to be favored by conservatives and Republicans. The final topic, nutrition advertising, served as a relatively apolitical baseline intervention for comparison; we used two different outcomes (whether doctors or actors were more effective as advocates in advertisements) to avoid confounding political neutrality with a particular finding. One intervention of each type (capital punishment and medical marijuana) reflects the legal status quo in

**Table 1.** Research Design and Cell Sizes

	Finding favors conservative position	Finding favors liberal position
Gun control	Fails to reduce crime (n = 120)	Reduces crime (n = 104)
Death penalty	Deters crime (n = 90)	Fails to deter crime (n = 122)
Medical marijuana	No medical value (n = 93)	Has medical value (n = 88)
School vouchers	Improves education (n = 124)	Fails to improve education (n = 105)
Nutrition ads	TV Actor (n = 102) vs. Real Doctor (n = 102)	

California, and one of each type (gun control and school vouchers) has had strong proponents but little legislative success.

For the four politicized topics, the study intervention was reported to be either effective or ineffective.<sup>5</sup> Political favorability of the outcome was fully crossed with the direction of the effect. The order of the questions was varied to test for possible effects of the described study on attitudes, and for possible priming or commitment effects of pre-assessed attitudes on study evaluations.

As an example of the manipulations, in the gun control conditions, respondents were told, “Now I’d like you to imagine that a new study is to be released tomorrow. The study examined the effect of a ban on handguns on local crime rates and gun-related deaths and injuries.” In the conservative condition (in this case, no effect), respondents were told, “the researchers report that the ban was unsuccessful, in that making handguns illegal had no effect on gun-related crimes or gun-related deaths and injuries.” In the liberal version (in this case, a significant result), respondents were told, “the researchers report that the ban was successful, in that making handguns illegal reduced gun-related crimes and gun-related deaths and injuries.”<sup>6</sup>

After hearing about the study, respondents were asked a series of questions about the plausibility of the study result. Two four-point items, “How surprised are you to hear this finding?” and “How believable is this finding?” (reverse scored), were averaged into a “skepticism” composite (coefficient alpha = .60).<sup>7</sup> They were also asked about the possible political views and motives of the study’s author. Depending on the order manipulation, they were asked before or after the study findings forced-choice questions about their own attitudes about the study topics and their political ideologies and affiliations (see the appendix for study materials).

## Results

### *Political Attitudes*

Five items assessed respondent views on the target issues (see Table 2).<sup>8</sup> As intended, our control topic of government promotion of healthy nutrition was

<sup>5</sup> We intentionally chose the word “reported” rather than “discovered” to leave respondents free to speculate about the honesty and completeness of the researchers’ reports.

<sup>6</sup> Our stimulus materials were intended to simulate media or word-of-mouth reports, not actual research articles, and we did not provide any methodological or statistical details. But it is worth noting that Lord et al. (1979) found that providing methodological details in addition to the study outcome actually strengthened rather than weakening the assimilation effect.

<sup>7</sup> The coefficient alpha is lower than commonly obtained in laboratory experiments, though not unusual for field data. Analyses using the “believable” item in isolation replicate the results reported here albeit somewhat more weakly; separate analyses using the “surprising” item produced some but not all the effects reported here.

<sup>8</sup> In Table 2, row percentages sum to less than 100% because of a small number of “don’t know” responses (<5% for each issue). We dropped these cases from subsequent analyses involving these issue attitudes. Analyses in which the “don’t know” responses were coded as intermediate between liberal and conservative positions were almost identical to the analyses we report.



**Table 2.** Issue Attitudes and Correlations with Partisanship and Ideology

	Gun Control		Death Penalty		Medical Marijuana		School Vouchers	
	Oppose	Favor	Oppose	Favor	Oppose	Favor	Oppose	Favor
Conservatives (%) <sup>a</sup>	25	74	20	77	25	74	36	61
Moderates (%)	15	84	37	58	19	80	53	44
Liberals (%)	18	81	55	42	12	86	55	42
TOTAL	18	81	37	56	19	80	50	47
Correlation with political ideology (5 = Liberal)	0.09**		-0.27***		0.13***		-0.15***	
Correlation with party identification (7 = Strong Democrat)	0.08*		-0.25***		0.08*		-0.12***	

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . <sup>a</sup>Percentages sum to less than 100 due to “don’t know” responses.

fairly innocuous, receiving 85% support versus 14% opposition. Specific issue attitudes were only weakly associated with self-reported political ideology and party identification, with correlations ranging from .07 to .26 (Table 2). This is comparable to estimates from national samples (Carsey & Layman, 2006; Goren, 2005). Political ideology and party identification were correlated .54 ( $p < .001$ ), comparable to national estimates of .44 and .64 for politically unsophisticated and sophisticated citizens (Norpoth & Lodge, 1985).

Eighty-one percent favored mandatory police permits for those carrying handguns. The gun control topic appears less politically polarized than intended, but this may reflect the item wording. Other recent California surveys using different questions found more equivocal support for gun control, with only 50% thinking stronger gun laws would be very or somewhat effective (2002 Field Poll, May 8, 2002 press release) and 56% preferring better enforcement of existing gun laws to new laws and regulations (Public Policy Institute of California, 19 September 2000 press release). A 2004 Field Poll (30 January 2004 press release) found a similar level of overall support for medical marijuana (74%), but found less support among of conservatives (53%) than we did in our survey (74%). With respect to school vouchers, 47% were in favor and 50% were opposed. We found less support for school vouchers than a 1998 California survey (58%; Public Policy Institute of California, 11 May 1998 press release), but more support than the 29% received by a school voucher initiative (Proposition 38) in the 2000 California General Election.

Our study asked respondents to “imagine” minimal descriptions of purely hypothetical research studies. Unsurprisingly, this did not produce any attitude change. Asked whether the finding would change their views, 8% said “very much,” 20% said “somewhat,” 19% said “a little,” and 53% said “not at all” (49% among those whose attitudes conflicted with the finding). Responses to this item did not vary by the direction of the study outcome for any of the topics. Our

manipulation of question ordering allows a test of whether people were actually influenced by the hypothetical study in ways they might not perceive. The order manipulation had no effects on reported issue attitudes, either alone or in interaction with the direction of the study's alleged result.

### *Skepticism toward the Study Finding*

As predicted, respondents were significantly more skeptical for three of the controversial cases than for the apolitical nutrition case: gun control ( $\beta = .18$ ,  $p < .001$ ), the death penalty ( $\beta = .18$ ,  $p < .001$ ), and school vouchers ( $\beta = .11$ ,  $p < .05$ ). Skepticism toward the medical marijuana study did not differ from the nutrition study ( $\beta = .07$ ,  $p > .05$ ). Our subsequent analyses of skepticism exclude the nutrition condition.

To test our hypotheses, we conducted a set of five regression models examining skepticism toward the study findings (Table 3). The first includes a set of respondent characteristics and the experimental manipulation of target study outcome. Skepticism was positively associated with the lack of a high school diploma, but not with age, gender, or higher education. There were no main effects for the study outcome manipulation.

The remaining models added respondents' issue attitudes, liberalism-conservatism, and party identification, as well as the interaction of these terms with the target study's outcome. The hypothetical study outcomes for gun control and medical marijuana were coded as favoring liberals and Democrats when effective, and conservatives and Republicans when ineffective. The hypothetical study outcomes for the death penalty and school vouchers were coded as favoring conservatives and Republicans when effective and liberals and Democrats when ineffective. For the issue attitude, the attitude-finding match index was coded 0 for a mismatch and 1 when the finding matched the issue attitude. The ideology and partisan match indices were coded -1 for a mismatch, +1 when the finding matched the ideology or party, and 0 for self-identified moderates and independents. The second model added dummy codes for the respondent's issue attitude and attitude-finding match. The third and fourth models replaced these items with dummy codes for ideology and party, respectively. The fifth model included all terms simultaneously. The study outcome was represented by two orthogonal indices ( $r(840) = -.04$ , ns): one indicating whether or not the target study found the intervention to be effective and another coded whether the finding was "liberal" or "conservative" based on the outcome and topic (e.g., death penalty when effective favored conservatives and Republicans).

In the second model, there was no net effect of issue attitudes, but as predicted by the assimilation hypothesis, there was a significant interaction such that respondents were more skeptical of the target study when its outcome was inconsistent with their issue attitude. Controlling for attitude mismatch, citizens were more

Table 3. Skepticism about Study Outcome

	Model 1:			Model 2:			Model 3:			Model 4:			Model 5:		
	Background Variables			Add Issue Attitudes			Add Ideology			Add Partisanship			All Variables		
	B (SE)	St. Beta		B (SE)	St. Beta		B (SE)	St. Beta		B (SE)	St. Beta		B (SE)	St. Beta	
(Constant)	2.04 (-0.12)			2.20 (-0.12)			2.24 (-0.14)			2.07 (-0.14)			2.36 (-0.14)		
Age	0.00 (0.00)	-0.02		0.00 (0.00)	-0.04		0.00 (0.00)	-0.04		0.00 (0.00)	-0.02		0.00 (0.00)	-0.05	
Female	0.04 (-0.07)	0.02		0.07 (-0.07)	0.04		0.04 (-0.07)	0.02		0.04 (-0.07)	0.02		0.06 (-0.07)	0.03	
No HS diploma	0.23 (-0.10)	0.09*		0.28 (-0.10)	0.11**		0.25 (-0.10)	0.09*		0.24 (-0.10)	0.09*		0.28 (-0.10)	0.11**	
College degree	-0.02 (-0.08)	-0.01		0.01 (-0.08)	0.00		0.02 (-0.08)	0.01		-0.02 (-0.08)	-0.01		0.04 (-0.08)	0.02	
Attitudes before reactions	-0.04 (-0.07)	-0.02		-0.06 (-0.07)	-0.03		-0.03 (-0.07)	-0.01		-0.03 (-0.07)	-0.02		-0.05 (-0.07)	-0.03	
Study reject null hypothesis?	0.03 (-0.07)	0.01		0.22 (-0.07)	0.12**		0.02 (-0.07)	0.01		0.02 (-0.07)	0.01		0.20 (-0.07)	0.11**	
Research finding favor liberals?	0.04 (-0.07)	0.02		0.17 (-0.07)	0.09*		0.02 (-0.07)	0.01		0.05 (-0.07)	0.03		0.14 (-0.07)	0.08*	

Table 3. (cont.)

	Model 1:		Model 2:		Model 3:		Model 4:		Model 5:	
	Background Variables		Add Issue Attitudes		Add Ideology		Add Partisanship		All Variables	
	B (SE)	St. Beta	B (SE)	St. Beta	B (SE)	St. Beta	B (SE)	St. Beta	B (SE)	St. Beta
Liberal attitude for target issue			-0.06 (-0.07)	-0.03					-0.03 (-0.07)	-0.02
Attitude-finding match			-0.50 (-0.07)	-0.27***					-0.46 (-0.07)	-0.25***
5 point respondent liberalism					-0.06 (-0.02)	-0.09*			-0.07 (-0.03)	-0.11**
Ideology-finding match					-0.22 (-0.05)	-0.16***			-0.19 (-0.05)	-0.14***
7 point party identification (7 = Strong Democrat)							-0.01 (-0.02)	-0.02	0.02 (-0.02)	0.04
Party-finding match									-0.05 (-0.05)	0.03
Adj. R-sq.		0		0.06***		0.03***		0.00		0.08***

\*p &lt; .05, \*\*p &lt; .01, \*\*\*p &lt; .001.

skeptical of studies in which the intervention was effective or studies with an outcome favoring liberals.

In the third and fifth models, liberals were significantly less skeptical overall than were conservatives; no similar effect was found for Democrats relative to Republicans. Consistent with the ideological bias hypothesis, respondents were more skeptical when the results were inconsistent with their ideological position, even after controlling for issue attitudes and the attitude-finding match. As such, the ideology effect, unlike the attitude effect, is difficult to explain under a Bayesian updating model, and appears to be an actual political bias.

The fourth and fifth models failed to support the partisan bias hypothesis. Political party identification was unassociated with skepticism, despite the fact that the partisan-attitude correlations for each issue were roughly equal in magnitude to the ideology-attitude correlations (Table 2).

Table 4 presents separate analyses of skepticism within each target study topic. The attitude-finding mismatch effect was found for the death penalty, for school vouchers, and (especially) for medical marijuana. It was not found in the gun control condition. This is probably not attributable to a ceiling effect—medical marijuana had the same high overall level of political support—but may result from what in hindsight is a weak correspondence between the content of the specific issue attitude item (which referred to a required “police permit” for guns) and the study manipulation (which referred to a “handgun ban”).

With respect to ideological bias, the ideology-finding mismatch effect was significant for the gun control and death penalty topics, and marginally so for medical marijuana. The effect was stronger for gun control despite the fact that the death penalty was a more polarized topic, but this could be an artifact because, as noted above, the content of our gun control item did not correspond as closely to the reported study result. Both gun control and the death penalty are older and hence more familiar topics than medical marijuana and school vouchers. The partisan bias hypothesis was not supported for any topic, and in fact there was an unexpected reversal for medical marijuana such that people were less skeptical when the study found a result contrary to what their own party might be expected to support.<sup>9</sup>

We also examined the full regression model separately for various subsets of citizens, replicating the attitude-finding mismatch effect for ideologues (self-identified conservatives and liberals,  $\beta = -.29$ ,  $p < .001$ ), moderates ( $\beta = -.23$ ,  $p < .05$ ), and partisans (self-identified Republicans and Democrats,  $\beta = -.26$ ,  $p < .001$ ), but not for independents ( $\beta = -.08$ ,  $p > .05$ ). Among ideologues and partisans, the ideology-finding mismatch effect was at least as strong as the

<sup>9</sup> We reran these analyses after recoding the ideology and partisan mismatch scores in the direction, if any, that moderates and independents reported “leaning” (liberal or conservative; Democrat or Republican). This weakened the effect of ideology-finding match ( $\beta = -.13$  and  $-.07$  before and after including the other two match indices). It had a negligible effect on the influence of partisan-finding match ( $\beta = -.09$  and  $-.02$  before and after controlling for the other two match indices).

Table 4. Skepticism by Topic

	Gun Control		Death Penalty		Medical Marijuana		School Vouchers	
	B (SE)	St. Beta	B (SE)	St. Beta	B (SE)	St. Beta	B (SE)	St. Beta
(Constant)	2.45 (-0.32)		2.49 (-0.29)		1.56 (-0.33)		1.39 (-0.22)	
Age	-0.01 (0.00)	-0.13	-0.01 (0.00)	-0.20**	0.00 (0.00)	0.05	0.00 (0.00)	-0.02
Female	0.01 (-0.14)	0.01	0.04 (-0.14)	0.02	0.28 (-0.13)	0.15*	0.04 (-0.11)	0.02
No HS diploma	0.24 (-0.19)	0.09	0.24 (-0.22)	0.09	-0.18 (-0.23)	-0.06	0.49 (-0.15)	0.22**
College degree	-0.05 (-0.16)	-0.02	0.15 (-0.15)	0.07	0.07 (-0.15)	0.03	-0.03 (-0.13)	-0.02
Attitudes before reactions	-0.16 (-0.14)	-0.08	-0.29 (-0.13)	-0.16*	-0.05 (-0.13)	-0.03	0.16 (-0.11)	0.10
Liberal issue attitude	0.00 (-0.19)	0.00	0.06 (-0.14)	0.03	-0.27 (-0.17)	-0.11	0.09 (-0.11)	0.06
Attitude-finding match	-0.12 (-0.18)	-0.06	0.59 (-0.14)	-0.33***	0.94 (-0.17)	-0.5***	0.53 (-0.11)	-0.33***
5pt respondent liberalism	-0.09 (-0.06)	-0.12	-0.01 (-0.06)	-0.02	-0.16 (-0.06)	-0.26**	-0.03 (-0.04)	-0.06
Ideology-finding match	-0.51 (-0.12)	-0.34***	-0.24 (-0.12)	-0.17*	-0.22 (-0.11)	-0.16	0.08 (-0.08)	0.07
7pt party identification (7 = Strong Democrat)	0.05 (-0.04)	0.10	-0.06 (-0.04)	-0.12	0.05 (-0.04)	0.12	0.04 (-0.03)	0.10
Party-finding match	0.01 (-0.11)	0.01	0.03 (-0.10)	0.02	0.27 (-0.10)	0.24**	-0.06 (-0.08)	-0.06
Adj. R-sq.		0.14***		0.15***		0.35***		0.14***

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

attitude-finding mismatch effect ( $\beta$  of  $-.21$  and  $-.26$ , respectively,  $p < .001$ ).<sup>10</sup> The effect was not found among independents ( $\beta = -.12$ ,  $p > .05$ ). We did not find support for the partisan bias hypothesis for any subgroup.

We conducted a similar analysis (not shown) of the item, “how biased do you think this study is?” Thirty seven percent of those hearing about the four politicized topics thought the study was completely or somewhat unbiased, 11% said “don’t know,” and 52% thought that the study was completely or somewhat biased. As predicted by the naïve realism hypothesis, regression analyses showed that the

<sup>10</sup> This suggests that the ideology mismatch effect is probably not an artifact of measuring ideology using more response options than the issue attitude items.

study was seen as less biased when there was an attitude-finding match ( $\beta = -.08, p < .05$ ), and when there was an ideology-finding match ( $\beta = -.14, p < .01$ ). There was also less perceived bias among Democrats ( $\beta = .11, p < .05$ ). We had hoped this item would form a composite index with items asking whether the researcher expected and/or wanted the finding, but these items were only weakly correlated with perceived bias and were mostly associated with whether the study received positive rather than null results. Further analysis of the naïve realism hypothesis appears below.

*Inferences about the Researchers*

When asked to infer the political ideology of the researchers, 44% of the participants chose “don’t know,” 21% chose “liberal,” 23% chose “in between,” and 12% chose “conservative.” These attributions varied significantly as a function of research topic, finding, and participant ideology (Figure 1 for the politicized cases). We analyzed the responses using the SPSS nomreg procedure for multinomial logistic regression, focusing here on attributions to “Liberal” versus “Don’t Know” and to “Conservative” versus “Don’t Know.”

We first compared attributions for the innocuous nutrition study to those for the four more controversial topics. Respondents were less willing to hazard a guess

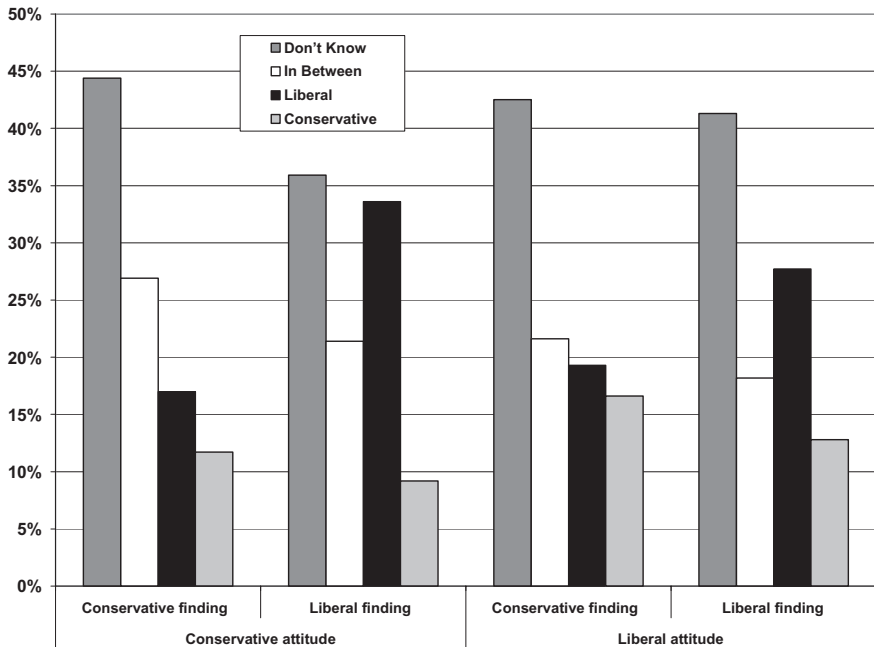


Figure 1. Attributed author ideology as a function of study outcome and respondent attitude.

as to researcher ideology for the nutrition topic (79% said “don’t know” or “in between”) than for the four controversial topics (where 63% said “don’t know” or “in between”). Respondents were less likely to attribute an ideology (“liberal” or “conservative”) to the researcher for the nutrition topic (50.5%) than for the more controversial topics (58.6%);  $\chi^2(1) = 4.55, p < .04$ .

Figure 1 presents the pattern of attributions broken down by issue attitudes and study findings. In a baseline model (upper panel of Table 5), respondents were significantly more likely to say the researcher was liberal when the study found an intervention to be effective (rejecting the null hypothesis) and when the finding favored liberals. However, there were no significant effects on judgments that the author was a conservative, and issue attitudes had no direct effect. Thus, we only partially supported the attitude attribution prediction.

The naïve realism hypothesis predicts that the attitude attribution effect should be stronger when citizens’ expectations are not confirmed (e.g., those with a conservative issue attitude should attribute a “liberal” finding to a liberal researcher). To test this, we specified two a priori contrasts. The first contrasted those with a conservative issue attitude and a liberal finding to the other three attitude-finding configurations. This contrast was significant for the liberal (vs. don’t know) attribution ( $B = 1.95, SE = .704, p < .006$ ), but not for the conservative (vs. don’t know) attribution ( $B = -.69, SE = 1.04, p = .51$ ), indicating that those with conservative issue attitudes tended to attribute “liberal” findings to liberal researchers. The second contrasted those with a liberal issue attitude and a conservative finding to the other three attitude-finding configurations. This contrast was not significant for either the liberal attribution ( $B = -.92, SE = .71, p = .14$ ) or the conservative attribution ( $B = 1.11, SE = .71, p = .12$ ). In separate analyses for those with conservative and liberal issue attitudes (lower panel of Table 5), participants with conservative issue attitudes attributed the study to a liberal author when the study found that the intervention was effective (odds ratio = 4.17), and when it resulted in a “liberal” finding (odds ratio = 5.42).<sup>11</sup>

## Discussion

Before drawing conclusions, we remind the reader of the caveats we offered at the outset regarding our methodology. First, ours was a study of impression formation rather than evidence evaluation; our participants received only the most superficial descriptions of a new research finding, and we used hypothetical

<sup>11</sup> A direct test for the interaction effect for study outcome by issue attitude suffered from multicollinearity with the main effects. When the main effect terms were excluded, the interaction term was significant ( $\chi^2 = 25.529, p < .001$ ). The simple effect of study outcome on attributions was significant for those with a conservative issue attitude ( $\chi^2 = 11.20, p < .02$ ) but not for those with a liberal issue attitude ( $\chi^2 = 5.76, ns$ ).



Table 5. Attributions of Author Ideology (Excluding Nutrition Cases)

	Respondent Infers that Author Is			
	Liberal (vs. Don't Know)		Conservative (vs. Don't Know)	
	B (SE)	Odds ratio	B (SE)	Odds ratio
Intercept	-1.18 (-0.21)		-0.84 (-0.22)	
Study assessed before attitudes	0.03 (-0.18)	1.03	-0.05 (-0.22)	0.95
Study found an effect	0.48 (-0.19)	1.62**	-0.29 (-0.23)	0.75
Liberal finding	0.60 (-0.19)	1.83**	-0.17 (-0.23)	0.85
Conservative issue attitude	0.08 (-0.19)	1.09	-0.28 (-0.24)	0.75
PARTICIPANTS WITH CONSERVATIVE ISSUE ATTITUDE:				
Intercept	-2.30 (-0.46)		-0.75 (-0.45)	
Study assessed before attitudes	0.17 (-0.31)	1.18	-0.02 (-0.40)	0.98
Study found an effect	1.43 (-0.40)	4.17***	-0.85 (-0.48)	0.43
Liberal finding	1.69 (-0.39)	5.42***	-0.52 (-0.49)	0.59
(Conservative finding)		0.18		1.68
PARTICIPANTS WITH LIBERAL ISSUE ATTITUDE:				
Intercept	-0.88 (-0.23)		-0.88 (-0.24)	
Study assessed before attitudes	-0.07 (-0.23)	0.93	-0.05 (-0.27)	0.95
Study found an effect	0.37 (-0.24)	1.44	-0.11 (-0.29)	0.89
Liberal finding	0.29 (-0.24)	1.33	-0.22 (-0.28)	0.80
(Conservative finding)		0.75		1.24

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

studies rather than actual new studies. Thus, our study sheds light on how citizens react to research findings received from superficial media coverage and word-of-mouth reports, but does not examine how citizens understand the details of actual social science methods. Second, our sample describes ordinary California adults and may not directly generalize to other regions of the United States or to other countries; still, our study is more broadly representative than most biased assimilation and attitude attribution studies. Finally, our stimulus materials were hypothetical, and we did not deceive respondents about that fact. We cannot rule out the

possibility that this influenced our results, but we gave respondents ample opportunity to refuse to speculate.

Our study suggests that the public has a more jaundiced (and possibly self-serving) view of policy-relevant research than the Enlightenment tradition might dictate. We replicated past evidence for an evidence assimilation effect, but using a probability sample of ordinary adult citizens rather than samples of experts or university students. Our results pose a possible challenge for a Bayesian account of this effect, because citizens were more skeptical toward research findings uncongenial to their abstract ideology (liberalism-conservatism) even after we controlled for their specific attitudes. It is possible that the ideology item spuriously tapped into specific issue beliefs that our opinion items failed to capture. This seems most plausible for the gun control topic, where our opinion item was most narrowly worded. But our interpretation would be consistent with other evidence that citizens sometimes act more like “lay politicians” than “lay scientists” (Tetlock, 2002).

Over half (56%) of our respondents were willing to speculate about the author’s political ideology. Our respondents were almost twice as likely to infer that the author was a liberal (21%) than a conservative (12%), consistent with base-rate evidence for a disproportionate representation of liberals among university researchers. We did not assess whether respondents based this impression on some of the recently published statistics on faculty political affiliations (Klein & Stern, 2005; Rothman et al., 2005), or whether they relied more on a stereotype. As we noted earlier, this is a domain where stereotypes may be fairly accurate.

We found partial support for the attitude attribution hypothesis. When research findings favored liberals, citizens were more likely to infer that the researcher was liberal, but “conservative” results were not more likely to be attributed to conservatives. The actual or perceived imbalance of political views among researchers may have made the “conservative” attribution less plausible. Our context is different than the debating framework studied by Jones and Harris (1967). Because researchers’ ideological views are supposed to be irrelevant to their empirical results, even partial support for the attitude attribution effect is impressive and troubling.

We also found support for the naïve realism hypothesis. Participants were more likely to speculate that a study was “biased” when it conflicted with their personal views. Also, those with conservative issue attitudes and liberal-favoring results showed a greater tendency than other respondents in other configurations to attributing the findings to the researcher’s own ideology. However, we didn’t find a parallel tendency among those with liberal issue attitudes and conservative-favoring results. Again, it may be that the “researchers are mostly liberal” belief mitigated against an attribution that the author was conservative. There is also considerable evidence that self-identified liberals are more apt to perceive (or tolerate) ambiguity and “shades of gray” in their beliefs about the world (J. Jost, Glaser, Sulloway, & Kruglanski, 2003; Tetlock, 1993). As such, liberals may be less vulnerable to naïve realism than conservatives.

Our results are not a cynical belittlement of the prospects for informing the public debate through social or medical science. Even for our controversial topics, a majority of respondents found the results to be completely or somewhat believable, and the biases we did find, though statistically significant, were fairly modest. Still, citizens appear to hold uncongenial findings to higher standards and often attribute them to the ideology of the researcher. While our focus was on citizens, we could not contend that researcher behavior played no role in the opinions they expressed. As we noted at the outset, citizens often have good reasons for skepticism about the impartiality of social science. While few empiricists would contend that a strict separation of facts and values is possible, most do believe that their methods grant them special warrant to “speak truth to power” and “inform the debate.” Social scientists who wish to claim the mantle of impartial authority should not take for granted that citizens will grant it to us.

## Appendix

### Experimental Manipulations

*Gun Control:* Now I’d like you to imagine that a new study is to be released tomorrow. The study examined the effect of a ban on handguns on local crime rates and gun-related deaths and injuries.

- [NULL RESULT; FAVORS CONSERVATIVES] The researchers report that the ban was unsuccessful, in that making handguns illegal had no effect on gun-related crimes or gun-related deaths and injuries.
- [POSITIVE RESULT; FAVORS LIBERALS] The researchers report that the ban was successful, in that making handguns illegal reduced gun-related crimes and gun-related deaths and injuries.

*Death Penalty:* Now I’d like you to imagine that a new study is to be released tomorrow. The study examined the effect of the death penalty on violent crime.

- [POSITIVE RESULT; FAVORS CONSERVATIVES] The researchers report that the death penalty was effective in deterring crime, meaning that the death penalty reduced rates of homicide and other violent crimes.
- [NULL RESULT; FAVORS LIBERALS] The researchers report that the death penalty was not effective in deterring crime, meaning that the death penalty had no effect on rates of homicide and other violent crimes.

*Medical Marijuana:* Now I’d like you to imagine that a new study is to be released tomorrow. The study examined the effects of making medical marijuana legal for patients with cancer, glaucoma, and AIDS-wasting syndrome.

- [NULL RESULT; FAVORS CONSERVATIVES] The researchers report that the patients who took medical marijuana didn't do any better than those who received traditional medical treatments.
- [POSITIVE RESULT; FAVORS LIBERALS] The researchers report that the patients who took medical marijuana suffered less than those who received traditional medical treatments.

*School Vouchers:* Now I'd like you to imagine that a new study is to be released tomorrow. The study examined the effect of a government school voucher program. This program provided several thousand dollars of public money to help low-income parents pay tuition at private schools.

- [POSITIVE RESULT; FAVORS CONSERVATIVES] The researchers report that the voucher program was successful. Students who received vouchers had higher test scores than students in districts without a voucher program.
- [NEGATIVE RESULT; FAVORS LIBERALS] The researchers report that the voucher program was unsuccessful. Students who received vouchers had test scores that were the same as students in districts without a voucher program.

*Nutrition Ads (Appended Comparison Group):* Now I'd like you to imagine that a new study is to be released tomorrow. The study examined the effect of different types of public service advertisements to encourage people to develop healthy eating habits. These ads were different depending on who was giving the message—whether it was a popular TV actor or a medical doctor.

- [VERSION 1] The researchers report that the ad had a greater effect on peoples' eating habits when the message was delivered by a popular TV actor rather than a medical doctor.
- [VERSION 2] The researchers report that the ad had a greater effect on people's eating habits when the message was delivered by a medical doctor rather than a popular TV actor.

## Survey Items

### *Reactions to the Study*

- How surprised are you to hear this finding? Are you not at all surprised, a little surprised, somewhat surprised, or very surprised?
- How believable is this finding? Would you say it is completely unbelievable, somewhat unbelievable, somewhat believable, or completely believable?
- How biased do you think this study is? Would you say it is completely biased, somewhat biased, somewhat unbiased, or completely unbiased?

- How much do you think this finding would change your view of the issue not at all, a little, somewhat, or very much?
- Now we'd like to ask you some questions about what you think about the authors of that study. Do you think that the people who did that study probably expected this result, probably did not expect this result, or don't you know?
- Do you think that the people who did that study were probably liberal, probably conservative, probably somewhere in between, or don't you know?
- Do you think that the people who did that study wanted to get this result, did not want to get this result, or don't you know?

### *Ideology and Issue Attitudes*

- In general, when it comes to politics, do you usually think of yourself as a liberal, a conservative, a moderate, or haven't you thought much about this?
  - [If "liberal"] Would you call yourself a strong Liberal or not a very strong Liberal?
  - [If "conservative"] Would you call yourself a strong Conservative or not a very strong Conservative?
  - [If "moderate"] If you had to choose, would you consider yourself more like a liberal, more like a conservative, or neither?
- Now we'd like to ask you about how you feel about some public policy issues. Would you favor or oppose a law which would require a person to obtain a police permit before he or she could buy a gun?
- Do you favor or oppose the death penalty for persons convicted of murder?
- Do you think adults should be allowed to legally use marijuana for medical purposes if their doctor prescribes it, or do you think that marijuana should remain illegal even for medical purposes?
- Do you favor or oppose providing parents with tax money in the form of school vouchers to help pay for their children to attend private or religious schools?
- Do you favor the use of government public service messages to promote healthier eating habits?

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