

The Informational Basis for Mass Polarization

Thomas J. Leeper*

September 5, 2012

If nothing else, democratic politics requires compromise. Mass polarization, where citizens disagree strongly and those disagreements magnify over time, therefore seems to present obvious threats to democratic well-being. The overwhelming presumption is that if polarization is occurring, a substantial portion of that polarization is attributable to the fragmentation attendant an increasingly choice-laden media environment where individuals can easily expose themselves only to opinion-reinforcing information. Under what conditions does mass opinion polarization occur? Through two over-time, laboratory experiments involving information choice behavior, this paper considers, first, the effects of slant in one's information environment on over-time opinion dynamics and, second, the moderating role of attitude importance on those effects. The experiments reveal that, despite similar information search behavior, those with strong attitudes are dogmatic, resisting even substantial contrary evidence; those with weak attitudes by contrast hear opposing arguments and develop moderate opinions regardless of the prevalence of those arguments in their environment. Evaluations of information, rather than information search behavior per se, explain why individuals with strong attitudes polarize and those with weak attitudes do not. Polarization therefore seems to require more than media fragmentation and, in fact, a more important factor may be the strength of citizens' prior attitudes on particular issues.

If nothing else, democratic politics requires compromise. Mass polarization, where citizens disagree strongly and those disagreements magnify over time, therefore seems to present obvious threats to democratic well-being. Political science has demonstrated a modulating, though frequently uneasy, view of political polarization. This ambivalence reflects the apparent divisiveness of polarized politics (Sunstein 2009) against the apparent benefits that polarization might have for citizen decision-making (Levendusky 2010). Contemporary debate surrounding polarization has deep roots. The concluding line item of the 1950 American Political Science Association report on political parties offered a cautious desire for party contrast without mass polarization.¹ Just a decade later, McClosky, Hoffmann, and O'Hara (1960) demonstrated that

*Department of Political Science, Northwestern University

¹"If the two parties do not develop alternative programs that can be executed, the voter's frustration and the

the two-party system offered clear differences between parties without undesirable polarization.² In more recent times, McClosky, Hoffmann, and O’Hara’s assessment of American politics seems to resonate much more with the conclusion drawn by Fiorina and Abrams (2008) that “the American public as a whole is no more polarized today than it was a generation ago” (584) than with the contemporary observation by Hetherington (2001) that “Greater ideological polarization in Congress has clarified public perceptions of party ideology, which has produced a more partisan electorate” (629), but the polarization literature is still growing (see, for example, Levendusky 2009, 2010, 2011; Stroud 2011; Carmines and Ensley 2004).

The overwhelming presumption is that if polarization is occurring, a substantial portion of that polarization is attributable to the fragmentation attendant an increasingly choice-laden media environment where individuals can easily expose themselves only to opinion-reinforcing information (see, especially, Sunstein 2002; Stroud 2011; Bennett and Iyengar 2008). Yet the literature says surprisingly little about *when* the micro foundations for mass polarization — overtime increases in individuals’ opinion extremity³ — actually occur (but see Taber and Lodge 2006; Feldman 2011; Levendusky 2011). In other words, media choice is often mentioned as a cause of polarization, but that effect has withstood insufficient empirical scrutiny. Furthermore, for all the talk of polarization, the lack of demonstrated polarization on specific issue opinions suggests that more than information choice alone must be involved. Indeed, much of the polarization literature focuses on trends in macro opinion (as opposed to individual-level opinion changes over time). This type of observational research will struggle to demonstrate the causes of polarization because of the high stability of opinions typically measured in repeated cross-sections (e.g., American National Election Studies) and a lack of individual-level panel data, which is necessary to avoid faulty ecological inferences about opinion dynamics (Druckman and

mounting ambiguities of national policy might set in motion more extreme tendencies to the political left and the political right [...] Orientation of the American two-party system along the lines of meaningful national programs is a significant step toward avoiding the development of such a cleavage” (*APSA Report* 1950, 14).

²“Whereas the leaders of the two parties diverge strongly, their followers differ only moderately in their attitudes toward issues” (426).

³Fiorina and Abrams (2008) write that “Movement away from the center toward the extremes would seem to be a noncontroversial definition of polarizing” (567).

Leeper 2012). Contemporary mass polarization — if it exists — has almost universally been blamed on the nature of the mass media environment (Bennett and Iyengar 2008; Iyengar and Hahn 2009; Sunstein 2002, 2009; Stroud 2011; Arceneaux and Johnson 2012). While it is plausible that the political information environment contributes to polarization, it seems far more likely that the information environment has effects that are highly conditioned by the public’s prior opinions.

What political conditions and what individual predispositions push people to extremes? Under what conditions does mass opinion polarization occur? Through two over-time, laboratory experiments involving information choice behavior, this paper considers, first, the effects of slant in one’s information environment on over-time opinion dynamics and, second, the moderating role of attitude importance on those effects. I first describe my expectations, which are rooted in the psychology of attitude strength, then report the design and results of each experiment in turn, and conclude with a discussion of how information choices are made and the effects of those choices on opinion dynamics including polarization. Experiment 1 shows how slanted environments may influence information exposure and opinion changes, but Experiment 2 shows these effects to be substantially moderated by the strength of individuals’ attitudes. The results suggest that while information choices facilitate polarization for those with the strongest opinions, slanted information environments alone do little to polarize the electorate. This has obvious substantive implications for understanding polarization, but also suggests that the use of macro opinion to look for and understand mass polarization may gloss over critical variations in individual opinion dynamics that vary across population subgroups.

Information and Polarization

Recent commentary on political communication has pointed to the political information environment — the set of information available to a given individual at a given point in time — as a central mechanism in the construction, perpetuation, and implications of a polarizing

politics (see especially Sunstein 2002; Bennett and Iyengar 2008; Iyengar and Hahn 2009; Levendusky 2010). Some have been quick to infer from the increasing information choice made available in the last two decades that media fragmentation causes average citizens to selectively expose themselves only to ideologically congruent political information and avoid cross-cutting exposure (Bennett and Iyengar 2008; Iyengar and Hahn 2009).⁴ During the mid-century period where Schattschneider and fellow committeemen saw parties as insufficiently differentiated, news media offered little diversity in political information; from the perspective of political communication, this correspondence is likely meaningful.⁵ This historical association bolsters arguments that media play a powerful role in polarization. But does information choice alone produce polarization?

Information Choice

Research has noted that political debate is frequently competitive — posing arguments supportive of and opposed to particular policies against one another — and that captive exposure to competing messages seems unlikely to polarize opinions (Petty and Cacioppo 1986; Chong and Druckman 2007*b*). It is less clear how information choice behaviors might enable individual-level opinion dynamics that aggregate to polarization. Despite considerable evidence for how people choose (political) information (Redlawsk 2004; Lau and Redlawsk 2006; Fischer et al. 2005, 2011; Sundström 1987; Jonas et al. 2001; Verplanken, Hazenberg, and Palenewen 1992; Huang 2000; Valentino et al. 2008), little research has examined how people choose from within different information environments or how those choices affect attitudes or behaviors downstream. This

⁴Fiorina and Abrams (2008) find little opinion polarization during this period, but there is a good chance this is due to the nature of the opinions considered in their assessment of opinion stability and change. As Druckman and Leeper (2012) argue, “macro” opinion studies, like Fiorina and Abrams’s, rely fundamentally upon less volatile, more general attitudes than those considered in most studies of opinion change and are thus ill-suited for examining the extent to which media polarize the electorate.

⁵In 1980s and 1990s scholarship, “the nightly news programs of ABC, CBS and NBC were widely criticized for being largely the same broadcasts covering the same narrow range of issues from the very same angles” (Mutz and Young 2011, 1021). Bennett and Iyengar (2008) would see this period as largely the same as much of 20th Century American media environment, where “The offerings of all news organizations were sufficiently homogeneous and standardized to represent an ‘information commons.’ Americans of all walks of life and political inclination were exposed to the same information” (717; see also Williams and Delli Carpini 2011).

seems to be, in part, due to research on political information acquisition (see, most prominently, Lau and Redlawsk 2006) adopting and responding to methods originated in consumer behavior research, which emphasize choice as an outcome (Jacoby, Szybillo, and Busato-Schach 1977; Jacoby, Chestnut, and Fisher 1978), rather than experimental designs aimed at understanding political phenomena.⁶

Choice is a critical part of the media effects, but from a political science perspective it is probably best understood as a mechanism rather than outcome in and of itself. There is limited extant research that considers information choice in this fashion. Arceneaux and Johnson (2012), for example, suggest that choice undermines the polarizing effects of partisan media. Whereas captive exposure to Fox and MSNBC lead people to hold quite different opinions toward issues, choice allows individuals to choose ideologically congruent information exposure or opt out of political information altogether. Levendusky (2012), however, finds that exposure to chosen messages magnifies the effects of partisan media observed under captive exposure. In other research, Redlawsk, Civettini, and Emmerson (2010) show that in the face of increasingly counter-attitudinal information about one’s preferred political candidate, campaign search behavior and affect toward that candidate eventually “tip” toward the slant of the environment. Beyond these few political science experiments, however, we know little about the opinion-dynamic effects of information choice and the mixed results from Arceneaux and Johnson (2012) and Levendusky (2012) suggest the effects of choice on polarization are largely unresolved.

This discussion leads to a first set of hypotheses associated with the premise that because the information environment shapes the choices that people *can* make, the information environment causes the choices the people *do* make (and to some extent directly affects their subsequent opinions). Just as in the real world, the information environment itself may influence attitudes aside from any effects of the particular information that people choose to read. While people

⁶Though psychologists have also examined information choice behavior. Fischer, Schulz-Hardt, and Frey (2008) and Fischer et al. (2011) have shown that search behavior changes as a function of the size of one’s information environment and the amount of time spent looking for information. In fact, information volume and its effects on “overload” have been major research topics at the border of psychology and consumer behavior (Greifeneder, Scheibehenne, and Kleber 2010; Scheibehenne, Greifeneder, and Todd 2010; Malhotra 1982).

make choices from the environment they are presented with, they often have little choice over the environment itself (which is set by editorial decisions and political agendas; Boczkowski 2010; McCombs and Shaw 1972; Baumgartner and Jones 1993). Individuals are often incidentally exposed to the information that they choose to avoid (Lee 2009; Tewksbury, Weaver, and Maddex 2001; Zukin and Snyder 1984). Operating within an environment that disproportionately favors or disproportionately opposes your predispositions would therefore seem to have divergent effects on both your choice behavior and the opinions that result from operating within each of those environments.

Hypothesis 1: Pro-slanted environments will lead to greater numbers of Pro articles being chosen, Con-slanted environments will lead to greater numbers of Con articles being chosen, and mixed environments will tend to lead people to choose an even number of Pro and Con argument.

By constraining choices and by exposing individuals to a mix of Pro and Con headlines (and further information contained within chosen articles), information environments also change peoples' opinions in the direction of the environment's slant.⁷ As a result of exposure to the environment and exposure to the information contained in articles therein, individuals should react to that information by evaluating it and moving their opinions in the direction of the slant of the environment, as they would were they exposed to information in a captive fashion as is paradigmatic in political communication research (Chong and Druckman 2007*a*; Redlawsk, Civettini, and Emmerson 2010; Druckman, Fein, and Leeper 2012).

Hypothesis 2: Pro-slanted environments will lead to more favorable opinions on an issue, Con-slanted environments will lead to less favorable opinions, and mixed environments will tend to lead to moderate opinions (comparable to those of the control group).

⁷As discussed, individuals do not need to thoroughly read and process all the information around them; they can be affected merely by passingly evaluating it. And, if people indeed read Pro and Con articles generally proportionate to their presence in the environment (as Hypothesis 1 predicts), then reading articles should only reinforce the effects of exposure to Pro and Con headlines in the environment.

Polarization for Some

If information environments sway opinions, then there is little reason to believe that polarization would happen at all. Polarization requires that individuals move to opposite extremes, not reach the same conclusion. When is this likely to occur? When individuals select information from their environment and evaluate that information in an attitude-reinforcing fashion (Kunda 1990; Taber and Lodge 2006), they may be much less likely to respond to the informational contents of their environment even if that environment is stacked against their predispositions (Sheagley 2012; Redlawsk, Civettini, and Emmerson 2010). Developing more extreme viewpoints — the foundation of polarization — would be much more likely. Indeed, Taber and Lodge (2006), suggest that exposure to any information increases attitude extremity, but they consider only a balanced information environment.⁸ As Leeper (2012) has argued, however, attitude-defensive motivation is not always widespread; only individuals with strong attitudes are likely to engage in attitude-defensive reasoning. Experiments by Leeper (2012) and Brannon, Tagler, and Eagly (2007) show that high attitude importance leads individuals to prefer attitude-congruent information over incongruent information.⁹

I therefore expect that personally important issues and attitudes will increase the likelihood of attitude-congruent information seeking and directionally motivated political reasoning (i.e., attitude-defensive evaluations of political information). When importance is high, motivated reasoning and its dogmatic effects are likely; when importance is low, citizen responsiveness to the information environment (i.e., polarization) is likely to be high. The effects of the information environment might therefore be highly conditional — depending on the way that individuals obtain and process information, the slant of one’s information environment might be a central factor in the formation of one’s opinions or it might be irrelevant for understanding

⁸Note also that while much research has emphasized the moderating role of political knowledge in motivated reasoning (Taber and Lodge 2006), convincing evidence that knowledge results from attitude importance (Holbrook et al. 2005) suggests that pattern of moderation is attributable to issue involvement as the underlying cause of motivated reasoning.

⁹Other extant evidence documents increased searching for information when an issue is personally important (Holbrook et al. 2005; Lee et al. 1999; Hart et al. 2009; Kim 2008), but no published work documents how the contents of the environment constrain choice behavior.

the increasingly polarized political climate witnessed in 21st century United States.

Hypothesis 3: High attitude importance will lead those with Pro *t1* (pretreatment) opinions to choose more Pro information and those with Con *t1* opinions to choose more Con information, regardless of environment.

In other words, selective exposure and evaluation may not be constrained by the contents of the information environment alone. An importance-driven motivation to seek out congruent information has the potential to yield selective exposure when the environment is evenly balanced or even when it is stacked against one's prior opinions. Those with high importance Pro (Con) *t1* attitudes will seek out Pro (Con) information regardless of the environment they are in. For those with low importance, however, the environment should be much more influential in shaping the choices that people make and the opinions they hold thereafter. This leads to two very different expectations about how those with high and low importance attitudes, respectively, will respond to similar environments:

Hypothesis 4a: High attitude importance will negate the directional effect of the environment's slant on issue opinions. Those with high importance Pro (Con) *t1* attitudes will hold similarly positive (negative) opinions regardless of the environment they are in.

Hypothesis 4b: Low attitude importance will lead individuals' opinions to be highly influenced by the environment's slant (in the direction of that slant). Those with low importance Pro and Con *t1* attitudes will tend to hold positive opinions in a Pro environment, negative opinions in a Con environment, and moderate opinions in a mixed environment (comparable to the control group).

In other words, those most likely to engage with politics (those for whom politics or particular issues are personally important; Krosnick 1990) are most likely to polarize, while the remainder of the public simply complies with the slant of the information environment. In testing these hypotheses, Study 1 examines Hypotheses 1 and 2. Study 2 serves to replicate those findings and then tests Hypotheses 3 and 4.

Table 1: Study 1 Experimental Conditions

	<i>Search</i>	<i>Captive</i>
Pro	1 (35)	3 (40)
Con	2 (42)	4 (32)
Control	5 (27)	

Note: Numbers in parentheses are treatment group sample sizes.

Study 1

In order to test Hypotheses 1 and 2, Study 1 looked only at the effects of slanted information environments (entirely Pro and entirely Con) relative to captive exposure to Pro, Con, or non-political Control information on information choices and the opinions that result from those choices. The findings suggest that information environments can have a direct effect on opinions on two different issues: health care reform and U.S. military actions in Libya. These issues were chosen because of their timeliness in the broader political context at the time of the study, with health care reform the subject of considerable debate several years earlier and the Libya invasion the subject of ongoing debate at the time of the study. The Pro health care articles focused on the benefits that health care reform would bring to those without insurance and with poor access to medical care, while the Con articles focused on the expansion of government bureaucracy as a result of involvement in health care. The Pro Libya articles focused on protecting civilians from violence on the part of the now-ousted Gaddhafi regime, while the Con articles focused on the burden placed upon the military and costs of U.S. involvement in, then, a third overseas conflict. All of these frames were selected for use in the study as a result of pretests conducted with respondents not involved in the full study, the results of which are described in the Appendix.

The study involved two manipulations to produce a 2x2 factorial design (plus a control group, who read a series of nonpolitical news articles before proceeding with the questionnaire). Half of the participants were assigned to “search” conditions, where they were presented with a 4x4 matrix of news article headlines from which they could choose to read any number of articles

Figure 1: Screenshot of Example Study 1 Search Environment

Please choose some articles to read. You may read any article, in any order. You do not need to read every article.

The Path to Playoffs in College Football?	Health Care Reform Aims to Reduce the Number of the Uninsured	Foreign Journalists, Finally Allowed in Libya, Report on Atrocities Against Civilians	Told to Eat Its Vegetables, America Orders Fries
Top Priority for Reform: Improving the Health of At-Risk Populations	Qaddafi's Siege on Populace Leads Thousands to Flee Country	Noise Pollution from SunChips Bags Prompts Change in Packaging	The Coffee-House Effect
Obsessions With Minutiae Thrive as Databases	Action Needed to Protect the Rising Numbers of Uninsured Americans	The Gimmick Makes the Beer	Working Class Families Have Most to Gain from Healthcare Reform
Libyan Civilians Struggle to Resist Unprovoked Attacks by Qaddafi's Forces	Qaddafi Brutalizes Foes, Armed or Defenseless	Community-Garden Rules Receive a Mixed Reaction	Why are 3-D Movies so Bad?

for up to 15 minutes (the approximate amount of time it took captive participants to read 8 articles; thus participants were not expected to read every article). Figure 1 shows an example search environment. Eight of these articles were non-political filler, four addressed Libya, and four addressed health care reform. Participants were assigned either to a Pro condition, where all the Libya and health care reform articles were associated with supportive opinions on the two issues, or to a Con condition, where all the Libya and health care reform articles were associated with negative opinions. In other words, respondents were assigned to the same treatment condition for two simultaneous experiments: one about Libya and one about health care reform.

The remaining respondents were assigned to “captive” conditions, where they were assigned to read eight news articles. These respondents were assigned to read either 2 Pro articles about Libya and 2 Pro articles about health care reform (along with 4 nonpolitical filler articles) or to instead read 2 Con articles about Libya and 2 Con articles about health care reform (along with the same nonpolitical filler). These captive conditions serve as a baseline for assessing the size of effects in the search conditions. A control condition read only nonpolitical articles in a captive fashion. Table 1 describes the design.

A total of 176 Northwestern University undergraduates participated in the study in Spring 2011 in order to fulfill a course requirement. Though questions are persistently raised about the appropriateness of student participants, there is little a priori reason to believe they should

Table 2: Health Care and Libya Opinion Changes

Condition	Health care	Libya
Search Pro	0.00 (0.03)	0.05 (0.04)
Search Con	-0.04 (0.04)	-0.04 (0.03)
Captive Pro	-0.05 (0.02)	0.03 (0.03)
Captive Con	-0.12 (0.04)	-0.03 (0.04)
Control	0.03 (0.03)	0.06 (0.03)

behave differently than others (Druckman and Kam 2011). Participants were not told anything about the purpose or content of the study prior to entering the laboratory. The study involved pretest measurement of opinions (t_1) about one month before the 30-minute, in-person experimental session. These pretreatment opinions are needed to assess within condition variations in information choice among those supportive of and opposed to each policy. At the lab session, individuals read articles (in either the search or captive fashion) and then completed a short post-treatment questionnaire that measured their opinions toward both issues. All variables are coded 0-1 with higher values indicating greater support. Exact question wordings are included in the appendix. Given the experimental design, all results focus on treatment group means and statistical significance is calculated based upon randomization/permutation tests, which offer a nonparametric test of the null hypothesis of no between-treatment differences.

Results

Recall that Study 1 is primarily intended to test Hypothesis 1, which expects that the contents of information environment shape search behavior, and Hypothesis 2, which expects that slanted environments move opinions in the direction of the slant. I first examine evidence testing Hypothesis 2 and then relate this back to evidence of information choice behavior for testing Hypothesis 1.

At t_1 participants reported favorable opinions toward government involvement in health care and, on average, moderate opinions toward military involvement in Libya. The first column of Table 2 reports changes in mean health care opinions (by treatment group) between t_1 and t_2 .

The second column does the same for the Libya issue.¹⁰ As should be clear, exposure to Pro rather than Con messages (in either search or captive fashion) appears to have affected opinions (with Pro participants holding more positive opinions than Con participants), consistent with Hypothesis 2. More specifically, on the health care issue, the difference between reading information from a slanted Pro or slanted Con information environment is a difference in opinions of 0.04 (on a 0-1 scale, $p=0.21$), as opposed to a difference of 0.07 ($p=0.04$) for being captively exposed to the same messages. This suggests searching within a slanted environment can have similar effects to being captively exposed to a biased subset of available information. The effects for Libya opinions are similar. The difference in opinions between those captively exposed to Pro rather than Con information was 0.06 ($p=0.02$), while the difference for those searching in slanted Pro and slanted Con environments was 0.09 ($p=0.11$).¹¹

Thus, on both issues, captive exposure to messages and search for messages within slanted information environments appear to produce comparable effects on opinions, consistent with predictions about opinions laid out in Hypothesis 2. This suggests that while extant research has shown individuals to resist counter-attitudinal information in the updating of their opinions, the information environment can have effects on opinion extremity. The reason for this is clear in a simple examination of information choice behavior (which provides a test of Hypothesis 1). Table 3 clearly shows that when faced with an environment containing only Pro information or only Con information, individuals — regardless of $t1$ opinion — choose to read approximately equal proportions of issue-relevant information, which is consistent with the environment effects predicted by Hypothesis 1. If there is no attitude-congruent information to choose, individuals must ultimately face incongruent information. That exposure via information search, as we have seen, has impacts similar to captive exposure.

In sum, I find support for Hypothesis 2 — the information environment shapes opinions

¹⁰Given that treatment conditions differed somewhat in their $t1$ opinions, changes rather than $t2$ opinions are a better metric of treatment effects.

¹¹Some readers may desire a discussion of how the captive conditions obtained traditional levels of statistical significance and the search conditions did not. Given recent arguments by Gelman and Stern (2006), I hesitate to draw a distinction between the substantive meaning of “significant” and “marginally significant” effects here.

Table 3: Issue-Relevant Articles as Proportion of Total Articles Read, by Search Condition and Prior Opinion (Study 1)

	Health care		Libya	
	t1 con	t1 pro	t1 con	t1 pro
Search Pro	0.18 (0.03)	0.17 (0.03)	0.25 (0.04)	0.29 (0.05)
Search Con	0.15 (0.04)	0.20 (0.03)	0.26 (0.05)	0.25 (0.04)

Note: Cell entries are the mean proportion of issue-relevant articles selected out of all articles read, with standard errors in parentheses. The Pro (Con) environment contained only Pro (Con) information, so values in the first row indicate Pro articles as a proportion of all articles read and values in the second row indicate Con articles as a proportion of all articles read.

by exposing individuals to potentially slanted information. I also find that individuals with different prior opinions seem to behavior in similar ways within a given information environment, suggesting a strong impact of the environment. Substantively, however, this leaves little room for polarization. If everyone is swayed by the environment — in both their behavior and their opinions — choice per se would seem to matter very little, the environment alone being the driver of opinion dynamics. Individuals are constrained by the information available to them; their opinions reflect both the perseverance of prior attitudes and their evaluations of new information. Even when people have the opportunity to opt out of information that might change their views, they appear to still be influenced by the presence of that information in their environment. If information choice is supposedly the basis of polarization, there must be more complicated relationships linking the information environment, choice, and opinion change. I take up this question in greater detail in Study 2.

Study 2

Given that Study 1 showed clear directional effects of the issue environment (i.e., environments constrained information choice behavior such that the Pro environment led to more positive attitudes and Con environment led to more negative attitudes), Study 2 aimed to provide a replication of those results and to further understand heterogeneity of both information search

behavior and opinion changes between those with high and low importance attitudes (that is, to test Hypotheses 3 and 4). Recall that Hypothesis 3 predicted that high attitude importance would lead individuals with pro *t1* opinions to choose more Pro information and those with con *t1* opinions to choose more Con information, regardless of how much attitude-congruent information was available in their environment. Hypothesis 4a expected that those with high attitude importance would therefore develop more extreme opinions regardless of environment and Hypothesis 4b expected the opinions of those with low attitude importance would move in the direction of the environment. To provide a rigorous test of these hypotheses, I largely replicate the design of Study 1 (and the findings regarding Hypotheses 1 and 2) but gain additional leverage on the causal effects of attitude importance on information search behavior and opinion dynamics by providing a direct manipulation of importance. Similar to the first experiment, Study 2 focused on an aspect of health care reform, which I describe before turning to the details of the experimental design.

Issue Selection and Frames

The experiment focused on opinions surrounding medical provider compensation — an aspect of health care policy that, while important, has received dramatically less media coverage and public debate than other facets of the Patient Protection and Affordable Care Act (PPACA). The specifics of provider compensation are — like most areas of health care policy — complex, but status quo policy is that most providers are paid fixed dollar amounts based upon an itemized list of procedures or services performed regardless of how those procedures benefit or harm patient well-being. Some argue that this current “fee-for-service” system leads to over-utilization of health care because providers have little incentive to withhold unnecessary care and providers benefit from performing unnecessary tests and procedures. As one possible alternative, compensation schemes built around physician performance in terms of patients’ health outcomes have been proposed in order to increase accountability for services rendered and reduce overall health care spending, somewhat analogously to proposals for performance-based

pay for educators. Reforms could feasibly reduce health care expenditures by more efficiently improving health without the excessive use of costly tests or procedures as well as provide “integrated care” where physicians work collaboratively to more efficiently and effectively satisfy patient needs.¹²

Though the PPACA did not explicitly change the rules of provider compensation in the United States, Section 3022 of the legislation called for the federal Department of Health and Human Services to examine and set guidelines for the creation of so-called “Accountable Care Organizations” (ACO), which would use outcome-based provider compensation, in an effort to reduce Medicare spending. Understanding public preferences over alternative compensation schemes is therefore a relevant contemporary issue. And unlike more general opinions about health care policy, individuals’ opinions toward this specific policy should not be heavily crystallized.

Articles used in the experiment were constructed from a mix of recent news coverage and academic writing on different compensation schemes. The Pro and Con messages were framed so as to reduce confounding due to a multitude of distinct arguments in the environment. The Pro frame focused on improvements to health care quality under outcome-based compensation and the Con frame focused on possible reductions in health care access under that scheme. These frames were chosen as a result of pretesting, described in the Appendix.

Design

Similar to Study 1, the experiment involved two stages because it is necessary to examine information search and attitude changes in the context of prior opinions. Basic participant characteristics and opinions were measured during the first stage ($t1$) and treatments were applied and outcomes measured during the second stage ($t2$) several weeks later. At $t2$, two manipulations were introduced. (The design is described in Table 4.) The first provided an exogenous manipulation of attitude importance. These manipulations follow from evidence that

¹²Another alternative is to pay providers fixed salaries or fixed per-patient fees regardless of services performed or outcomes.

Figure 2: Screenshot of Example Study 2 Search Environment

Reports From the Hive, Where the Swarm Concur	Doctors Can Work Together to Improve Patient Health, But Need Appropriate Incentives	SEC Vote Requires Business Filings to Add Environmental Risks to Bottom Line	Wellness, Rather Than Illness, Is Focus Under Outcome-Accountable Care
Pay for Performance Improves Quality of Health Care Through Collaborative Medicine	Patients Better Served When Providers Paid for Health Outcomes	Anatomy of a Tear-Jerker	Gender Differences in Education Need Innovative Solutions
Why are 3-D Movies so Bad?	Improving America's Health Requires Provider Incentives, Not 'Fee-for-Service'	Spammers Use the Human Touch to Avoid CAPTCHA	Heart Attack While Dining at Heart Attack Grill in Las Vegas
Physicians Group Says Quality Will Improve Under Outcome-based Payments	When Paid for Outcomes, Doctors Have Little Reason to Treat Highest Risk Patients	USDA Raises Corn Export Outlook	Out of the O.R., T.R. Knight Back Onto the Stage
Council Is Set to Consider Increases in Hotel and Property Taxes	A Bowl of Chili with Bragging Rights	Will a Standardized System for Verifying Web Identity Ever Catch On?	Paying Doctors Based on Outcomes Will Lead to Rationing

attitude importance is driven in part by self-interest (Boninger, Krosnick, and Berent 1995). Though previous research has correlated attitude importance with various outcomes (Holbrook et al. 2005, e.g.), a manipulation provides clear causal leverage. The importance manipulation was embedded in instructions provided to participants at the beginning of t_2 .¹³ Importance was manipulated to be high by providing half of the participants with the following instructions:

In today's session, you will have the opportunity to choose to read a number of recent news articles. Some of the articles focus on issues of clear direct personal relevance to you, such as rules regarding how physicians are paid (which affects your access to quality health care). Other articles focus on issues that are likely of little direct personal relevance to you, such as issues surrounding agricultural policy.

The other half of the participants were manipulated to believe the issue was unimportant by instructing them that:

In today's session, you will have the opportunity to choose to read a number of recent news articles. Some of the articles focus on issues of direct personal relevance to you, such as agriculture policy (which affects prices consumers pay for food). Other articles focus on issues of little direct personal relevance to you, such as health regulations (which are not currently being debated and seem like they will not significantly affect you personally). Other articles address additional topics that have nothing to do with policymaking.

¹³Participants had been given (and were subsequently given) no other indications about the purpose of the study.

Table 4: Study 2 Experimental Conditions

	Issue Importance	
	<i>High</i>	<i>Low</i>
Slanted Pro	1	2
Balanced	3	4
Slanted Con	5	6
Control		7

After reading these instructions, participants were given 15 minutes to choose and read articles from an environment that consisted of 20 articles (see Figure 2).¹⁴ As the second manipulation, the contents of the search environments were as follows:¹⁵

- Eight nonpolitical articles
- Eight articles about provider compensation:
 - Pro environment contained six Pro messages and two Con articles
 - Con environment contained two Pro messages and six Con articles
 - Mixed environment contained four Pro and four Con articles
 - Control environment contained eight additional nonpolitical articles
- Four articles about other political issues (unrelated to both health care and the frames)

Data were mostly collected in the Northwestern Political Science Research Laboratory, involving 300 participants. The sample included 109 students who completed the study for partial course credit, 96 nonstudents recruited from the campus area and online advertisements who completed the study for a \$15 cash payment, and 95 participants recruited from Amazon Mechanical Turk, who completed the study remotely and were paid \$6 each. Recruitment of each sample was planned in order to increase statistical power and diversify the subject population lest students responded differently to the experiment than others (Druckman and Kam 2011).¹⁶

¹⁴Participants had to remain in the environment for the full 15 minutes, but could choose to stop reading at any point.

¹⁵While the choice of the size of the search environment and proportions of different types of articles contained therein is inevitably somewhat arbitrary, the environment was designed to be larger than what the average participant could read in the allotted time, consist of a mix of political and non-political articles, and not be composed disproportionately of articles addressing the target issue (for a similar justification of the search environment, see Druckman, Fein, and Leeper 2012).

¹⁶Replication data sufficient to compare sample characteristics are available at [TBD].

After choosing and reading articles from the environment, participants reported their opinions and answered a few additional questions. In order to test the robustness of effects, two issue opinion questions were used: one that measured respondents' preferences for fee-for-service versus performance-based provider compensation on a seven-point scale (similar to the questions used in Study 1) and a secondary measure (asked only at $t2$) that captured preferences on an 11-point scale of exact percentages of compensation that should be generated by services-based fees versus patients' health outcomes. Given that both questions are intended to measure the same construct, hypotheses for both measures are the same.¹⁷ The exact question wording of the two outcome measures are included in the Appendix. All outcomes are scaled -1 to 1 and, as in Study 1, non-parametric tests are used for testing all hypotheses.

Results

Though Study 2 largely serves to test Hypotheses 3 and 4, it also allows for a replication of the results of Study 1 with regard to the direct effects of information environment on search behavior (Hypothesis 1) and opinion dynamics (Hypothesis 2). Consistent with the results in Study 1, the Pro environment made individuals more supportive over time relative to the control group and the Con environment made individuals less supportive relative to the control group. These results are consistent with the direct effect of the environment outlined in Hypothesis 2. Averaging across all conditions, opinions became significantly more negative between $t1$ and $t2$ ($\bar{x}=-0.31$, $SE=0.07$), but these changes were uneven across treatment groups.¹⁸ Given the overall negative change in opinions, results will be presented hereafter as difference-in-differences estimates. Specifically, the control group change in opinion ($t2 - t1$) is subtracted from every

¹⁷A pretest of the dependent measures was conducted with twenty-one of the participants from the frame-selection pretest, described in the Appendix. On the original variable scales, these respondents reported a mean opinion of 4.71 ($SD = 1.55$) on the ordinal measure and a mean of 62.86% ($SD = 21.94$) on the percentage measure, both of which indicate a slight preference for service-based compensation. The two measures correlated at $r = .86$, suggesting they likely measure the same attitude construct.

¹⁸Treatment group means for $t1$ opinion, $t2$ opinion, the change over time, and the secondary $t2$ opinion measure are reported in the Appendix.

other treatment conditions' mean change in opinion ($t2 - t1$).¹⁹

Breaking out results by $t1$ opinion, interesting patterns of effects emerge that allow us to examine Hypotheses 3 (that $t1$ opinions shape information choices) and 4 (that $t1$ opinions and attitude importance shape over-time opinion changes). In regards to opinion changes, significant differences across treatment conditions emerge when looking at both those with con $t1$ opinions (Kruskal-Wallis $\chi^2(6)=10.62$, $p=0.10$) and pro $t1$ opinions ($\chi^2(6)=26.83$, $p=0.00$).²⁰ The same pattern emerges for the salary measure, which was asked only at $t2$ (con: $\chi^2(6)=16.93$, $p=0.00$; pro: $\chi^2(6)=29.30$, $p=0.00$).²¹

To clarify the pattern of effects, Figure 3 shows the changes in opinions over time in each treatment condition (relative to the control group as discussed above), separated by those with $t1$ con (red bars) and $t1$ pro opinions (blue bars). Looking at the Pro conditions (left set of four bars), those with con opinions who were induced to have high-importance attitudes actually became more negative over-time, while those with pro opinions became more supportive of outcome-based care. The plot clearly shows that the effect of the environment on polarization is highly conditional — the environment alone seems to matter less than how different types of individuals behave within that environment. The figure suggests that the high-importance respondents engaged in motivated evaluation of the available information, polarizing in their responses to the same Pro information (consistent with Hypothesis 4a). Under low importance, however, opinions among those with low importance moved in a fashion very similar to the no-information control group, which was unexpected (by Hypothesis 4b).

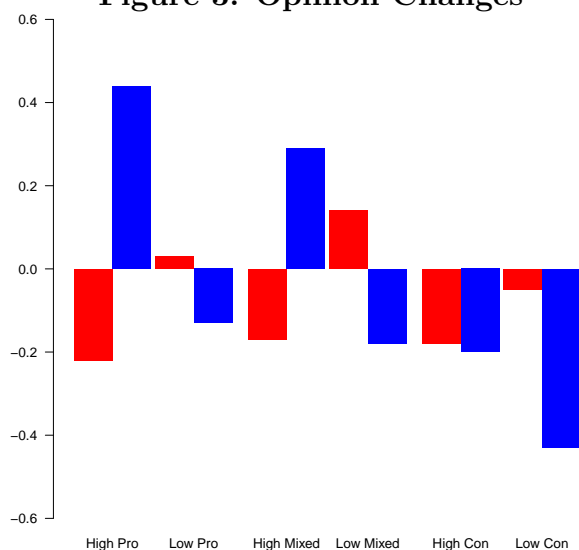
A similar pattern emerges in the Mixed conditions (middle set of bars). High importance respondents again polarized in response to the even balance of Pro and Con information available to them, while low importance respondents moderated (Con respondents becoming more

¹⁹This has no effect on inference, but eases interpretation by having a change of zero within a treatment group signify no change relative to the control group (which received no issue-relevant information at any time during the experiment). When results are presented for individuals with con $t1$ (pro $t1$) opinions, the control group average for only those participants with con $t1$ (pro $t1$) opinions is used in making this calculation.

²⁰The Kruskal-Wallis χ^2 is a nonparametric analogue to ANOVA that does not require a Normality assumption.

²¹Looking just at $t2$ opinions, significant differences across treatment conditions are also present (con: $\chi^2(6)=21.60$, $p=0.00$; pro: $\chi^2(6)=39.07$, $p=0.00$).

Figure 3: Opinion Changes



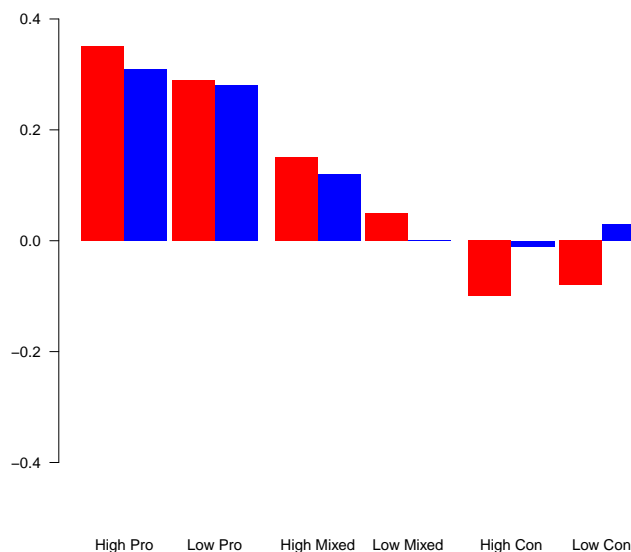
Note: Figure displays difference-in-differences estimates of treatment effects, separated by con t_1 opinions (red) or pro t opinions (blue), less the mean change in control group opinion. Means and associated standard errors reported in the figure are, reading left-to-right, as follows: -0.22 (0.07), 0.44 (0.16), 0.03 (0.13), -0.13 (0.12); -0.17 (0.10), 0.29 (0.11), 0.14 (0.08), -0.18 (0.13); -0.18 (0.10), -0.20 (0.15), -0.05 (0.11), -0.43 (0.11).

supportive and Pro respondents becoming less supportive).

The results for the Con conditions (right set of bars) are less consistent with expectations and the other conditions. High importance respondents, regardless of t_1 opinion became less supportive (reflecting the information in their environment). Low importance con respondents moved very little (consistent with behavior in the other information environments), but low importance pro respondents became significantly — indeed, dramatically — less supportive. This change was not expected but may reflect the slightly right-skewed t_1 opinion distribution: there were very few individuals offerings scores of 6 or 7 (i.e., very supportive of outcome-based compensation), suggesting that on this particular issue individuals held relatively moderate and possibly ambivalent opinions that, lacking importance, were easily swayed by con information. This also bolsters the evidence for those with con t_1 opinions: regardless of environment, those with high-importance con t_1 opinions become consistently (indeed indistinguishably) more opposed after reading quite different mixes of information.

Despite subtle variations across the Pro, Mixed, and Con environments, one striking feature

Figure 4: Balance of Pro and Con Articles Read



Note: Figures displays the mean difference in proportions of Pro and Con articles read (Pro%-Con% of all articles read) for each treatment condition, separated by con *t1* opinions (red) or pro *t1* opinions (blue).

of Figure 3 is the similarity of the effects of prior attitudes and strength across the three environments. If the environment alone explained opinion dynamics, we would expect the left, center, and right portions of the figure to look quite different. Instead, they look quite similar, which provides unequivocal visual evidence that attitude importance is critical for understanding how choice might lead to polarization.

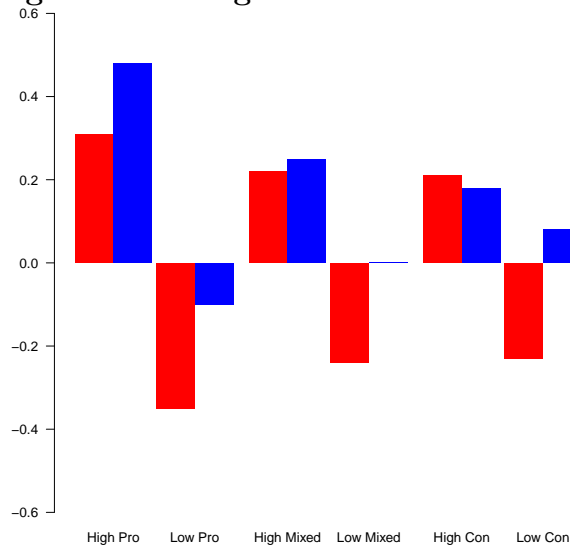
These results suggest two possible explanations for why opinions moved the way they did: either people engage in attitude-congruent selective exposure and/or evaluate whatever information they encounter in an attitude-reinforcing fashion. As a reminder, Hypothesis 3 expected that those with high importance attitudes would choose disproportionately attitude-congruent information. Overall, individuals read 8.59 (SE=0.20) articles during their fifteen minutes in the search environment, or just about one article every two minutes. And, attitude importance — despite the expectation that it would increase information-seeking — appears to have had little effect on behavior (contrary to Hypothesis 3). Indeed, it had no effect on the balance of Pro and Con articles read across the conditions. Figure 4 shows this pattern of search behavior.

Individuals in Pro environments read more Pro than Con articles, those in Mixed environments read more Pro than Con (though the balance between the two was closer), and those in Con environments read about the same number of Pro and Con articles (and those with con *t1* opinions read more Con articles).

The lack of differences in search behavior between those high- and low-importance attitudes and prior Pro and Con attitudes means that the patterns of opinion polarization (among high importance individuals) and opinion moderation (among low importance individuals) is due to biases in *evaluation* not biases in *search behavior*. And the behavioral results in Study 2 perfectly replicate those of Study 1. While the effects on opinions were dramatic despite few differences in participants' search behavior, effects on individuals' certainty about their opinions provide further evidence of motivated reasoning. In aggregate, the sample showed no significant over-time changes in attitude certainty during the course of the experiment ($\bar{x}=-0.02$, $SE=0.02$). But changes in certainty over time differed dramatically among those with high and low importance attitudes. Those manipulated to have high importance became significantly more certain about their opinions ($\bar{x}=0.28$, $SE=0.03$) even as they reached opposite opinions from the same information, while those manipulated to have low importance became significantly less certain about their more moderate opinions ($\bar{x}=-0.15$, $SE=0.03$) and this difference is clearly significant ($p=0.00$). Interestingly, when manipulated to have high importance, changes in certainty did not differ between those with con and pro *t1* opinions (see Figure 5). By contrast, under low importance, those with con *t1* became much less certain of their opinions and those with pro *t1* opinions showed little change in certainty regardless of environment.

These results, consistent with motivated evaluation of information, are interesting because those with high importance found any issue-relevant information, regardless of its valence, helped them become more certain of their increasingly extreme opinions. When their opinions were unimportant, however, individuals became less certain. More information led them to be less convinced of their opinions, even though those opinions did not move much over time or, when they did move, they became more moderate.

Figure 5: Changes in Attitude Certainty



Note: Figure displays difference-in-differences estimates of treatment effects: i.e., changes in attitude certainty from t_1 to t_2 within each treatment condition, separated by con t_1 opinions (red) or pro t opinions (blue), less the mean change in control group certainty. Reading left to right, means and associated standard errors displayed are: 0.31 (0.05), 0.48 (0.10), -0.35 (0.12), -0.10 (0.10); 0.22 (0.08), 0.25 (0.06), -0.24 (0.09), 0.00 (0.08); and 0.21 (0.10), 0.18 (0.07), -0.23 (0.07), -0.08 (0.12).

Discussion

The late 20th and early 21st centuries have been marked by their abundance of choice — people seem freer to make choices than ever before (and not only about politics and information). For many years, this choice was seen as a positive shift away from the homogeneous offerings of mid-century political media (Mutz and Young 2011). Yet Botti and Iyengar (2006) write that “the presumption that people are never worse off, and usually better off, as a result of making their own choices may not necessarily be true” (35). The results presented here suggest that choice, at least among those with personally important opinions, does not appear to make those individuals or democracy better off. Freedom to choose one’s political news seemed to many scholars of the 1980s a much needed component of democratic health, but the abundance of choice that has emerged in the “post-broadcast” present is now being seen as democratically problematic (Sunstein 2002). Whereas citizens are no longer captive to media influence, they

must make choices from a complex information environment (which often provides people with unequal access to particular information).

Empirically testing the impacts of information choice depends in large part upon two underutilized features of experimental design that were used to advantage in this research: panel data and moves away from the “captive audience” assumption (Hovland 1959; Druckman, Fein, and Leeper 2012). Mass polarization is fundamentally a question of over-time dynamics of individuals’ opinions, aggregated at multiple points in time. Panel data is the only way to establish the existence of polarization and begin to understand its causes and effects. Similarly, the frequently mentioned relationship between information choices and polarization imply the centrality of choice behavior in understanding the causes thereof. A lack of studies involving information choice is therefore critically problematic. While Arceneaux and Johnson’s research has been instrumental in encouraging choice-focused experimental research (see also Gaines and Kuklinski 2011), when experiments have incorporated information choice, the set of alternatives has typically been small, such as Fox and MSNBC (Levendusky 2011; Arceneaux and Johnson 2011), pro and con (Leeper 2012), etc. Studying choices among a few alternatives or among only *political* alternatives is informative, but may say little about how individuals make and respond to choices from more complex environments. Without breaking away from the experimental norm of captive exposure, it is simply not possible to understand the effects of choice behaviors. Mass polarization and its downstream effects on democratic health are too important to be examined only with old tools — the experimental designs presented here have used innovative techniques to offer novel evidence about this vitally important topic.

Though nearly all research on polarization presumes information choice to be an important — if not the most important — micro-foundation for polarization, almost no research has examined the effects of choice on individual opinion movements. The research presented here corrects this deficit of empirical investigation. Study 1 showed that highly biased environments can shape opinions in aggregate, but raised questions about why opinions moved the way they did. To better understand those opinions dynamics, Study 2 revealed that it may be quite unimportant

how much information people have about an issue or what that information says. Instead, opinion dynamics depend much more on evaluations of information in one’s environment, which seem to be largely determined by one’s prior attitudes, when those opinions are important, and which seem to be largely determined by balancing opposing arguments (regardless of the proportion of those arguments in the environment). Contrary to expectations, the pattern of opinion dynamics among those with low importance opinions were more similar to the results of competitive framing experiments (Chong and Druckman 2007a), where strong arguments cancel each others’ effects, than with exposure to one-sided Pro or Con information (as was shown in Study 1).

Those with low importance opinions, regardless of information available to them, held more moderate opinions at t_2 than t_1 . This has a possibly ironic implication that those with the least important attitudes may be better off, to the extent that biased information environments will not lead them to extremes. High importance participants, by contrast, were not only unmoved by their information environment but actually displayed considerable attitude-defensive bias in their opinion dynamics. Choosing information from any environment, regardless of its informational content, made them hold more extreme opinions — precisely the micro-foundation necessary for mass opinion polarization. Attitude strength biased evaluations of information, regardless of participants’ actual information search behavior.

These results suggest that caution should be used when extrapolating from evidence of selective exposure to information (e.g., Stroud 2011; Garrett, Carnahan, and Lynch 2011) to polarizing effects of those choices. Demonstration only of selective exposure²² does little to substantiate the existence or causes of opinion changes because the strength of the public’s opinions appears to affect polarization far more than the information in their political environment. Intriguingly, the experiments presented here suggest that while the contents of the distinct environments shaped what information people chose, those with different prior opinions chose remarkably similar information. How people *evaluate* information is most critical for un-

²²If it is demonstration at all, as opposed to mere evidence of “de facto” selectivity (Sears and Freedman 1967).

derstanding opinion dynamics; what information individuals actually choose seems rather less important. Attitude strength and its effects on information processing seem to lay at the core of mass polarization, while the contents of the information environment and the choices people make matter far less.

References

- APSA Report*. 1950. *American Political Science Review* 44(3): v–ix.
- Arceneaux, Kevin, and Martin Johnson. 2011. “Does Media Fragmentation Produce Mass Polarization? Selective Exposure and a New Era of Minimal Effects.” Unpublished paper, Temple University.
- Arceneaux, Kevin, and Martin Johnson. 2012. *Changing Minds or Changing Channels? Media Effects in the Era of Viewer Choice*.
- Baumgartner, Frank R., and Bryan D. Jones. 1993. *Agendas and Instability in American Politics*. Chicago, IL: The University of Chicago Press.
- Bennett, W. Lance, and Shanto Iyengar. 2008. “A New Era of Minimal Effects? The Changing Foundations of Political Communication.” *Journal of Communication* 58(4): 707–731.
- Berenson, Robert A., and Rachel A. Burton. 2011. *Accountable Care Organizations in Medicare and the Private Sector: A Status Update*. Technical Report November 2011 Robert Wood Johnson Foundation.
- Boczkowski, Pablo J. 2010. *News At Work: Imitation in an Age of Information Abundance*. Chicago, IL: The University of Chicago Press.
- Boninger, David S., Jon A. Krosnick, and Matthew K. Berent. 1995. “Origins of Attitude Importance: Self-Interest, Social Identification, and Value Relevance.” *Journal of Personality and Social Psychology* 68(1): 61–80.
- Botti, Simona, and Sheena S. Iyengar. 2006. “The Dark Side of Choice: When Choice Impairs Social Welfare.” *Journal of Public Policy & Marketing* 25(1): 24–38.
- Brannon, Laura A., Michael J. Tagler, and Alice H. Eagly. 2007. “The Moderating Role of Attitude Strength in Selective Exposure to Information.” *Journal of Experimental Social Psychology* 43(4): 611–617.
- Carmines, Edward G., and Michael J. Ensley. 2004. “Ideologically Polarized Parties, Ideologically Inconsistent Voters, and Split-Ticket Voting in the United States.” Paper presented at the Annual Meeting of the American Political Science Association, Chicago, IL.
- Cartwright-Smith, Lara, Jane Hyatt Thorpe, and Sara Rosenbaum. 2011. “Easing the Pathway to Accountable Care Organizations: Final Administration Policy.” *Health Care Policy Report* 19(1805): 1–8.

- Chong, Dennis, and James N. Druckman. 2007a. "Framing Public Opinion in Competitive Democracies." *American Political Science Review* 101(4): 637–655.
- Chong, Dennis, and James N. Druckman. 2007b. "Framing Theory." *Annual Review of Political Science* 10(1): 103–126.
- Devers, Kelly, and Robert A. Berenson. 2009. Can Accountable Care Organizations Improve the Value of Health Care by Solving the Cost and Quality Quandaries? Technical Report October Robert Wood Johnson Foundation.
- Druckman, James N., and Cindy D. Kam. 2011. "Students as Experimental Participants: A Defense of the 'Narrow Data Base'." In *Cambridge Handbook of Experimental Political Science*, eds. James N. Druckman, Donald P. Green, James H. Kuklinski, and Arthur Lupia. New York: Cambridge University Press, 41–57.
- Druckman, James N., and Thomas J. Leeper. 2012. "Is Public Opinion Stable?" *Daedalus* In press.
- Druckman, James N., Jordan Fein, and Thomas J. Leeper. 2012. "A Source of Bias in Public Opinion Stability." *American Political Science Review* 106(2): 430–454.
- Emanuel, Ezekiel J., and Victor R. Fuchs. 2008. "The Perfect Storm of Overutilization." *JAMA: The Journal of the American Medical Association* 299(23): 2789–2791.
- Feldman, Lauren. 2011. "The Opinion Factor: The Effects of Opinionated News on Information Processing and Attitude Change." *Political Communication* 28(2): 163–181.
- Fiorina, Morris P., and Samuel J. Abrams. 2008. "Political Polarization in the American Public." *Annual Review of Political Science* 11(1): 563–588.
- Fischer, Peter, Eva Jonas, Dieter Frey, and Stefan Schulz-Hardt. 2005. "Selective Exposure to Information: The Impact of Information Limits." *European Journal of Social Psychology* 35(4): 469–492.
- Fischer, Peter, Stefan Schulz-Hardt, and Dieter Frey. 2008. "Selective Exposure and Information Quantity: How Different Information Quantities Moderate Decision Makers Preference for Consistent and Inconsistent Information." *Journal of Personality and Social Psychology* 94(2): 231–44.
- Fischer, Peter, Stephen Lea, Andreas Kastenmüller, Tobias Greitemeyer, Julia Fischer, and Dieter Frey. 2011. "The Process of Selective Exposure: Why Confirmatory Information Search Weakens Over Time." *Organizational Behavior and Human Decision Processes* 114(1): 37–48.
- Gaines, Brian J., and James H. Kuklinski. 2011. "Treatment Effects." In *Cambridge Handbook of Experimental Political Science*, eds. James N. Druckman, Donald P. Green, James H. Kuklinski, and Arthur Lupia. New York: Cambridge University Press.
- Garrett, R. Kelly, Dustin Carnahan, and Emily K. Lynch. 2011. "A Turn Toward Avoidance? Selective Exposure to Online Political Information, 2004–2008." *Political Behavior* In press.
- Gelman, Andrew, and Hal Stern. 2006. "The Difference Between 'Significant' and 'Not Significant' is not Itself Statistically Significant." *The American Statistician* 60(4): 328–331.

- Greifeneder, Rainer, Benjamin Scheibehenne, and Nina Kleber. 2010. "Less May Be More When Choosing Is Difficult: Choice Complexity and Too Much Choice." *Acta Psychologica* 133(1): 45–50.
- Hart, William, Dolores Albarracín, Alice H. Eagly, Inge Brechan, Matthew J Lindberg, and Lisa Merrill. 2009. "Feeling Validated Versus Being Correct: A Meta-Analysis of Selective Exposure to Information." *Psychological Bulletin* 135(4): 555–588.
- Hetherington, Marc J. 2001. "Resurgent Mass Partisanship: The Role of Elite Polarization." *American Political Science Review* 95(3): 619–631.
- Holbrook, Allyson L., Matthew K. Berent, Jon A. Krosnick, Penny S. Visser, and David S. Boninger. 2005. "Attitude Importance and the Accumulation of Attitude-Relevant Knowledge in Memory." *Journal of Personality and Social Psychology* 88(5): 749–769.
- Hovland, Carl I. 1959. "Reconciling Conflicting Results Derived from Experimental and Survey Studies of Attitude Change." *American Psychologist* 14(1): 8–17.
- Huang, Li-Ning. 2000. "Examining Candidate Information Search Processes: The Impact of Processing Goals and Sophistication." *Journal of Communication* 50(1): 93–114.
- Iyengar, Shanto, and Kyu S. Hahn. 2009. "Red Media, Blue Media: Evidence of Ideological Selectivity in Media Use." *Journal of Communication* 59(1): 19–39.
- Jacoby, Jacob, George J. Szybillo, and Jacqueline Busato-Schach. 1977. "Information Acquisition Behavior in Brand Choice Situations." *Journal of Consumer Research* 3(4): 209–216.
- Jacoby, Jacob, Robert W. Chestnut, and William A. Fisher. 1978. "A Behavioral Process Approach to Information Acquisition in Nondurable Purchasing." *Journal of Marketing Research* 15(4): 532–544.
- Jonas, Eva, Stefan Schulz-Hardt, Dieter Frey, and Norman Thelen. 2001. "Confirmation Bias in Sequential Information Search After Preliminary Decisions: An Expansion of Dissonance Theoretical Research on Selective Exposure to Information." *Journal of Personality and Social Psychology* 80(4): 557–571.
- Kim, Young Mie. 2008. "Where Is My Issue? The Influence of News Coverage and Personal Issue Importance on Subsequent Information Selection on the Web." *Journal of Broadcasting & Electronic Media* 52(4): 600–621.
- Krosnick, Jon A. 1990. "Government Policy and Citizen Passion: A Study of Issue Publics in Contemporary America." *Political Behavior* 12(1): 59–92.
- Kunda, Ziva. 1990. "The Case for Motivated Reasoning." *Psychological Bulletin* 108(3): 480–498.
- Lau, Richard R., and David P. Redlawsk. 2006. *How Voters Decide: Information Processing in Election Campaigns*. New York: Cambridge University Press.
- Lee, Henjoon, Paul M. Herr, Frank R. Kardes, and Chankon Kim. 1999. "Motivated Search Effects of Choice Accountability, Issue Involvement, and Prior Knowledge on Information Acquisition and Use." *Journal of Business Research* 45(1): 75–88.

- Lee, Jae Kook. 2009. *Incidental Exposure to News: Limiting Fragmentation in the New Media Environment*. Doctoral Dissertation, University of Texas at Austin.
- Leeper, Thomas J. 2012. "Strong Attitudes and Biased Political Engagement." Paper presented at the Annual Meeting of the Midwest Political Science Association, Chicago, IL.
- Levendusky, Matthew S. 2009. *The Partisan Sort: How Liberals Became Democrats and Conservatives Became Republicans*. Chicago, IL: The University of Chicago Press.
- Levendusky, Matthew S. 2010. "Clearer Cues, More Consistent Voters: A Benefit of Elite Polarization." *Political Behavior* 32(1): 111–131.
- Levendusky, Matthew S. 2011. "Do Partisan Media Polarize Voters?" Unpublished paper, University of Pennsylvania.
- Levendusky, Matthew S. 2012. *Partisan News that Matters: How Partisan News Impacts American Politics*. Chicago, IL: The University of Chicago Press.
- Malhotra, Naresh K. 1982. "Information Load and Consumer Decision Making." *Journal of Consumer Research* 8(4): 419–430.
- McClosky, Herbert, Paul J. Hoffmann, and Rosemary O'Hara. 1960. "Issue Conflict and Consensus Among Party Leaders and Followers." *American Political Science Review* 54(2): 406–427.
- McCombs, Maxwell E., and Donald L. Shaw. 1972. "The Agenda-Setting Function of Mass Media." *Public Opinion Quarterly* 36(2): 176–187.
- Mutz, Diana C., and Lori Young. 2011. "Communication and Public Opinion: Plus Ça Change?" *Public Opinion Quarterly* 75(5): 1018–1044.
- Petersen, Laura A., LeChauncy D. Woodard, Tracy Urech, Christina Daw, and Supicha Sookanan. 2006. "Annals of Internal Medicine Improving Patient Care Does Pay-for-Performance Improve the Quality of Health Care?" *Annals of Internal Medicine* 145(4): 265–272.
- Petty, Richard E., and John T. Cacioppo. 1986. "The Elaboration Likelihood Model of Persuasion." *Advances in Experimental Social Psychology* 19: 123–205.
- Redlawsk, David P. 2004. "What Voters Do: Information Search During Election Campaigns." *Political Psychology* 25(4): 595–610.
- Redlawsk, David P., Andrew J. W. Civettini, and Karen M. Emmerson. 2010. "The Affective Tipping Point: Do Motivated Reasoners Ever 'Get It'?" *Political Psychology* 31(4): 563–593.
- Rosenbaum, Sara. 2011. "An Overview of the Administration's ACO Policy: Opportunities and Challenges." *Health Care Policy Report* 19(20): 1–8.
- Scheibehenne, Benjamin, Rainer Greifeneder, and Peter M. Todd. 2010. "Can There Ever Be Too Many Options? A Meta-Analytic Review of Choice Overload." *Journal of Consumer Research* 37(3): 409–425.
- Sears, David O., and Jonathan L. Freedman. 1967. "Selective Exposure to Information: A Critical Review." *Public Opinion Quarterly* 31(2): 194–213.

- Sheagley, Geoffrey D. 2012. "Political Decision Making, Information Search, and Disagreeable Information." Paper presented at the Annual Meeting of the Midwest Political Science Association, Chicago, IL.
- Shortell, Stephen M., and Lawrence P. Casalino. 2007. *Accountable Care Systems For Comprehensive Health Care Reform*. Technical report Robert Wood Johnson Foundation.
- Shortell, Stephen M., and Lawrence P. Casalino. 2008. "Health Care Reform Requires Accountable Care Systems." *JAMA: The Journal of the American Medical Association* 300(1): 95–97.
- Stroud, Natalie Jomini. 2011. *Niche News: The Politics of News Choice*. New York: Oxford University Press.
- Sundström, Gunilla A. 1987. "Information Search and Decision Making: The Effects of Information Displays." *Acta Psychologica* 65(2): 165–179.
- Sunstein, Cass R. 2002. *Republic.com*. Princeton, NJ: Princeton University Press.
- Sunstein, Cass R. 2009. *Going to Extremes: How Like Minds Unite and Divide*. Oxford, UK: Oxford University Press.
- Taber, Charles S., and Milton Lodge. 2006. "Motivated Skepticism in the Evaluation of Political Beliefs." *American Journal of Political Science* 50(3): 755–769.
- Tewksbury, David, Andrew J. Weaver, and Brett D. Maddex. 2001. "Accidentally Informed: Incidental News Exposure on the World Wide Web." *Journalism and Mass Communication Quarterly* 78(3): 533–554.
- Valentino, Nicholas A., Vincent L. Hutchings, Antoine J. Banks, and Anne K. Davis. 2008. "Is a Worried Citizen a Good Citizen? Emotions, Political Information Seeking, and Learning via the Internet." *Political Psychology* 29(2): 247–273.
- Verplanken, Bas, Pieter T. Hazenberg, and Grace R. Palenewen. 1992. "Need for Cognition and External Information Search Effort." *Journal of Research in Personality* 26(2): 128–136.
- Williams, Bruce A., and Michael X. Delli Carpini. 2011. *After Broadcast News: Media Regimes, Democracy, and the New Information Environment*. New York: Cambridge University Press.
- Zukin, Cliff, and Robin Snyder. 1984. "Passive Learning: When the Media Environment Is the Message." *Public Opinion Quarterly* 48(3): 629–638.

Appendix A. Question Wordings

Study 1

To what extent do you oppose or support U.S. military action in Libya?

- 1 Strongly oppose
- 2 Moderately oppose
- 3 Somewhat oppose
- 4 Neither oppose nor support
- 5 Somewhat support

- 6 Moderately support
- 7 Strongly support

How certain are you about your opinion about U.S. involvement in Libya?

- 1 not certain at all
- 2
- 3 moderately certain
- 4
- 5 extremely certain

How important to you is your opinion about U.S. involvement in Libya?

- 1 not too important
- 2
- 3 moderately important
- 4
- 5 extremely important

Some people feel there should be a universal government insurance plan that would cover medical and hospital expenses for all citizens. Others feel that medical and hospital expenses should be paid by individuals and through private insurance plans. Where would you place yourself on this scale:

- 1 Universal government insurance plan covers all Americans
- 2 Government insurance options cover significantly more Americans than private insurance plans
- 3 Government insurance options cover slightly more Americans than private insurance plans
- 4 Government insurance options (such as Medicare and Medicaid) cover the same number of Americans as private insurance plans
- 5 Private insurance plans cover slightly more Americans than government insurance options
- 6 Private insurance plans cover significantly more Americans than government insurance options
- 7 Private insurance plans cover all Americans

How certain are you about your opinion about health care insurance?

- 1 not certain at all
- 2
- 3 moderately certain
- 4
- 5 extremely certain

How important to you is your opinion about health care insurance?

- 1 not too important
- 2
- 3 moderately important
- 4
- 5 extremely important

Study 2

There is ongoing debate about how medical providers (i.e., physicians and hospitals) should be compensated for the care they provide. Some argue that these providers should be paid based entirely upon the services and procedures they perform. Others argue that pay should be based entirely or at least partially on the quality of patients's health outcomes. How do you think medical providers should be paid?

- 1 Pay based entirely on services performed
- 2 Pay based mostly on services performed
- 3 Pay based somewhat more on services performed than health outcomes
- 4 Pay based equally on services performed and health outcomes
- 5 Pay based somewhat more on health outcomes than services performed

- 6 Pay based mostly on health outcomes
- 7 Pay based entirely on health outcomes

In your view, what percentage of medical provider compensation should be based on services performed and what percentage should be based on their patients' health outcomes?

- 100% based on services performed and 0% based on health outcomes
- 90% based on services performed and 10% based on health outcomes
- 80% based on services performed and 20% based on health outcomes
- 70% based on services performed and 30% based on health outcomes
- 60% based on services performed and 40% based on health outcomes
- 50% based on services performed and 50% based on health outcomes
- 40% based on services performed and 60% based on health outcomes
- 30% based on services performed and 70% based on health outcomes
- 20% based on services performed and 80% based on health outcomes
- 10% based on services performed and 90% based on health outcomes
- 0% based on services performed and 100% based on health outcomes

How certain are you about your opinion about provider compensation?

- 1 not certain at all
- 2
- 3 moderately certain
- 4
- 5 extremely certain

How important to you personally is the issue of provider compensation?

- 1 not too important
- 2
- 3 moderately important
- 4
- 5 extremely important

Appendix B. Pretesting

Study 1

Pro and Con frames were chosen as a result of pretesting (following from procedures described by Chong and Druckman 2007a). Libya frames were pretested on Amazon Mechanical Turk with 40 respondents. The humanitarian concern (Pro) and military overextension (Con) frames were rated as the most effective and clearly Pro and Con valenced, respectively. Health care frames were borrowed from another study and focused on beneficiaries of health care reform (Pro) and the government role in health care (Con), which were seen as similarly effective and clearly valenced Pro and Con, respectively (see, for details of these frames and relevant pretesting, Druckman, Fein, and Leeper 2012).

Study 2

A pretest of thirteen frames was conducted using Amazon Mechanical Turk between February 7 and February 12, 2012. Each frame was rated by 40 individuals, who were paid \$.05 to rate each frame in terms of its Pro-Con valence (on a 1-7 scale with higher scores indicating greater support for outcome-based payment) and its effectiveness in making an argument about provider compensation (also on a 1-7 scale, with higher scores indicating greater effectiveness). Given that little media attention has been given to this issue, frames were constructed based upon academic and policy writing on the issue that emphasized varying potential consequences (positive and negative) for different types of compensation schemes (e.g. Shortell and Casalino 2007, 2008;

Table 5: Provider Compensation Frame Direction and Effectiveness

Frame	<i>Direction</i>		<i>Effectiveness</i>	
	Mean	SE	Mean	SE
Accountability	5.85	0.22	4.67	0.24
Beneficiaries	5.78	0.21	4.72	0.25
Costs	6.00	0.23	5.25	0.22
Overuse s	5.88	0.22	5.10	0.24
Profit	5.80	0.23	5.05	0.18
Quality	5.70	0.27	5.53	0.22
Simplified Billing	5.92	0.20	4.50	0.25
Confusing	2.35	0.23	5.10	0.21
Logistics	2.60	0.27	5.25	0.21
Patient Control	3.35	0.29	4.70	0.22
Provider Resistance	2.58	0.24	4.90	0.20
Rationing Costs	2.52	0.28	5.17	0.25
Rationing Access	2.05	0.23	5.38	0.23

Note: First seven frames were thought a priori to be Pro frames and latter six frames were thought a priori to be Con frames.

Rosenbaum 2011; Petersen et al. 2006; Emanuel and Fuchs 2008; Devers and Berenson 2009; Berenson and Burton 2011; Cartwright-Smith, Thorpe, and Rosenbaum 2011).

Among arguments that favor compensation based upon health outcomes (Pro arguments) include:

- Paying health care providers based upon health outcomes improves quality of care
- Paying health care providers based upon health outcomes reduces costs
- Paying health care providers based upon health outcomes holds providers accountable
- Paying health care providers based upon health outcomes reduces overuse of health care and unnecessary testing
- Paying health care providers based upon health outcomes simplifies billing procedures for patients
- Paying health care providers based upon health outcomes allows good physicians to earn more money
- Paying health care providers based upon health outcomes increases access to health care for those in need

Arguments that favor compensation based upon health outcomes or favor fee-for-service approaches (Con arguments) include:

- Paying health care providers based upon health outcomes reduces incentives to care for patients with chronic diseases, pre-existing conditions, etc.
- Paying health care providers based upon health outcomes prevents patients from making their own decisions about what procedures and treatments to obtain
- Paying health care providers based upon health outcomes leads to denial of care to save money
- Paying health care providers based upon health outcomes will meet resistance from physicians and hospitals
- Paying health care providers based upon health outcomes is logistically challenging because criteria for health outcomes are hard to specify
- Paying health care providers based upon health outcomes is confusing for patients

Table 5 reports the results of this pretest. The Costs (Pro) frame, which argued that provider compensation based upon outcomes would reduce the costs of health care, stood out as being particularly extreme Pro argument ($\bar{x}=6.00$, $SE=.23$), but was not seen as significantly more positive than any of the other Pro frame. In the opposite direction, the Rationing-Access (Con) frame, which argued — without using the word “rationing” —

that payment based upon outcomes would lead providers to withhold care from some patients, stood out as a similarly extreme Con argument and the most extreme Con argument ($\bar{x}=2.05$, $SE=.23$). The Rationing-Access frame was also seen as the most effective Con frame ($\bar{x}=5.38$, $SE=.23$), and therefore seems to be the appropriate Con argument to use in the main study. The Costs (Pro) frame, however, was the second most effective Pro frame, being seen as slightly less effective than the Quality frame ($\bar{x}=5.53$, $SE=.22$), which argued that payment based upon outcomes would improve the quality of health care provision. Given that the Quality frame was more effective, but no more effective than the Rationing-Access frame, it will serve as the Pro frame in the main study.

Appendix C. Study 2 Opinion Data

Treatment Group Opinion Means				
Condition (n)	t1	t2	t2-t1	t2 (salary %)
High Pro (46)	3.65 (0.20)	3.52 (0.20)	-0.13 (0.20)	5.22 (0.20)
Low Pro (37)	3.66 (0.19)	3.46 (0.19)	-0.20 (0.19)	4.43 (0.19)
High Mixed (49)	3.53 (0.21)	3.59 (0.21)	0.06 (0.21)	4.22 (0.21)
Low Mixed (36)	3.81 (0.20)	3.39 (0.20)	-0.42 (0.20)	4.28 (0.20)
High Con (46)	3.72 (0.21)	3.07 (0.21)	-0.65 (0.21)	3.85 (0.21)
Low Con (49)	3.57 (0.20)	2.98 (0.20)	-0.59 (0.20)	2.88 (0.20)
Control (37)	3.70 (0.25)	3.46 (0.25)	-0.24 (0.25)	3.73 (0.25)

Appendix D. Example Search Environment Articles

Study 1

Action Needed to Protect the Rising Numbers of Uninsured Americans (Health care Pro)

A recent Treasury Department study highlighted how vulnerable Americans are to losing their health care coverage. It found that, between 1997 and 2006, 48 percent of nonelderly Americans went without health insurance for at least one month, 41 percent lacked coverage for at least six months, and 36 percent were uncovered for a year or more. That happened during a decade of strong economic growth.

The number of uninsured is likely to be higher over the next decade, the study warns, unless action is taken to protect these vulnerable populations from falling victim to a broken health care system.

In October, the Urban Institute produced a study measuring the percentage of people under 65 who had neither public nor private medical insurance in each of the nation's 435 congressional districts in 2008. The results from California's 53 congressional districts are particularly revealing.

Not to put too fine a point on it — fewer and fewer Californians are insured.

A study released Monday by the University of California Los Angeles Center for Health Policy Research reported that the number of uninsured Californians jumped by more than 25 percent from 2007 to 2009. In the earlier year, before the recession began, 6.4 million Californians were

uninsured. By last year, that number had risen to a staggering 8.2 million, or 24.3 percent of the state's population.

The Children's Health Insurance Program, which served about 7.4 million people in 2008, is credited with helping reduce the number of uninsured children by 2.5 million over its first decade. The Congressional Budget Office estimated that the revitalized program would eventually reduce the number of uninsured youths by an additional 4.1 million. But millions of children remain uninsured, with health care just out of their reach. These children are victims of a system far beyond their control.

It should be no surprise that people without insurance often postpone needed care, and many get much sicker as a result. That is morally unsustainable. It is also fiscally unsustainable for safety net hospitals, which foist much of the cost on the American taxpayer when the uninsured end up in the emergency room. That bill will rise as the number of uninsured rises.

Helping this growing segment of the population obtain health care is critical.

Reform proposals use a variety of strategies to cover the uninsured, including making a lot more people eligible for Medicaid and by helping tens of millions of low- and moderate-income people buy policies on new insurance exchanges, in which private plans and possibly a public plan would compete for those people who lack employer-provided insurance or work in small companies.

Foreign Journalists, Finally Allowed in Libya, Report on Atrocities Against Civilians (Libya Pro)

A bold play by Col. Muammar Qaddafi to prove that he was firmly in control of Libya appeared to backfire Saturday, as foreign journalists he invited to the capital discovered blocks of the city in open defiance of his authority.

Witnesses described government snipers and anti-aircraft guns firing at unarmed civilians. Many said security forces had been removing the dead and wounded from streets and hospitals, apparently in an effort to hide the mounting toll.

Just off the tour route were long bread lines where residents said they were afraid to be seen talking to journalists.

"I have seen more than 68, I think, people killed," said a doctor who had been helping out at a neighborhood clinic in Tajoura and gave his name only as Hussein. "But the people who have died, they don't leave them in the same place. We have seen them taking them in the Qaddafi cars, and nobody knows where they are taking the people who have died." He added, "Even the ones with just a broken hand or something they are taking away."

In some ways, the mixed results of Col. Qaddafi's theatrical gamble — opening the curtains to the world with great fanfare, even though the stage is in near-chaotic disarray — are an apt metaphor for the increasingly untenable situation in the country.

Col. Qaddafi's son promised journalists they would find the streets peaceful and his father beloved. Do not mistake the sound of celebratory fireworks for bursts of gunfire around the streets of Tripoli, he advised them.

The next morning, a driver took a group of foreign journalists to an area known as the Friday market, which appeared to have been the site of a riot the night before. The streets were strewn with debris, and piles of shattered glass had been collected in cardboard boxes.

A young man approached the journalists to deliver a passionate plea for unity and accolades to Col. Qaddafi, then slipped away in a white van full of police officers. Meanwhile, two small

boys offered bullet casings as evidence of force used on protesters the day before.

Out of earshot of Libyan government escorts, a few residents of Tripoli said that they had seen security forces scooping up dead and wounded protesters and removing them from the streets - presumably to hide their crimes.

Because of this cover-up of civilian casualties and a previous lack of media access, a precise death toll has been impossible to verify. A Libyan envoy said Friday that hundreds had been killed in Tripoli. That number will likely only rise in coming weeks.

Government Involvement in Health care Will Lead to Rationing (Health care Con)

The American health care system suffers from two serious problems: More than 15 percent of the population has neither private nor public insurance; and the high cost of health care can lead to personal bankruptcy, even for families that do have health insurance.

These faults persist despite a massive federal government role in the health care market, through its enormous Medicare and Medicaid expenditures, as well as a federal tax subsidy of more than \$220 billion for the purchase of employer-provided private health insurance.

There's got to be a better way. And it should not involve expanded government participation or the increased regulation that characterize the proposals being discussed in Congress. A dirty word in health care reform is "rationing," a term that conjures up the image of faceless government bureaucrats denying lifesaving therapies in the name of cutting costs.

Medical professionals say the fundamental problem in the nation's health care system is the widespread misuse and overuse of tests, treatments, and drugs that drive up prices, have little value to patients, and can pose serious risks. The question, they say, is not whether there will be rationing, but rather what will be rationed, and when and how, if the government expands its role in health care.

Opponents of a national insurance plan hope to highlight how such a plan could lead to the denial of medical services, or rationing.

"We don't want to turn health care over to a bunch of bureaucrats in Washington, who then will determine what kind of health care we have," committee member Orrin G. Hatch said recently. "And you know that rationing is going to happen."

Critics cite places, such as Canada and Europe, where government experts prioritize the delivery of medical services. Wait times, particularly for specialists, may stretch for weeks or months under such a system, they fear. "Here in the States, we get access to new drugs and medical devices," said Canadian-born Sally C. Pipes, president of the market-oriented Pacific Research Institute. "I have friends in Vancouver who can't get colonoscopies; they wait six or seven months."

A good system should avoid having the government pay all health care bills. That would lead to excessive demand, wasteful use of expensive technology and, inevitably, rationing in which health care decisions are taken away from patients and their physicians. Countries that provide health care to all are forced to deny some treatments and diagnostic tests that most Americans have come to expect.

Reforms should instead seek to reduce total health care spending — rather than expanding federal involvement and, inevitably, hurting all Americans — without imposing a radical system dominated by a single government insurer. Now isn't that a better way?

Paying for the Libyan Intervention Is Costly (Libya Con)

With fighter planes darting around at a cost of \$13,000 an hour, and Tomahawk missiles worth \$1.4 million apiece, lawmakers have been concerned about how much the intervention in Libya could cost the Pentagon and the American people.

With the destruction of Libya's air defenses, the initial expense of U.S. involvement has come in at a total of around several hundred million dollars, analysts say. If the United States can avoid being dragged more deeply into the operation, the Pentagon may be able to absorb the costs without seeking a special appropriation, a spokesperson said yesterday. As the conflict continues, prospects for a quick resolution seem ever less likely.

Before the bombing began on March 19, the Center for Strategic and Budgetary Assessments, a research group in Washington, had estimated that imposing a no-fly zone over the northern part of Libya could cost \$400 million to \$800 million for the initial strikes. It had also projected costs of \$30 million to \$100 million a week to patrol the area.

So far at least, the expenses seemed to be coming in toward the lower end of those estimates, according to Todd Harrison, one of the Center's analysts. But in the midst of a nationwide fiscal crisis, costs at the lower end of the Center's estimates may still be more than the country's checkbook can handle.

Michael J. Howard, a former Marine pilot who is now an analyst at AeroStrategy, a consulting firm in Ann Arbor, Michigan, said flying the F-15s and F-16s costs about \$13,000 an hour, including fuel and repairs. He said the planes would be flown three to five hours a day in normal practice operations. And they may have spent up to 10 hours aloft, refueled several times in midair, in policing the no-fly zone, he said.

Three submarines and two destroyers have fired 178 Tomahawk missiles, worth \$250 million, and the Navy also has a command ship and two amphibious vessels off Libya. Navy officials said that while these ships were already at sea, military operations have primarily included the cost of the Tomahawks.

There also have been unexpected costs, as the war has expanded to include air attacks on Libyan ground forces. One F-15E "Strike Eagle," which cost \$55 million, crashed.

While the costs have not been fully tabulated, Libya is costing the United States hundreds of millions of dollars and offers the prospect of an open-ended commitment. In that sense, the lessons of Iraq and Afghanistan are clear. The United States cannot afford the cost of extended military operations overseas, least of all when we are already carrying the massive fiscal debt created in those wars.

Study 2

Patients Better Served When Providers Paid for Health Outcomes (Pro)

One important reason that health care costs have skyrocketed while quality has not is that our current system is not designed to promote high-value health care, says Denis Cortese, the director of ASU's Health Care Delivery and Policy Program. "There are a bunch of stakeholders that come to the table to maximize their own sector. It's like an orchestra. If every player decided they were going to play as loud as they could, they're not going to make very nice music," Cortese says.

The way in which health care providers are paid increases costs, Cortese says. "We pay money in a fee-for-service environment, which means I make more money if I keep you sick" Cortese explains. "We pay doctors and hospitals and nurses more money the sicker you are —

just the reverse of what we say we want. We're not paying people to keep you healthy, we pay them when you're sick."

In order to receive payment from the federal health insurance program Medicare, which covers 47 million Americans, health care practitioners must keep extensive documentation of everything they do in treating a patient. This is where the "fee-for-service" concept comes in (And this payment system doesn't just work for Medicare, it's the dominant payment model among insurers and health care providers nationwide.) "The sicker you are, the more procedures you're going to have done, the longer you're in the hospital, the more money everybody makes. But the patient is getting sicker and we're not getting the results we want," Cortese says.

Doctors should be rewarded for keeping people healthy, rather than getting paid based on the tests and procedures they have done to treat a patient, he says. Indeed, this is precisely what would happen under alternative proposals to compensate health care providers, like doctors, clinics, and hospitals, according to how well they maintain and improve patient health. This focus on outcomes rather than billing for individual services means that doctors would provide higher quality care.

Changing the way that providers are paid will change how they approach medical care provision, leading them to provide care that is focused on tracking patients' health over time and emphasizing prevention and early detection of illness rather than expensive treatments of advanced stages of disease. Clinics and hospitals that have begun experimenting with outcome-based compensation have also seen health-improving benefits from more frequent contact between doctors and patients, collection of more data about patients' health, and more resources being directed toward preventive medicine. All in all, paying for health outcomes rather than health services seems to change the way the health care industry works for the better and, in turn, makes patients healthier.

When Paid for Outcomes, Doctors Have Little Reason to Treat Highest Risk Patients (Con)

Paying health care providers — clinics, hospitals, and individual physicians — according to how well they improve patient health seems like an attractive model to cut costs and to improve health outcomes. However, equity remains among the most important challenges in American health care — a challenge that this type of payment system may actually exacerbate. In order to avoid the potential widening of health disparities that could result from the widespread adoption of this kind of payment model, health care reformers should think about who is going to be hurt most by changing the way we pay for health care.

A recent report in the journal *Health Care Policy* put it this way: "Under the proposed model, a clinic will be paid according to metrics of wellbeing set by joint public-private committees of health care leaders from government, insurers, and provider groups. All doctors will know those metrics in advance of accepting a new patient and will know full well that their bottom line depends on having healthy patients. While the model intends to incentivize doctors to improve patient health to the greatest extent possible, the reality is that doctors will have every reason to cherry-pick the healthiest patients available to them and turn away those they think are least likely to contribute to the bottom line - in other words, the patients most in need of medical care."

That's a grim portrait of outcome-based compensation, but it's not far off. Health care disparities in the United States are already larger than in almost any other developed country and

there is a real possibility that shifting to outcome-based pay could exacerbate these inequities. Advocates of the new model say that it is precisely these disparities that require fundamental reform of the fee-for-service compensation system.

But their approach doesn't adequately address the equity problem. First, payments are contingent on meeting quality and outcome criteria — criteria that are substantially more difficult to meet among poorer patients. For example, a draft list of 33 criteria includes influenza and pneumococcus immunizations, weight screenings and follow-up, tobacco cessation interventions, and depression screenings. Even in the setting of perfect availability, the poor are less likely to access these preventive services and the providers that serve these communities are likely to be punished.

Second, while some have suggested that outcome-based payment schemes might account to some extent for these challenges, no proposal seems to account for most of the realities of treating low-income and high-risk patients. In short, poorer communities have higher rates of disease and therefore require more costly procedures. Even if payment formulas are adjusted for lower baseline wellbeing in a given community, the medical treatment that providers serving that community perform are necessarily more expensive and that won't be accounted for. Why would providers take on these higher-cost patients? Or even operate in low-income areas at all?