Echo chambers online?: Politically motivated selective exposure among Internet news users[1]

R. Kelly Garrett

School of Communication, Ohio State University, Columbus, OH

A review of research suggests that the desire for opinion reinforcement may play a more important role in shaping individuals' exposure to online political information than an aversion to opinion challenge. The article tests this idea using data collected via a web-administered behavior-tracking study with subjects recruited from the readership of 2 partisan online news sites (N = 727). *The results demonstrate that opinion-reinforcing information promotes news story exposure while opinion-challenging information makes exposure only marginally less likely. The influence of both factors is modest, but opinion-reinforcing information is a more important predictor. Having decided to view a news story, evidence of an aversion to opinion challenges disappears: There is no evidence that individuals abandon news stories that contain information with which they disagree. Implications and directions for future research are discussed.*

Key words: online news, echo chambers, selective exposure, political communication.

Will the Internet lead Americans to adopt increasingly insular political news exposure practices? This is the premise of Cass Sunstein's influential book, *Republic.com*, first published in 2001, and the question is no less pressing today. The Internet affords users unprecedented access to information from around the world. Seeking political information online, individuals choose among a diverse and wide-ranging assortment of political ideas and attitudes (Bimber & Davis, 2003). But what do individuals do when faced with so much information? More pointedly, what role do their political attitudes play in shaping which political news they look at, and which they ignore? Scholars warn that the more choice individuals have when seeking political news, the more likely they are to exclude opinions with which they disagree (Mutz & Martin, 2001; Stroud, in press). As a consequence, some worry that the Internet is promoting an increasingly fragmented and polarized citizenry (Sunstein, 2001).

Recent research provides compelling evidence that individuals' decisions about what news they read and watch are informed by their political beliefs. Access to partisan news is associated with declining exposure to other opinions (Mutz & Martin, 2001). For example, individuals hear less that they disagree with on (partisan) talk radio than on (less partisan) television news; and when people have a choice of newspapers, they tend to favor the one that more closely matches their opinions. Individuals are also more likely to use media outlets that correspond to their ideological beliefs (Stroud, in press). For example, conservative Republicans are more likely to read a newspaper that endorsed Bush, to listen to conservative talk radio, to watch FOX News, and to use conservative political Internet sites than are liberal Democrats. Termed selective exposure, these politically motivated decision-making processes are not limited to traditional sources of political information, but extend to other venues as well. For example, Bush detractors were significantly more likely to have seen Michael Moore's scathing critique of the Bush administration in the 2004 film *Fahrenheit 911* than Bush supporters were (Stroud, 2007).

Research on peoples' use of the Internet for political information acquisition, however, raises questions about the nature of selective exposure in this high-choice information environment. Although Americans who got their news online in 2004 encountered more information favoring their preferred candidate than Americans who did not, there was not a corresponding decline in their contact with information favoring the other candidate (Garrett, in press). This is in spite of evidence that Internet users identify the ease with which they can customize their news environment and the diversity of news sources available online as key advantages of the medium (Kohut, Doherty, Dimock, & Keeter, 2006). The evidence that online news users are not screening out other perspectives runs contrary to traditional interpretations of selective exposure, which suggest that the phenomenon is composed of equal parts opinion reinforcement seeking and opinion challenge avoidance.

The inconsistency between these results and the conventional view of selective exposure presents an intriguing puzzle. Why are online news users, who actively value control over news exposure provided by this medium, not systematically filtering out differing viewpoints? The explanation advanced in this article is that people's desire for opinion reinforcement is stronger than their aversion to opinion challenges. On this view, the control afforded by online news promotes exposure to information that supports news consumers' beliefs without producing a comparable drop in contact with other perspectives.

Although it is possible to test this assertion using cross-sectional survey data, the results of such an approach are limited. Surveys capture aggregate exposure levels, and do not give clear insight into the underlying exposure processes. Thus, we do not know whether online news users in the 2004 election study (Garrett, in press) only continue to have contact with other viewpoints because they desire it or if there is some other explanation. For instance, perhaps people are simply not very good at controlling what they encounter online. After all, few people use the ubiquitous search engine with much sophistication (Fallows, 2005; Hargittai, 2004), and news

customization services are no easier to learn. To further our understanding of people's selection preferences, we must examine these preferences using other types of data. For this study, several hundred readers of partisan online news sites were recruited from across the country to participate in a web-administered behavior-tracking study designed to examine the influence that opinion has on online news users' political information exposure. The results help us to understand how individuals' political attitudes influence their use of the news.

The next section presents a series of formal hypotheses based on existing research on exposure preferences. I then describe the research methodology, including the novel use of a system for tracking participants' real-time use of online news content. The results demonstrate that online news users' attention to news is influenced by their political views. These individuals are more likely to be interested in reading a story that they expect to support their opinion, and they spend more time reading it. They are also marginally less likely to be interested in stories containing opinion-challenging information, but they do not systematically avoid them. To the contrary, the results show that people spend more time examining stories that include opinions with which they disagree. I conclude with a discussion of these results, and with recommendations for future research.

Political opinion and news use decisions

Selective exposure theory has historically treated a preference for opinion reinforcement and an aversion to opinion challenges as equivalent (e.g., Lazarsfeld, Berelson, & Gaudet, 1944; Mutz, 2006; Mutz & Martin, 2001; Sears & Freedman, 1967). The implicit assumption is that there is a strict trade-off—individuals choose one type of information at the expense of the other—but the information environment is more complex than this. News stories are bundled information goods, often including a mix of viewpoints and evidence supporting multiple perspectives. A news outlet, be it a newspaper, magazine, or television program, further aggregates this information, presenting a collection of news stories. News consumers choose among these offerings, either selecting a preferred news outlet or (especially since the advent of online news) selecting preferred news stories. Either way, the chosen information source represents a collection of opinions. In this context, the exposure question is not whether an individual will seek or avoid a particular attitude, argument, or piece of evidence, but how the various opinions included in a news story influence his or her use of it.[1]

There is substantial evidence that people are interested in opinion-reinforcing political information (see Frey, 1986 for a review). For example, individuals whose media environment affords more control over their news exposure tend to use news outlets offering more opinion reinforcement, and to be more familiar with ideas and arguments that support their viewpoint (Mutz, 2006; Mutz & Martin, 2001). The most commonly cited explanation for this phenomenon is cognitive dissonance theory (Festinger, 1957). According to the theory, people experience positive feelings

when presented with information that confirms that their decision is correct. The effects of this phenomenon should extend to the level of individual news items: the presence of opinion-reinforcing information is expected to increase the likelihood of exposure.

> H1: The more opinion-reinforcing information an individual expects a news story to contain, the more likely he or she is to look at it.

Story selection is just one measure of exposure in the online news environment. Length of exposure is another important dimension of exposure selectivity for two reasons. First, story selection is based on incomplete information. The most accessible cues about a story's political content, such as the headlines, source identification, and brief excerpts that often accompany links to online news items, do not provide detailed information about story contents. These indicators are an imperfect means of gauging what the reader will encounter. Individuals may discover after selecting a news item that its contents are different than what they expected. In this situation, a reader could revise the initial exposure decision, choosing to abandon the story based on the new information. Second, the presence of opinion-reinforcing information could influence a reader's willingness to stay engaged with a news story because of the positive feeling associated with reading. That is, the reader might find a story that contains information that is consistent with his or her own beliefs to be more pleasurable to read than one that does not discuss or acknowledge those beliefs. Thus, the prediction concerning the influence of opinion-reinforcing information on read time mirrors that of its influence on the decision to view a news story at all.

> H2: The more opinion-reinforcing information a news story contains, the more time an individual will spend viewing it.

There is comparatively little evidence that individuals systematically avoid contact with opinion-challenging political information. As noted in the introduction, survey data indicates that online news users encounter as many opinion challenges as nonusers. These individuals are not using web-based exposure control to screen out other viewpoints. In his review of experimental selective exposure research, Frey (1986) concludes that people's tendency to avoid information that challenges their opinion is generally weaker than their tendency to seek out opinion-reinforcing information. He cautions that this finding may in part be an artifact of experimental designs that test selective seeking before turning to selective avoidance. Such designs could suppress selective avoidance effects since selective exposure weakens over the course of an experiment. Taken together, however, these findings suggest that people do not exhibit a strong aversion to other perspectives.

There are several mechanisms that could help to explain why selectively avoiding opinion challenges is less likely than selectively seeking opinion reinforcement. Most pragmatically, it may be easier to identify counterarguments than to avoid all opinion-challenging information. Another consideration is that encountering criticisms of

one's position in a news story can be useful, giving the individual an opportunity to prepare a rebuttal for future use. Finally, individuals may value being seen as well informed and thoughtful decision makers. On this view, even those whose views are most entrenched want to be aware of why others might disagree.

> H3: The more opinion-challenging information the reader expects a news story to contain, the less likely he or she is to look at it.

> H3a: The influence of opinion-challenging information on the decision to look at a news story will be smaller than the influence of opinion-reinforcing information.

As noted, length of exposure is the other important dimension of selectivity. If a reader who is inclined to avoid opinion challenges misjudges a story based on its headline or source and then encounters content he finds objectionable, the individual might stop reading the story before reaching its end. This would tend to produce a negative association between opinion-challenging information and exposure time. Other factors might work in the opposite direction, though. Biased-assimilation theory predicts that people will spend more time processing information with which they disagree because they tend to be more critical of it, and spend more time looking for its flaws (Lord, Ross, & Lepper, 1979; Munro et al., 2002). Although motivated by a desire to undercut opinion-challenging information, the fault-finding process nevertheless has the potential to enhance retention, as it entails elaboration (Holbrook, Berent, Krosnick, Visser, & Boninger, 2005). If the tendency to avoid other opinions is slight—that is, if relatively few readers abandon news stories when they encounter views with which they disagree—then the overall effect of the inclusion of opinion-challenging information in a news story will be to increase the length of exposure to the story.

> H4: The more opinion-challenging information a news story contains, the more time the individual will spend viewing it.

Method

Recruitment

A web-administered behavior-tracking study was used to examine how political content influences newsreaders' use of individual news items. Subjects participated in the study over a 6-week period between February 9 and March 20, 2005. A pilot test was conducted approximately 2 weeks prior to final data collection to evaluate question wording and estimate effect size.

Two partisan online news services—one aligning itself with the U.S. political left (AlterNet–A Project of the Independent Media Institute) and the other tending to the right (WorldNetDaily)—helped to recruit subjects by encouraging readers to participate in the computer-administered experiment. Partisan news readers are

a particularly appropriate group to study because many of these individuals have already demonstrated a propensity to engage in selective exposure by getting news from a source that espouses views similar to their own. If selective reinforcement seeking is more common than selective avoidance among members of this group, it is likely that the same is true among mainstream news users who have not demonstrated such a clear tendency to shape their news exposure according to their political beliefs.

A 75-word recruitment statement was included in both organizations' weekly e-mail newsletter. WorldNetDaily also included the statement in the news headlines listed on its web site on February 15, 2005. The exact size of the distribution lists is not known, but conversations with staff members suggest that as many 20,000 people may have seen the material sent by AlterNet, while the material posted to the WorldNetDaily site could have been viewed by as many as 100,000 people. Volunteers who responded to these recruitment materials received an e-mail containing additional information about the study and instructions for accessing the study web site. As an incentive to participate, subjects could enter a $100 gift certificate lottery. Volunteers who had not completed the study after 2 weeks were sent one follow-up e-mail. Half of the 1,462 people who volunteered to participate completed the study, for a total of 727 subjects. The two recruitment sites were represented about equally in the data, with 358 Alternet readers and 369 WorldNetDaily readers participating.

Administration

The study was administered via the web using purpose-built software. The software presented news content and a questionnaire, and automatically recorded subject behavior and responses. Participants accessed the system using a web browser and user-specific URL provided in the e-mail invitation. If a subject left the site before completing the study, that individual could return to the original URL at any time, choosing either to continue where he or she left off or to start over. The URL was disabled once the subject completed of the study.

Upon arriving, subjects first indicated which of three political issues—gay marriage, social security reform, or civil liberties—was of greatest personal interest, and provided information about their familiarity with the topic, including how much they had heard about it, how often they had participated in related political activity, and whether their position had changed over time. Next the system presented users with a web page displaying five relevant news items automatically selected from a diverse collection of recently published online news. The stories were selected using Google News, a real-time aggregation service that provides query-driven results from an estimated 4,500 sources.[2] A synopsis, including a headline, source, and two-line excerpt, was displayed for each item. (Sample synopses and a screenshot of the news selection interface are included in the appendix.) Subjects were asked to use checkboxes to indicate which of the items they were interested in reading. They were allowed to select as many as they desired, and were informed that they would be

given an opportunity to read the stories later in the experiment. Having submitted their answers on this page, subjects were not allowed to go back.

In the next section, subjects answered a series of questions about each of the five news items based on the brief descriptions provided. The automated story selection was imperfect, sometimes generating duplicate or off-topic news items, so the questionnaire began with two screening questions. The remaining questions, which are described in more detail below, addressed subjects' perceptions of the news item. Once subjects submitted these responses, they were again prevented from returning to prior sections of the study.

Having completed the assessment, subjects were allowed to read any of the news items in which they had expressed interest. The system listed the descriptions for the items selected in the initial evaluation, and subjects could access the complete news story by clicking on its title. (A screenshot of the news reading interface is included in the appendix.) The accompanying instructions informed subjects that they had 15 minutes to read, that they could stop reading at any time, and that they were not required to read all the stories. The system allowed subjects unlimited time to read each individual news item, but prevented them from accessing a new item after 15 minutes had passed. Such limits have been shown to encourage individuals to prioritize access to preferred information sources (Frey, 1981). When a subject selected a story to read, the content was presented in a new pop-up window. The subject could not select another story or continue to the next stage of the experiment without closing this window. Once the subject closed the window, the system recorded how long the window had been open, and presented a series of follow-up questions. Subjects were first asked to confirm that they had been able to access the content, and then were allowed to give a revised assessment based on what they read. After responding to these questions, subjects could view another news item or continue to the next section of the study. In the final section, subjects were presented with a series of demographic questions.

Measurement of dependent variables
As noted above, subjects were first asked which of three current issues was of greatest personal interest. The issues, gay marriage, social security reform, and civil liberties, were chosen because of their high news profile in the weeks leading up to the study. Gay marriage was in the news because of the controversy surrounding its legal status. Following its legalization in Massachusetts in 2004, several states, including Ohio, Arizona, Tennessee, and Virginia, had moved to ban gay marriage, and coverage of these initiatives was extensive at the time of this study. Social security reform received significant media attention because the Bush administration was actively pushing congress to tackle the issue amidst growing concern that the current system was financially unstable. Commentary by prominent figures such as Alan Greenspan, who was at the time the chairman of the Federal Reserve Board, and Tom DeLay, the House Majority Leader, helped to keep this issue in the news. Finally, the media discussion of civil liberties tended to focus on the balance between privacy

and security in post-9/11 America. During the period of this study, one particularly noteworthy event was the nomination of Michael Chertoff for Secretary of Homeland Security. The importance of these three issues was evidenced by their daily presence in the mainstream news media, and their correspondingly high profile in the Google News search engine, which yielded several dozen results on each topic every day of the study period.

Subjects' use of issue-related news, the dependent variable, was measured in two ways. First, did the subject express *interest in reading* the news item based on the description? This was a dichotomous variable corresponding to whether the subject had placed a checkmark next to the item the first time it was displayed. Subjects selected well over half (58%) of the 2,907 unique news items presented.[3] Second, how long did the subject spend viewing the news item? *Read time* was measured as the number of seconds that the pop-up window containing the complete news story was open. Subjects read 1,297 news items, about three-quarters (77%) of the stories they expressed interest in reading and had not read previously. Seventeen items with read times greater than 10 minutes were excluded because these unusually high read times were likely the result of factors external to the experiment. For the analyses, duplicate and off-topic news items were also excluded, leaving a total of 1,167 cases. After these exclusions, read times ranged from 4 seconds to about 9.5 minutes, with a mean read time per story of a little over 2 minutes (122 seconds, s.d. = 86 seconds), and a median of about a minute and a half (100 seconds).

This measure of read time includes more noise than it would were these data collected in a lab setting. Variations in Internet access speeds could produce random errors of up to several seconds, and the researcher had limited influence over subjects during the study. Thus, subjects might have been interrupted by a phone call or distracted by other events in their local environment while participating. Although these factors are expected to increase the variance in the measure, these are still random errors. There is no reason to expect them to systematically bias the results.

Measurement of independent variables
Subjects' perceptions of the political opinions represented in a news item were the basis of the independent variables. These perceptions were measured twice during the study. Subjects completed the first assessment, reporting their *prospective perceptions*, after indicating which news items they were interested in viewing. The second assessment, which provided *retrospective perceptions*, came after subjects viewed the full news item. Subjects' interest in reading could only be influenced by their prospective perceptions, while both prospective and retrospective perceptions had the potential to influence the news item view time.

Both assessments included questions about the presence of *opinion reinforcement* and *opinion challenge*. To measure the former, subjects were asked about the extent to which the news item (1) described arguments supporting their position, and (2) provided evidence that other people share their beliefs (see Appendix for question wording). Responses were summed to create reinforcement scores that fell between

Table 1 Opinion-reinforcement and opinion-challenge score descriptives

	(n)	Opinion reinforcement		Opinion challenge	
		Cronbach α	Mean (s.d.)	Cronbach α	Mean (s.d.)
Prospective	2903	.88	6.25 (1.92)	.86	7.18 (1.66)
Retrospective	1297	.89	6.92 (2.18)	.84	7.04 (1.94)

2 and 10. The mean prospective opinion-reinforcement score was slightly lower than the retrospective score, which was itself very close to the scale midpoint (see Table 1). The presence of *opinion challenge* was measured using a parallel set of questions that dealt with opposing viewpoints. In contrast to opinion-reinforcement scores, the prospective opinion-challenge score was higher than the retrospective score, which again fell very near the middle of the scale.

The instrument also included several measures used as controls in this study, including political ideology and demographics, such as education, gender, and age.

Data and sample

Subjects recruited via the two news sites exhibited several demographic similarities. Both groups ranged in age from 18 to about 80, with an average age of just under 50 years. More than 85% were white, and less than 5% identified as Black or Hispanic. Participants in this study were highly educated, with more than half holding a college degree. There were, however, several demographic differences between the two groups. Those recruited via the conservative site were disproportionately male, and those recruited via the liberal site disproportionately female, compared to national averages. Conservative-site recruits tended to be less educated: Slightly more than half had completed a college degree compared to about seven in 10 of those recruited from the liberal site. Conservative-site subjects also tended to have slightly higher incomes, with only about one in six reporting an income under $30,000 while more than one-quarter of the liberal site recruits reported an income in this range.

As expected, these groups also differed significantly in terms of their political affiliation and ideology. More than half of those recruited from the liberal site identified themselves as Democrats, with very few Republicans. This pattern was reversed among conservative site recruits. A more pronounced pattern is evident when looking at political ideologies: About nine in 10 identified with the ideology corresponding to that of the recruiting news site. It is also noteworthy that participants were more strongly committed to their particular political ideologies than most Americans. Three-fifths described themselves as strong partisans, about three times the proportion nationally.

Results

News story interest

The data show that the news items that subjects expressed interest in tended to be more consistent with their viewpoint than those they did not (see Table 2). The average level of opinion reinforcement reported in the news items that subjects expressed interest in reading is higher than that of news items subjects choose to exclude. Furthermore, the average opinion-challenge score is lower among selected news items than among those that were not selected for future examination. These results suggest that subjects' news item selections were biased toward opinion reinforcement and against opinion challenge, consistent with hypotheses 1 and 3.

Comparing the levels of opinion-relevant content in the news items that subjects selected to those they did not provides preliminary support for the hypotheses, but this analysis is insufficient. Antecedents, such as the issue of interest, political affiliation, or demographics, might explain the simple relationships shown above. Furthermore, the comparison of means does not account for the fact that the observations were not all independent: Each subject evaluated five news items.

Story selection decisions are clustered by subject because each subject evaluated multiple stories. To accommodate for this fact, a random-intercept logistic regression model is used to assess the influence of political opinion on item selection under multivariate controls (estimated using Stata 10).[4] These models treat story assessments and selection decisions as level-1 variables nested within subject, a level-2 variable. The models assume that selection likelihood varies randomly between subjects, but that opinion-relevant information has a fixed influence. A *likelihood-ratio* test, which compares a model where effects are fixed against a model where they are allowed to vary (Hayes, 2006; Raudenbush & Bryk, 2002), demonstrates that subjects differ from one another significantly in terms of story selection ($\chi^2(1) = 115.88$, p<.001). Coefficients for the model, which is based on based on 2,836 story selection choices by 691 study participants, are reported in Table 3.

The model controls for both a story-level factor, the topic of the news item, and individual-level factors, including age, education, and political ideology. Of these, only ideology had a significant influence, with conservative subjects demonstrating less interest in reading the stories presented.

The first prediction is that the expectation of encountering opinion-reinforcing information in a news story will promote its selection (H1). The data support

Table 2 Prospective opinion score by interest in reading

	(n)	Opinion reinforcement Mean (s.d.)	Opinion challenge Mean (s.d.)
Interest in reading	1685	6.53 (1.82)	7.05 (1.66)
Not interested in reading	1218	5.86 (1.99)	7.37 (1.64)
Mean comparison test		t (2887)= 9.41, p<.001	t (2888)= 5.20, p<.001

Table 3 Random-intercept logistic regression model of story selection

	Coeff. (se)	
Story-level fixed effects		
Opinion reinforcement (prospective only)	.25***	(.03)
Opinion challenge (prospective only)	−.06†	(.03)
Issue: civil liberties[b]	.10	(.15)
Issue: gay marriage[b]	.26	(.17)
Intercept	−.12	(.54)
Individual-level fixed effects		
Age	−.01†	(.00)
Education	−.00	(.06)
Conservative?[a]	−.37**	(.13)
Variance of random effects		
Intercept (subject)	1.07	(.08)

Notes: The maximum likelihood method is used for estimation. [a]Includes weak and strong conservatives. [b]Reference category is social security reform. †p<.10, *p<.05, **p<.01, ***p<.001.

this prediction: Prospective opinion reinforcement is associated with a strongly significant increase in the likelihood of looking at a story even after controlling for a variety of other factors. The evidence that individuals avoid opinion-challenging information (H3) is less compelling, as prospective opinion challenge is associated with an only marginally significant decrease in selection likelihood. As expected, opinion reinforcement had a larger influence on selection than opinion challenge (H3a). Comparing the magnitude of these coefficients confirms that the coefficient on the former is significantly larger the latter ($\chi^2(1) = 13.05$, p<. 001).

The use of the logistic model makes the interpretation of the parameters reported in Table 3 somewhat difficult. These values correspond to the independent variables' influence on a logit transformation of the dependent variable, story selection. In order to understand the meaning of these coefficients, it may helpful to visualize their influence after converting them to the proportion scale (see Figure 1). The estimates are computed by assuming mean values for all the variables in the model except for the amount of opinion-reinforcing or opinion-challenging information. The horizontal scale is anchored by low, meaning the minimum value for the measure of the opinion-relevant information, and high, meaning the maximum value. As the figure clearly shows, opinion-reinforcing and opinion-challenging information push the probability of selection in opposite directions, but the influence of opinion-reinforcing information is substantially larger (the slope of the line is steeper).

News story view time
Having demonstrated that opinion-relevant information influences story selection, the next question is whether it also shapes story exposure times. Correlations suggest that the more opinion-relevant information the reader encounters in a news item (retrospective opinion scores), the more time he or she spends viewing it (see Table 4).
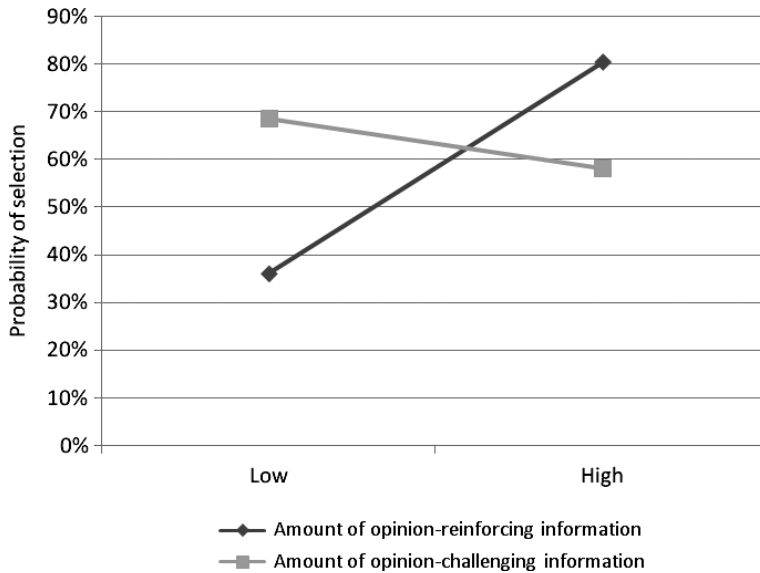
Figure 1 Influence of opinion-relevant information on probability of story selection. Note: Assumes mean values for all other variables

Table 4 Correlation between opinion score and read time

	Opinion reinforcement		Opinion challenge	
	Prospective	Retrospective	Prospective	Retrospective
Read time	−0.014	0.079**	−0.023	0.123**
	(1161)	(1167)	(1158)	(1162)

Note. Cell entry is Pearson correlation, sample size in parenthesis (**p<.01).

The subject's *expectation* that he would encounter such information (prospective opinion scores), however, was not significantly correlated with exposure time. It is also noteworthy that exposure times increased more rapidly in the face of opinion challenges than opinion reinforcement: The correlation r of the former is almost 50% larger than that of the latter ($r = .079$ versus $r = .123$).

A random-intercept linear regression model provides a more vigorous test of these relationships, allowing for statistical control.[5] As with the logistic model employed above, this technique accounts for the subject-level clustering within the dataset. Read time was transformed using a log function in order to render the data more compatible with model assumptions. A total of 1,065 read times were included in the analysis, representing the behavior of 483 subjects. The *likelihood-ratio* test confirms that read times differ significantly across subjects ($\chi^2(1) = 47.60$, p<.001). After controlling for the level-2 variable, the addition of predictors accounted for 7% of

Table 5 Random-intercept linear regression model of the log of read time

	Coeff. (se)	
Story-level fixed effects		
Opinion reinforcement, retrospective	.02[*]	(.01)
Opinion challenge, retrospective	.09[***]	(.01)
Opinion reinforcement, prospective	.01	(.01)
Opinion challenge, prospective	.01	(.01)
Issue: civil liberties[b]	−.05	(.06)
Issue: gay marriage[b]	−.21[**]	(.07)
Amount learned from news item	.07[**]	(.02)
Intercept	4.04[***]	(.25)
Individual-level fixed effects		
Age	.01[**]	(.00)
Education	−.07[**]	(.02)
Conservative?[a]	−.12[*]	(.06)
Number of news items read prior	.05[*]	(.02)
Total number of news items read	−.07[**]	(.02)
Variance of random effects		
Intercept (subject)	.34	(.03)
Level-1 residual ($\hat{\sigma}$)	.57	(.02)

Notes: The maximum likelihood method is used for estimation. a. Includes weak and strong conservatives. b. Reference category is social security reform. [†]$p<.10$, [*]$p<.05$, [**]$p<.01$, [***]$p<.001$

the variance in the dependent variable. Table 5 reports the model coefficients, with positive coefficients corresponding to an increase in the log of read time.

In addition to the controls from the first model, this model adds three factors that are related to reading, but not selection: how much the subject reported learning from the news story, how many stories the subject read prior to reading the story being evaluated, and how many stories the subject read in all.

As with the model of interest in reading, several control variables significantly influence news story exposure time. Unsurprisingly, the more people learn from a news story, the more time they spend looking at it. Age is also positively correlated with read time, which may be due to the fact that Americans tend to be more interested in politics the older they are (although the coefficient is so small as to appear trivial). In contrast, educational attainment is negatively correlated with read time. One interpretation of this finding is that through education people develop reading skills that allow them to process news stories more quickly. In addition to being less likely to look at a news story, individuals with a conservative political ideology also tend to have slightly lower read times. Turning to factors associated with exposure to other news, we see that the number of stories read prior to the current item is associated with increased read time, which is likely a result of fatigue. In contrast, the more stories a subject reads overall, the less time he or she spends on each. This suggests that people limit their overall news exposure time by adjusting the time they spend on each story downward the more stories they examine. Finally,

those interested in gay marriage tend to spend less time on each article they chose to read, which may again be due to the high profile of the issue. The topic was regularly in the news, which meant that subjects might be able to more quickly scan the story for new information.

The first prediction concerning story exposure times is that encountering opinion-reinforcing information will lead to longer read times (H2). The analysis confirms this, demonstrating that the more opinion reinforcement a subject reports encountering, the more time that individual spends looking at the story. In contrast to the prediction regarding the influence of opinion-challenging information on story selection, however, the last prediction is that increasing opinion challenge will be associated with *longer* read times (H4). Once again, the data support this claim. The relationship between opinion-challenging information and read time is positive and strongly significant. Although no prediction about the magnitude of influence of opinion-reinforcing versus opinion-challenging information was made, it is interesting to note that the coefficient on latter factor is significantly larger than on the former ($\chi^2(1) = 52.13$, p<. 001).

The transformation of the dependent variable again makes the interpretation of the coefficients somewhat more difficult, and a visualization showing the influence on read time measured in seconds may be helpful (see Figure 2). The estimates are made by assuming mean values for model variables not shown, and the horizontal axis ranges from the least possible opinion-relevant information to the most possible. The graph clearly demonstrates the positive influence of both opinion-reinforcing and opinion-challenging information, and calls attention to the more substantial change associated with the presence of opinion-challenging information (the steeper slope).

Discussion

From the moment the Internet entered public consciousness, scholars have wondered how it would alter the political communication landscape (e.g., Neuman, 1996). A prevailing concern is that new information and communication technologies (ICTs), with their unique capacity for managing information flows, would precipitate a crisis of democracy. Would people abandon efforts to understand other perspectives or to reach common ground if they could simply avoid those with whom they disagreed (Mutz & Martin, 2001)? Would online political communication herald an era of "echo chambers," of political fragmentation and social polarization (Sunstein, 2001)?

Fears of Internet-induced fragmentation are fundamentally linked to the concept of politically motivated selective exposure. If individuals are inclined to use opinion-reinforcing information sources to the exclusion of sources that describe views with which they disagree, then new ICTs' capacities for seeking out and filtering information are a profound threat to political discourse. If, however, people are not averse to opinion challenges, then we have little reason to equate the Internet with the construction of homogeneous personal political information environments.
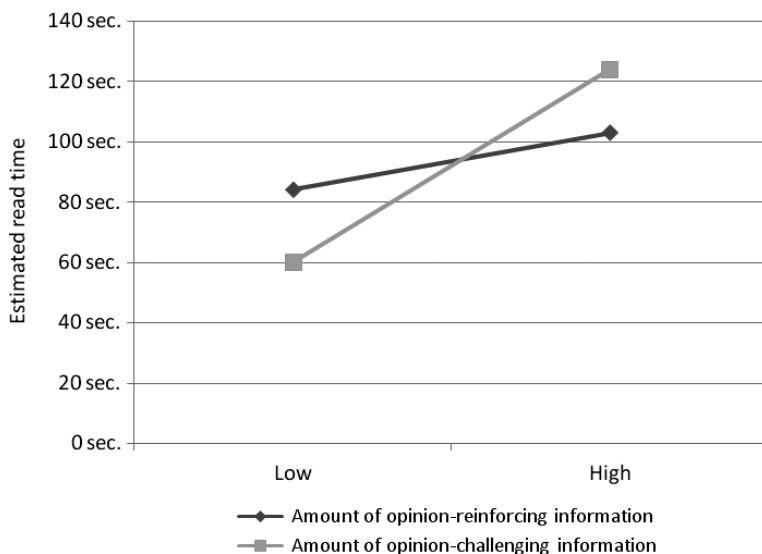
Figure 2 Influence of opinion-relevant information on story read time. Note: Assumes mean values for all variables not shown

The results support the five hypotheses proposed at the outset of this article. When selecting among a variety of news items representing a range of political opinions, individuals consistently seek support for their own positions. They are more likely to look at information that reinforces their opinion (Hypothesis 1), and they spend more time reading it (Hypothesis 2). Individuals also exhibit a slight (marginally significant) aversion to opinion-challenging information (Hypothesis 3), though the effect is substantially smaller than the effect associated with opinion-reinforcing information (Hypothesis 3a). The selection bias may also be partially offset by individuals' tendency to spend more time looking at the opinion-challenging news items they do choose to read, reflecting a willingness to engage with (though not necessarily be persuaded by) other perspectives (Hypothesis 4).

These results have important implications for our understanding of online news and what the capabilities afforded by new ICTs mean for individuals' exposure to political information. People do not seek to completely exclude other perspectives from their political universe, and there is little evidence that they will use the Internet to create echo chambers, devoid of other viewpoints, no matter how much control over their political information environment they are given. To the contrary, the longer read times associated with opinion-challenging information suggest that people may wish to maintain awareness of diverse political views (while ensuring that their own beliefs are well supported).

In light of these information-exposure preferences, the information management capabilities afforded by new ICTs could ultimately yield some desirable changes in people's political information exposure. By making opinion-reinforcing information

more accessible, online political information sources give people the opportunity to become more knowledgeable about arguments supporting their beliefs, and increasing political knowledge can promote participation (Kenski & Stroud, 2006). Furthermore, recent scholarship suggests that heightened contact with opinion-reinforcing information can promote higher levels of political participation (Mutz, 2006).

This does not mean that technology is a panacea. New ICTs that promote political segmentation, not just choice based on political content, might yet emerge. For example, if online news services attempt to impute users' political preferences and then exclude divergent viewpoints when reporting the news, online news users' strong interest in opinion-reinforcing information will dominate their weaker interest in other perspectives. Polarized news outlets serving niche audiences, which are more economically feasible online where production costs are lower, are another threat. Faced with a choice between a news source that is almost exclusively supportive of their opinions and another that almost exclusively challenges those same opinions, news consumers seem likely to choose the former.

Limitations

One important consideration when viewing these results is that the sample is not representative of the U.S. population at large. The recruitment strategy, which targeted users of partisan news sites, means that subjects were already engaged in a form of selective exposure. All the subjects in this study choose to get news from a source that explicitly gives priority to one ideology over another. Furthermore, subjects were more ideologically extreme than most Americans, and the topic was one that they indicated was of interest to them, characteristics which are both associated with a greater tendency to be selective (Chaiken & Stangor, 1987; Frey, 1986, p. 580). It may be, then that these subjects are more likely than most to take their political opinions into consideration when choosing which news items to view. It is possible that a more typical reader is indifferent to opinion-challenging information, but these results demonstrate that there are at least some individuals who practice a limited form of selective avoidance of opinion-challenging information.

Future research

The lessons learned here are important, but many questions remain. Given the evidence that people are selective about which sources of opinion-challenging information they use, the question becomes: How do people choose which sources of opinion-challenging information to use? Do they look for the most complete coverage of the other views, while ensuring that their viewpoint is always in evidence? Or perhaps they prefer sources in which other views are most easily critiqued. Again, this would be consistent with biased-assimilation theory, suggesting that individuals are not interested in understanding other perspectives as much as they are interested in affirming the correctness of their own views. The answers to these questions will help us better understand the choices individuals will make as online news evolves.

Conclusion

Politically motivated selective exposure has a long and controversial history, swinging from widespread acceptance following Lazarsfeld and colleagues landmark work (1944) to outright rejection (Chaffee, Saphir, Graf, Sandvig, & Hahn, 2001; Sears & Freedman, 1967) before returning to favor (Frey, 1986; Mutz, 2006; Stroud, in press). The changing communication environment, and especially the rapid adoption of online news, has helped to spur renewed interest in this topic. What types of news people choose to examine when their range of choices is virtual unconstrained is of profound importance to our democracy. The results presented here suggest, however, that worry that the Internet will lead to an increasingly fragmented society appears to have been overstated.

The Internet and online news do allow individuals more choices and more control over their political information exposure, but people are not using these capabilities to isolate themselves entirely from other ideas. Although individuals are slightly less likely to examine news items that include opinion-challenging information, the effect is small and only marginally significant. Awareness of other views is further enhanced by the fact that individuals tend to spend more time examining information sources that include opinion challenges. This is not to say that people are persuaded by this content—to the contrary, other studies have suggested that the additional time is spent critiquing the other perspectives—but the process does help to ensure political awareness. This is an encouraging finding, suggesting that control-enhancing ICTs do not necessarily bode ill for exposure to cross-cutting political views.

Notes

1 Among individuals who rely solely on partisan news, the range of opinions represented in the stories from which they choose may be relatively narrow. Research indicates, however, that the vast majority of partisan-news users continue to use mainstream news sources as well (Garrett, in press).
2 Since the Google service updates its database of news stories in real time, the selection of stories presented varied from subject to subject.
3 All 727 subjects were presented with five news items for a total of 3,635 items; however, 728 of these contained duplicate or off-topic content and were excluded from this analysis. A duplicate story could appear if, for example, an AP wire story was picked up by more than one newspaper.
4 The following command was used to estimate the model in Stata: `xtmelogit select age educ cons civil gm precon predis || userid:`
5 The following command was used to estimate the model in Stata: `xtmixed lnrtime age educ cons civil gm fq6x read nread precon predis postcon postdis || userid:, mle`

References

Bimber, B., & Davis, R. (2003). *Campaigning online: the Internet in U.S. elections*. New York: Oxford University Press.

Chaffee, S. H., Saphir, M. N., Graf, J., Sandvig, C., & Hahn, K. S. (2001). Attention to Counter-Attitudinal Messages in a State Election Campaign. *Political Communication*, **18**, 247–272.

Chaiken, S., & Stangor, C. (1987). Attitudes and Attitude Change. *Annual Review of Psychology*, **38**, 575–630.

Fallows, D. (2005). *Search engine users: Internet searchers are confident, satisfied and trusting but they are also unaware and naïve*. Pew Internet and American Life Project.

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford: Stanford University Press.

Frey, D. (1981). The effect of negative feedback about oneself and cost of information on preferences for information about the source of this feedback. *Journal of Experimental Social Psychology*, **17**, 42–50.

Frey, D. (1986). Recent research on selective exposure to information. *Advances in Experimental Social Psychology*, **19**, 41–80.

Garrett, R. K. (in press). Politically motivated reinforcement seeking: Reframing the selective exposure debate. *Journal of Communication*.

Hargittai, E. (2004). Informed web surfing: the social context of user sophistication. In P. N. Howard & S. Jones (Eds.), *Society online: The Internet in context* (pp. 257–274). Thousand Oaks: Sage Publications, Inc.

Hayes, A. F. (2006). A Primer on Multilevel Modeling. *Human Communication Research*, **32**(4), 385–410.

Holbrook, A. L., Berent, M. K., Krosnick, J. A., Visser, P. S., & Boninger, D. S. (2005). Attitude importance and the accumulation of attitude-relevant knowledge in memory. *Journal of Personality and Social Psychology*, **88**(5), 749–769.

Kenski, K., & Stroud, N. J. (2006). Connections between Internet use and political efficacy, knowledge, and participation. *Journal of Broadcasting & Electronic Media*, **50**(2), 173–192.

Kohut, A., Doherty, C., Dimock, M., & Keeter, S. (2006). *Online papers modestly boost newspaper readership: Maturing Internet news audience—broader than deep*. Washington, DC: Pew Research Center for The People and The Press.

Lazarsfeld, P. F., Berelson, B., & Gaudet, H. (1944). *The people's choice*. New York: Columbia University Press.

Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology*, **37**(11), 2098–2109.

Munro, G. D., Ditto, P. H., Lockhart, L. K., Fagerlin, A., Gready, M., & Peterson, E. (2002). Biased assimilation of sociopolitical arguments: Evaluating the 1996 U.S. presidential debate. *Basic and Applied Social Psychology*, **24**(1), 15–26.

Mutz, D. C. (2006). *Hearing the other side: Deliberative versus participatory democracy*. New York: Cambridge University Press.

Mutz, D. C., & Martin, P. S. (2001). Facilitating communication across lines of political difference: the role of mass media. *American Political Science Review*, **95**(1), 97–114.

Neuman, W. R. (1996). Political communications infrastructure. *Annals of the American Academy of Political and Social Science*, **546**, 9–21.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (Second ed.). Thousand Oaks: Sage Publications.

Sears, D. O., & Freedman, J. L. (1967). Selective exposure to information: A critical review. *Public Opinion Quarterly*, **31**(2), 194–213.

Stroud, N. J. (2007). Media Effects, Selective Exposure, and Fahrenheit 9/11. *Political Communication*, **24**(4), 415–432.

Stroud, N. J. (in press). Media Use and Political Predispositions: Revisiting the Concept of Selective Exposure. *Political Behavior*.

Sunstein, C. R. (2001). *Republic.com*. Princeton, NJ: Princeton University Press.

About the Authors

R. Kelly Garrett is an assistant professor in the School of Communication at the Ohio State University. His research interests include the study of online political communication and online news and the ways in which citizens and activists use new technologies to shape their engagement with contentious political topics.
Address: 3080 Derby Hall, 154 North Oval Mall, Columbus, OH 43210-1339, USA. Email: garrett.258@osu.edu

Appendix

Sample news item synopses
The following are examples of the headlines, source identification, and excerpts that were presented to subjects during the study. Six examples are provided, two for each topic. (1) Gay marriage is a tie that blinds (Newsday, NY)—"Gay marriage is today the mother of all political wedge issues, an element that works like nerve gas—turning ordinary political contests into their own self . . ."; (2) Gay Marriage Is An Issue Of Basic Human Rights Canadian PM Tells . . . (365Gay.com)—". . . The minority government has the support of the country's two small parties - the New Democrats and the Bloc Quebecois - on gay marriage. . . ."; (3) An attack on civil liberties (Socialist Worker Online, IL)—"VETERAN DEFENSE attorney and civil liberties advocate Lynne Stewart is facing 20 years in prison as the latest victim of the US government's 'war on terror' . . ."; (4) Chertoff Promises to Balance Security, Civil Liberties (Washington Post (Subscription), DC)—". . . nominee for secretary of Homeland Security told senators on Wednesday that if confirmed he would balance protecting the nation with preserving civil liberties. . . ."; (5) Selling Social Security reform (CNN)—"WASHINGTON (CNN)—Fresh from his 'charm offensive' in Europe, President Bush returned home to woo Americans with his plan for Social Security reform. . . ."; (6) Greenspan Calls for Social Security Reform (Cato Institute, DC)—". . . Estimates suggest that each year that we wait to reform Social Security costs between $150 billion and $600 billion more. . . ."

Screenshots of news selection and read interfaces

Please indicate which of the following news reports you are interested in reading.

These are real news reports published within the last few days. How many you select is up to you. You will be given an opportunity to read the report(s) later.

☐ **President Bush Touts Social Security Reform, This Time With A Twist (NY1 News)**

Talking up his plans for Social Security reform before a prime-time audience Thursday night, President George W. Bush proposed cutting benefits for wealthier retirees.

☐ **Bush set to shift approach on Social Security reform (Financial Times)**

Faced with growing public disapproval of the centrepiece of his plan to reform Social Security, President George W. Bush was expected to take a new approach on Thursday night, using a prime-time press conference to underscore how he would guarantee the long-term solvency of the system.

☐ **Students to Rally for Social Security Reform on 75 Campuses Nationwide (U.S. Newswire via Yahoo! News)**

Students for Saving Social Security (SSSS) is a non-partisan, grassroots campaign on college campuses across the nation advocating for Social Security reform through personal ownership. SSSS is leading the charge to inform and mobilize today's college students to advocate for personal accounts. Unlike Rock the Vote, SSSS represents the interest of the vast majority of college students

☐ **Bush proposes reform to save Social Security (Houston Chronicle)**

You may now read the news report(s) you selected earlier.

The reports are listed below. Click on an underlined title to view a report, and close the window when you are done. After answering a few follow-up questions you will be returned to this page so that you may select another report to view. **When you have read all that you care to,** click the "Click here to continue" button at the bottom of the page. You have up to 15 minutes to view these reports.

Notice: The researchers have no control over the views or images presented in these news reports. Any report you select will be presented as published by the responsible news organization, including potentially offensive language or images. You may stop viewing these reports at any time.

President Bush Touts Social Security Reform, This Time With A Twist (NY1 News)
Talking up his plans for Social Security reform before a prime-time audience Thursday night, President George W. Bush proposed cutting benefits for wealthier retirees.

Students to Rally for Social Security Reform on 75 Campuses Nationwide (U.S. Newswire via Yahoo! News)
Students for Saving Social Security (SSSS) is a non-partisan, grassroots campaign on college campuses across the nation advocating for Social Security reform through personal ownership. SSSS is leading the charge to inform and mobilize today's college students to advocate for personal accounts. Unlike Rock the Vote, SSSS represents the interest of the vast majority of college students

Opinion-relevant content assessments

Responses given on a 5-point scale anchored by strongly agree and strongly disagree.
Prospective assessment of opinion-relevant content: I expect the news report to describe

arguments supporting my political viewpoint; I expect it to demonstrate that others support my political viewpoint; I expect it to describe arguments opposing my political viewpoint; I expect it to demonstrate that others oppose my political viewpoint. *Retrospective assessment of opinion-relevant content:* The news report described arguments supporting my political viewpoint; It demonstrated that others support my political viewpoint; It described arguments opposing my political viewpoint; It demonstrated that others oppose my political viewpoint. *Other news item questions:* I learned something from this news report.