

SCOTT L. ALTHAUS<sup>1</sup>  
DAVID TEWKSBURY

## Agenda Setting and the “New” News

### *Patterns of Issue Importance Among Readers of the Paper and Online Versions of the New York Times*

*This study examines whether readers of the paper and online versions of a national newspaper acquire different perceptions of the importance of political issues. Using data from a weeklong experiment in which subjects either read the print version of the New York Times, the online version of that paper, or received no special exposure, this study finds evidence that people exposed to the Times for 5 days adjusted their agendas in response to that exposure and that print readers modified their agendas differently than did online readers.*

In the process of disseminating information about what Walter Lippmann called the “world outside,” the press does much more than merely inform its audiences. By selecting which public affairs stories will be reported and by giving special prominence to some stories, the news media suggest which people, issues, and events are especially deserving of public attention. Given the importance of this attention-directing function, we might ask whether the nature of agenda setting by the news media might change as the technologies of news dissemination adapt to the formats of new communication media. Newspaper readers quickly learn to navigate the familiar signals employed by editors to set the momentous apart from the trivial: Few readers miss the point that long front-page articles with banner headlines are more important than short inside stories. How accurately are news agendas perceived by these same readers when Web-based news sources are used in place of traditional newspapers?

The agenda-setting tradition of mass media effects research has long been interested in the ways that news formats influence the perceived importance of issues in the news. For instance, one study of survey respondents found

that possession of a color television was associated with larger agenda-setting effects from television news content, a finding presumed to stem from the enhanced recall of information that color visuals lend to news stories (Hill, 1985). Most agenda-setting research has compared aggregate trends in the public agenda to aggregate trends in the news agenda (the “mass persuasion” and “natural history” approaches described by McCombs, Danielian, & Wanta, 1995). When differences in the agenda of different media have been studied, it has typically been to assess the impact of content differences among media on audience agendas (e.g., McLeod, Becker, & Byrnes, 1974; Mutz & Soss, 1997; Protess et al., 1991; Roessler, 1999; Wanta, 1997). Although much attention has been given to assessing the relative impact of television and newspaper agendas on the agenda of problems the public considers important (for wide-ranging reviews of this and other research in the agenda-setting literature, see Dearing & Rogers, 1996; McCombs, Shaw, & Weaver, 1997; Protess & McCombs, 1991), relatively little attention has been paid in this work to agenda-setting effects at the individual level, and no studies have examined whether filtering the same news content through two different media might produce different patterns of agenda-setting effects.

The present study addresses these gaps in the literature by exploring differences in individual-level agendas brought about by prolonged use of online versus paper editions of the same national newspaper. Using data from a multiday experiment, this study assesses differences in agenda-setting effects produced among readers of the printed version of the *New York Times*, the Web-based edition of the *Times*, and a control group having no special exposure to *Times* content.

### *Do New Media Set Agendas Differently Than Traditional Media?*

Because quantitative work in the agenda-setting tradition began long after the rise of television as a dominant channel for public affairs information, until recently there have been few opportunities to compare differences in agenda-setting effects produced by traditional media and by newer media for news dissemination. Some work was done on a precursor to the World Wide Web known as Videotex, which was introduced as an alternative means of delivering traditional newspaper content in the 1980s but which never achieved broad popularity. Videotex was shown to direct reader attention to different stories than print formats, with the index-style format of Videotex attracting readers to the first stories appearing in indexes regardless of the content of those stories (Fico, Heeter, Soffin, & Stanley, 1987). One study was also conducted to test for differences in agenda-setting effects produced by traditional news exposure and Videotex services, under the presumption that

the smaller number of salience cues available with Videotex should produce unique patterns of agenda setting (Heeter, Brown, Soffin, Stanley, & Salwen, 1989). This study found no differences in the personal agendas of regular media users versus subjects who used a Videotex service for a week, despite the fact that these groups were exposed not only to different news formats but also to different news content.

As far as we are aware, no study has yet tested for differences in agenda-setting effects between users of traditional printed newspapers and Web-based newspapers. Yet there is good reason to expect such differences. Doris Graber's influential (1988) study of news reading concluded that the most important criteria used by newspaper readers when choosing stories to read are the presence of story importance cues supplied by editors and the match between story topics and their own interests. Participants in Graber's study indicated the stories that caught their attention, and subsequent analysis of these reports revealed that people use article location (the closer to the front of the paper, the more likely to be selected), the size of headlines and visuals (the larger of either, the more likely to be selected), and story length and repetition to help guide their decisions. When asked about articles they missed, respondents in the study noted the stories' relatively low prominence in the newspaper. Newspaper-supplied cues are not the entire picture, however. Graber reported that interest in a topic can easily override the prominence criterion. For example, crime stories were more popular than international stories, regardless of the relative prominence of the two topics in the paper. Overall, however, Graber reported that 72% of reading comes from the first section of the paper, the section typically heavy in national, international, and political news.

Two differences in the presentation of news in print and online media may be especially relevant to the agenda-setting process because they alter the traditional ways that editorial decisions might influence the issue agendas of newspaper readers. The first stems from the relative flexibility of Web-based news formats: Online news sites encourage users to be highly selective in their consumption of news content provided by editors (Heeter et al., 1989; Williams, Phillips, & Lum, 1985). Traditional formats for printed newspapers define a hierarchy of stories by arranging them linearly in rough order of importance from the front to inside pages (Graber, 1988). This approach to structuring the news requires readers to undertake a relatively inefficient page-by-page search for stories of interest to them. As a consequence, readers of printed newspapers are likely to be exposed to stories that they might not have been actively seeking, particularly if those stories appear on the front page. In contrast, online newspapers tend to organize the news into topical categories that draw readers immediately to those stories most likely to fit

their information preferences (Dozier & Rice, 1984; Fico et al., 1987; Heeter et al., 1989). This tendency limits the potential that online readers will be exposed to the particular stories that a newspaper’s editorial staff deems important.

Second, due to constraints in the ways that news reports can be presented on the World Wide Web, most of the conventional story importance cues used in printed newspapers are not suitable for use in Web-based newspapers. For instance, the small size of computer monitors relative to printed newspaper pages puts a premium on condensing as much information as possible into a viewing area the size of a single screen, which leaves little room for large headlines or visual cues about story length. Although Web-based news formats may suggest their own importance criteria—such as the linear order in which story headlines are arranged in indexed lists of stories—to date, the presence or use of such cues has received little attention by researchers. This study asks whether the enhanced flexibility in story selection and reduced number of story importance cues associated with Web-based news formats lead readers of online newspapers to draw different inferences about important public issues than readers of printed newspapers.

To capture a broad range of possible effects, this study tests for differences in agenda setting at two different levels of news content: the perceived importance of particular stories appearing in the news (e.g., the relative importance of stories entitled “Mossad Agents Arrested in Switzerland” and “How Iraq’s Biological Weapons Program Came to Light,” expanding on the approach of Protess et al., 1991) and the perceived importance of broad topics into which particular stories can be categorized (viz., international issues versus national issues). In addition, the impact of news exposure on perceptions is examined for three different kinds of agendas: the impact of news content on readers’ own agenda of important concerns, the perceived importance of such topics in the news (Do readers of online papers perceive the news agenda as accurately as readers of printed newspapers?), and the perceived importance of news items to other people (following the approach used by Mutz & Soss, 1997).

Identifying how agenda setting might be influenced by the medium for delivering news content requires an experimental design that focuses attention on differences among individuals rather than populations. Studies of individual-level agenda setting have been few and far between, due in no small measure to findings in several early studies of few observable effects at the individual level (Erbring, Goldenberg, & Miller, 1980; Hill, 1985; McLeod et al., 1974). These early studies looked for consistency between the set of issues making up the media agenda and the set of issues making up individual agendas, expecting to find what later researchers have disparagingly

called “automaton effects” (McCombs et al., 1995). Later researchers came to recognize that the presence of such effects would suggest a level of media power akin to the long-discredited “hypodermic needle” model, and more recent work has tended to focus on aggregate-level relationships between media and public agendas.

Nonetheless, developments in the field of social psychology over the past two decades have shown that a variety of individual-level characteristics influence how people process information, a finding confirmed in the small number of agenda-setting studies informed by this tradition (e.g., Iyengar & Kinder, 1987). One individual-level variable that has received a great deal of recent attention by political communication scholars is political knowledge, which has been shown to predict media exposure (Neuman, Just, & Crigler, 1992; Price & Zaller, 1993), influence strategies for processing new information (McGuire, 1969; Zaller, 1992), and increase interest in public affairs (Delli Carpini & Keeter, 1996; Neuman, 1986), all three of which have been shown to moderate agenda-setting effects. Yet direct evidence for the impact of political knowledge on agenda setting has been mixed, with some studies finding political knowledge to be associated with resistance to agenda-setting effects (Iyengar & Kinder, 1987; Iyengar, Peters, & Kinder, 1982; McLeod et al., 1974) and others suggesting that knowledge increases susceptibility to such effects (Hill, 1985; Krosnick & Brannon, 1993; Miller & Krosnick, 2000; Roessler, 1999; Wanta, 1997; Weaver, 1977).

Aside from the “vulnerability” question, it is unclear how political knowledge might moderate agenda-setting processes in different media environments. Iyengar and Kinder (1987) argued that the less knowledgeable are more susceptible to media-supplied cues about the importance of various issues, and given the potential for online news sources to feature fewer overt cues about the importance of issues in the news, this perspective would suggest that agenda-setting effects among less knowledgeable readers should be larger in the printed newspaper condition than in the online condition. To the extent that political knowledge increases interest in a wide range of political and public affairs issues (Delli Carpini & Keeter, 1996; Neuman, 1986), the least knowledgeable should be influenced to a greater degree by the format characteristics of printed rather than online newspapers, because people typically start reading from the front of printed papers, where public affairs content is usually concentrated (Bogart, 1989). The nonlinear style of online news formats, however, is geared to maximize the efficiency with which readers can locate stories that interest them, thus making it easier for readers to avoid public affairs content if they so choose. In contrast, the heightened interest of more knowledgeable readers may incline them to pursue public affairs news regardless of the format in which news content is delivered.

These speculations notwithstanding, given the diversity of functions that knowledge can serve, the extant literature offers no firm predictions about how knowledge may interact with format differences among news media to influence agenda-setting effects. The present study is designed to clarify how political knowledge moderates the effect of format characteristics on agenda-setting effects.

The first hypothesis details expectations about the impact of group assignment on exposure to international and national stories in the news. By any measure, the general public's interest in international news is low. Foreign news items make up the bulk of least-followed stories in the Pew Center's News Interest Index (Pew, 2001), which has been surveying audience interest in news stories since the mid-1980s. *Newsweek* magazine posts a 25% drop in newsstand sales whenever an international topic is on its cover, and the average amount of space devoted to international stories in news broadcasts, newspapers, and news magazines has declined precipitously in recent years due to limited reader interest in international news topics (Hoge, 1997). Given the ease with which online readers can selectively expose themselves only to the categories of news content that already interest them, online readers should be less likely to expose themselves to the international coverage available in the *Times* than paper readers, who should tend to search for stories of interest by reading through the front section in a linear fashion. Because international news occupies roughly the first half of the paper version's front section (the remaining half is primarily national, metro, and editorial items), paper readers should be at least minimally exposed to a broad range of foreign affairs coverage even if they have limited interest in such topics. Moreover, the linear presentation of news in the printed version of the *Times* also should lead paper readers to be exposed to a broader range of national political stories than online readers. Our expectations about group differences in news exposure can be expressed as follows:

*Hypothesis 1:* Subjects in the paper group will recall and recognize more stories about international and national politics than will subjects in the online group.

A second set of hypotheses lays out expectations regarding the perceived importance of particular stories appearing in the *Times* during the week in which subjects used either the online or printed editions of the newspaper:

*Hypothesis 2:* Subjects in the paper group will more accurately perceive the agenda of the *New York Times* than will subjects in the online group.

*Hypothesis 3:* Subjects in the paper group will perceive the agenda of other people in the United States to reflect the agenda of the *New York Times* more closely than will subjects in the online group.

*Hypothesis 4:* The personal agendas of subjects in the paper group will reflect the agenda of the *New York Times* more closely than will the personal agendas of subjects in the online group.

The third set of hypotheses detail expected group differences in perceptions of the “most important problems” facing the country.<sup>2</sup> To assess the potential that group assignment influences the mix of “most important problems” reported by subjects, these problems were divided into two broad categories corresponding to the two dominant emphases in *New York Times* front-section content: international and national problems (details on this categorization are presented in the Method section). When it comes to spontaneous mentions of problems facing the country, we expect that the wording of the “most important problems” question—which asks, “What do you think are the most important problems facing this country?”—should cue subjects to think of national rather than international problems. To the extent that subjects in the online and paper groups are exposed to international stories, international problems should tend to supplement or displace national problems in subjects’ answers.

*Hypothesis 5:* When asked to name the most important problems facing the country, subjects in the paper group will tend to place international problems closer to the top of their lists than will subjects in the online group.

*Hypothesis 6:* When asked to rank the most important problems facing the country, subjects in the paper group will tend to rank international problems higher than will subjects in the online group.

*Hypothesis 7:* When asked to identify the most important problems facing the country, subjects in the paper group will tend to mention more international problems than will subjects in the online group.

In addition to testing these hypotheses, this study also explores the following research question: What is the relationship between levels of general political knowledge and perceptions of most important problems and stories? In particular, we assess the possibility that knowledge interacts with group assignment in different ways for subjects in the online and paper groups.

## Method

To explore whether different modes of delivering essentially the same news content give rise to differences in agenda-setting effects, this study used



a pre- and posttest experimental design with two treatment groups and a control group. A convenience sample of paid volunteers was recruited in February 1998 from the student population of a large midwestern university using advertisements placed in the campus newspaper and posted on bulletin boards around campus. Most of those completing the study were undergraduates (89%), and nearly two thirds of them (63%) were female. Although the generalizability of findings from experiments using student subjects has long been a matter of controversy among social scientists, our reliance on them turns out to offer an advantage for studying differences between printed and online newspapers. Because all but 1 of the subjects in the online group reported using the World Wide Web at least occasionally before the experiment, we can be confident that differences between the paper and online groups are unlikely to result from unfamiliarity with World Wide Web applications or resources.

The experiment began on a Sunday afternoon, when subjects who had been assigned randomly to one of three groups completed a pretest questionnaire. After the pretest, subjects in the control group (47 subjects assigned, with 42 completing the posttest survey) received no special instructions and were asked merely to return in 6 days.<sup>3</sup> A second group (45 subjects assigned, with 43 completions) was asked to report to a computer laboratory for 1 hour on each of the subsequent 5 days. Subjects in this group (hereafter, the “online group”) used personal computers to access the *New York Times* Web site for at least 30 minutes but not more than 60 minutes per day. A third group (42 subjects assigned, with 38 completions) was asked to report to university classrooms for 1 hour on each of the subsequent 5 days. Subjects in this group (the “paper group”) read the traditional print version of that day’s national edition of the *New York Times* for between 30 and 60 minutes per visit.<sup>4</sup> Subjects in both of the exposure groups were repeatedly told to limit their news exposure during the week to information received during the laboratory visits, a control on news exposure that has proven effective in other experimental studies of media effects (e.g., Iyengar & Kinder, 1987).

Reading sessions were held for subjects in the paper and online groups from Monday through Friday, and the posttest questionnaire was completed by subjects in all three groups on Saturday, leaving approximately 24 hours between the last day of exposure and administration of the posttest.<sup>5</sup>

General political knowledge was measured as an index of 8 factual knowledge questions included in the pretest questionnaire and built according to the recommendations of Delli Carpini and Keeter (1993, 1996).<sup>6</sup> The political knowledge variable, which attains conventional levels of reliability (Cronbach’s  $\alpha = .73$ ), ranges in value from 0 to 1, with a mean of .55 and



standard deviation of .28. For the analyses that follow, this variable is split at the mean to assess differences between higher and lower knowledge groups.

Three sets of dependent variables are used in the analyses reported below.

### *Recognition and Recall of News Events During the Exposure Week*

The Saturday posttest included a battery of 15 questions (3 for each of the preceding 5 days of exposure) asking whether subjects recognized and could describe news events that occurred during the exposure week. Adapted from the National Election Studies 1989 pilot study, each question began with the phrase “Have you seen or heard any news stories this week about” and then gave a brief description of an event. Subjects could answer yes or no, and those answering yes were asked to describe what happened in their own words. All of the events in these questions were selected from stories printed in the front section of the *New York Times* paper edition, with 8 stories focusing on issues of national concern and seven focusing on international matters (for additional details and the full wording of these questions, see Tewksbury & Althaus, 2000).<sup>7</sup> One of the international stories—concerning Israeli spy activity in Switzerland—proved to be problematic, however, because this story was prominently featured on the front page of the online version of the *Times* but merited only a short story on the fourth page of the international section in the paper version of the *Times*. The recall and recognition measures for international stories used below therefore omit the Israeli spy story, although findings from the full set of international issues are reported in the Notes section.

The story recognition variables used in the analysis below measure the number of national and international stories that subjects said they recognized. The open-ended descriptions of these events reported by subjects were coded for accuracy by comparing them to the content of the relevant news article.<sup>8</sup> Each description was first divided into discrete thoughts, and each thought was coded as correct, incorrect, or off-topic (e.g., “I think I read something about this”). Intercoder reliability was measured by having two coders analyze 10% of the recall descriptions. This test produced a Guetzkow’s *U* of .008 for the unitizing task and a Cohen’s kappa of .75 for the accuracy task, both indicating that the recall coding was acceptably reliable. The recall measure used in the analyses below takes a value of 1 for descriptions containing at least one correct recall statement and a value of 0 for descriptions containing no correct recall statements, including subjects who did not fill out the recall portion of the question.

*Perceived Importance of Stories Appearing  
in the News During the Exposure Week*

A second set of dependent variables was developed to test perceptions regarding the news agenda of the *New York Times* as well as to study the impact of news items making up the *Times* agenda on the personal agendas of our subjects. The posttest questionnaire included a battery of 18 questions that asked subjects to rank the importance of stories appearing in the *New York Times* during the preceding 5 days, which was the time period in which the two treatment groups were being exposed to *Times* content. Each of these story importance questions presented subjects with the wording of three headlines that appeared in both the print and online editions of a particular day's coverage. Questions focused on either international, national, or business news headlines and asked subjects to evaluate the relative importance of the stories in the news, both to others in the United States and to themselves personally. The headlines in each question came from stories that were clearly differentiated in priority within the paper version of the *New York Times*. Each question contained one headline from the front page of a particular day's edition (in cases when no business stories appeared on the front page of the paper, stories were chosen from the front page of the business section), one headline from a prominent inside page (close to the first page for international stories, on the front of the National section page for national stories), and one headline from a minor story appearing deep on the inside pages.

Three variables were constructed from these story importance questions to indicate the congruence between a subject's ranking of story importance and the relative prominence of stories in the *Times*. Within each of the three ranking tasks per question, subjects who ascribed the highest relative importance to the story that was most prominent in *Times* coverage were given a score of 1, and subjects whose choice of most important story was different from that of the *Times* were given a score of 0. Thus, for each set of headlines, matches were assessed between the most prominent *Times* story and that story's perceived importance in the news, both to other people in the United States and to the subject personally. The number of matches was then averaged across all 18 questions to produce an overall measure of congruence between the *Times* agenda and each of the three perception measures. Additional details on the construction of these story importance measures is reported in the appendix.

*Mentions of "Most Important Problems"*

A third set of dependent variables are constructed from the traditional open-ended "most important problem" (MIP) question, which was the first question in both the pretest and posttest and which invited subjects to list as many as 16 problems. Responses to these questions were analyzed by a trained coder who assigned each response to a numerical category constructed from an updated version of the comprehensive list proposed by McCombs and Zhu (1995). These raw data were then collapsed into two topical categories: international problems and national problems.<sup>9</sup> Two coders independently analyzed a sample of 82 MIP mentions from the pretest and 81 from the posttest, and the resulting assignment of comments into the two categories was found to be highly reliable (Cohen's kappa = 1.00 in the pretest and .94 in the posttest). Two variables were constructed from the open-ended MIP data to measure the numerical prominence of international and national problems among the MIPs mentioned by each subject: The total number of international and national MIPs mentioned and the proportion of total MIPs made up of international and national problems.

We also constructed two measures to assess the importance of one MIP topic relative to others mentioned by a subject: the average rank that subjects assigned to MIPs from each category and the average order in which MIPs from each category were listed. Our version of the MIP question invited subjects, once they had recorded their lists of most important problems, to go back and rank the problems in order from most to least important.<sup>10</sup> These data were transformed into an interval-level ranking variable that assigns an average importance rank to each set of national and international MIPs mentioned by a subject. Each subject's top MIP is assigned a value of 1, and lower-ranking MIPs are assigned fractional values in descending order of importance. Thus, if "crisis with Iraq" has a rank of 1 and "keeping the world safe from nuclear weapons" has a rank of .5, the aggregate "international problems" category would receive a rank of .75.<sup>11</sup> If this hypothetical subject had failed to mention any international MIPs, the international problems category would be assigned a rank value of 0. The average order variable is constructed the same way, with the MIP listed first taking a value of 1 and MIPs lower in the list taking fractional scores of decreasing value.<sup>12</sup>

Although the recall/recognition and story importance questions offer indirect measures of exposure to *Times* content, we have no parallel measure of the overall agenda of *Times* content during the study week against which to compare the prevalence of MIP topics mentioned by subjects in the exposure groups. In the logic of the experimental design used here, random assignment

to the three groups should ensure that any posttest differences in agendas between groups can be taken as evidence of differences in exposure to *Times* content, either because subjects read different stories from among the same population of available content or because the paper and online editions led subjects to process the same stories in different ways.

However, a third possibility is suggested by an important difference between the two editions: The online edition is less bound by the capacity restrictions of the paper edition, which has a limited number of pages on which to run news stories. For that reason, the online edition carries a larger number of stories per day than its paper counterpart. For example, on the last day of the reading week, the paper version contained 112 stories compared to 177 available on the online site. The paper edition had a smaller number of public affairs stories ( $n = 38$ ) than the online edition ( $n = 50$ ), but the difference in total number of stories meant that the paper version had a slightly higher proportion devoted to public affairs topics (34% of stories on that day) than the online version (28%). An analysis of these differences revealed that 84% of the paper edition’s public affairs stories (that is, stories from the front section, excluding Metro stories)<sup>13</sup> were found on that same day in the online edition, whereas 64% of the public affairs stories in the online edition also appeared in that day’s paper edition. Of the stories that were not shared by both editions, we concluded that most represented (a) links in the online edition to past stories published by the *Times* that were related to events of the day and (b) stories that appeared in the other edition during the previous or next news cycle, as when the online edition ran a “breaking news” story that became incorporated into the next day’s print edition.

Given that content differences arising from these two factors are most pronounced in a single day’s news and should lessen considerably over longer periods of news exposure, we believe that the differences in the population of news content to which the two treatment groups were exposed was quite small, limited primarily to Associated Press wire service stories not deemed important enough to be included in the next day’s paper edition and to special sections of the *Times* available only to online readers (e.g., the “CyberTimes” section, which on the final reading day contained 7 technology stories not appearing in the paper edition). Previous analysis of these data found that between-group differences in exposure to public affairs news remained significant after controlling for differences in the availability of public affairs stories (Tewksbury & Althaus, 2000). Although content differences could account for some variance in agenda-setting effects between groups, it seems clear that such differences in content are not so great as to be solely responsible for any between-group differences in agenda-setting effects.

Table 1

*Recognition and Recall of News Stories Appearing During the Experimental Week*

	Group			$F$ ( $Eta^2$ )
	Paper	Online	Control	
Recognition				
International stories	2.00 <sub>a</sub> (1.45)	1.33 <sub>b</sub> (1.13)	.67 <sub>c</sub> (.75)	13.90** (.19)
National stories	3.11 <sub>a</sub> (1.93)	1.93 <sub>b</sub> (1.37)	1.04 <sub>c</sub> (1.16)	13.81** (.19)
Recall				
International stories	1.47 <sub>a</sub> (1.20)	.79 <sub>b</sub> (.99)	.31 <sub>c</sub> (.52)	15.55** (.21)
National stories	2.18 <sub>a</sub> (1.61)	1.44 <sub>b</sub> (1.18)	.83 <sub>c</sub> (1.01)	8.39** (.13)
$N$	38	43	42	

*Note.* Cell entries are the mean number of stories recognized or recalled from each category, with standard deviations in parentheses. Means with different subscripts in a particular row differ in planned comparisons at the  $p < .05$  level. Significance levels are reported for one-tailed tests.

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

## Results

An exposure control check confirms that subjects in the two exposure groups successfully followed our instructions to refrain from reading or viewing other news content during the week of the experiment. Subjects in all three groups were statistically indistinguishable in their pretest levels of self-reported exposure to television news, newspapers, and radio news programming (for details, see Tewksbury & Althaus, 2000). For the week leading up to the pretest, subjects reported spending an average of 1.92 hours watching television news programs (including local and national broadcasts), 2.88 hours reading newspapers (including the student newspaper for the campus), and .76 hours listening to news programming on the radio. Posttest measures for news exposure during the week of the experiment showed that although levels of news exposure among subjects in the control group did not differ from pretest levels, 95% of subjects in the online group and 92% of subjects in the paper group reported no exposure to television news during the week in which the experiment was being conducted, and 88% of online subjects and 92% of paper subjects reported no exposure to radio news programming during the experiment week.

We first assessed subjects' ability to recognize and recall stories that appeared in the *Times* during the exposure week. Given that the paper group is expected consistently to have higher values on the variables of interest than the online group, in this table and for all other findings discussed below one-tailed significance tests are reported unless otherwise noted. Table 1 shows that subjects in the paper group could recognize and recall more stories than subjects in the online group and that both exposure groups could

Table 2  
*Proportions of Matches Between Perceived Story Importance and  
the Agenda of the New York Times*

	Group						$F$ ( $Eta^2$ )	
	Paper		Online		Control			
International stories								
Importance in the news	.56	(.23)	.52	(.15)	.49	(.20)	.66	(.01)
Importance to others in U.S.	.54	(.18)	.50	(.16)	.54	(.16)	.61	(.01)
Importance to self	.59	(.19)	.62	(.17)	.54	(.17)	1.84	(.03)
National stories								
Importance in the news	.50	(.16)	.50	(.17)	.45	(.22)	.76	(.01)
Importance to others in U.S.	.42	(.18)	.48	(.21)	.48	(.23)	.65	(.01)
Importance to self	.36	(.17)	.45	(.20)	.42	(.23)	2.26	(.04)
$N$	36		41		37			

*Note.* Cell entries are the mean proportion of matches between the most important stories in the *New York Times* and the most important stories identified by subjects. Significance levels are reported for one-tailed tests.

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

recognize and recall more stories than subjects in the control group. For instance, the first row shows that an average of 2 out of 6 international stories were recognized by subjects in the paper group, compared to slightly more than 1 story among online subjects and less than 1 story among subjects in the control group.<sup>14</sup> This pattern of group differences holds for international as well as national stories. Polynomial contrast tests confirm a significant linear structure to the between-group differences, all  $t$ s  $\geq 4.09$ , all  $p$ s  $< .01$ . In short, these findings provide strong confirmation of our expectations regarding group differences in exposure to international and national stories. However, none of the interactions between political knowledge and group assignment was statistically significant, indicating that the impact of political knowledge on story recognition and recall was essentially similar across groups.<sup>15</sup>

Subjects in the paper group could recognize and recall a wider variety of stories than subjects in the online group, but Table 2 shows that when presented with sets of three headlines from the week's news coverage, they were no more accurate than online or control subjects in identifying the news agenda of the *New York Times*. For example, the first row in Table 2 shows that subjects in the paper group correctly identified the most prominent international stories 56% of the time, compared to a 52% accuracy rate for online subjects and a 49% accuracy rate for subjects in the control group.

Paper subjects were not only just as likely to identify correctly the agenda of the *Times* as subjects in the other two groups, but more generally there were no significant between-group differences observed for any of the story-level analyses reported in Table 2. The paper group's wider exposure to international and national news stories did not lead them to perceive that other people in the United States regarded the most prominent *Times* stories as relatively more important than less prominent stories, nor did it produce significant between-group differences in subjects' own assessments of story importance. Moreover, all of the interactions between group assignment and level of general political knowledge were statistically insignificant, indicating that knowledge level had a similar relationship with perceived story importance among subjects in the paper, online, and control groups.<sup>16</sup>

Because by chance the perceptions of subjects should match the agenda of *Times* about a third of the time, the tendency for subjects in each of the groups to match the *Times*' agenda about half of the time suggests that the patterns of homogeneity in Table 2 are not arising from random guessing alone. It is possible that the control group's matches reflect inferences based on exposure to other news media, but the most likely explanation for this high degree of similarity across groups is that subjects were evaluating story importance based on heuristic cues in the headlines themselves. Our data do not allow a direct test for this possibility, but the fact that subjects in all three groups arrived at similar conclusions suggests at a minimum that perceptions of important stories were not influenced consistently by the medium through which subjects received public affairs information.

Although perceptions of story importance did not vary significantly across experimental groups, consistent between-group differences were found in patterns of MIP responses displayed in Table 3. Because there were no statistically significant differences among groups in pretest mentions of MIPs, the impact of exposure to the paper and online versions of the *Times* can be read straightforwardly as between-group differences in the posttest MIP mentions, which, in the case of international problems, are all statistically significant. As expected, subjects in the paper group tended to mention more international problems than other subjects, both numerically and proportionally: Paper subjects mentioned an average of .94 international problems, compared to .83 for online subjects and .51 for subjects in the control group, whereas international problems constituted 16% of MIPs mentioned by paper subjects, compared to 12% among online subjects and 8% among control group subjects. Moreover, international problems appeared earlier in the lists of MIPs provided by subjects in the paper group and tended to be ranked as relatively more important than the international problems mentioned by



Table 3  
*Posttest Mentions of International and National Issues as  
 “Most Important Problems”*

	Group			$F$ ( $Eta^2$ )
	Paper	Online	Control	
International problems				
Mean number mentioned	.94 <sub>a</sub> (.63)	.83 <sub>a</sub> (.82)	.51 <sub>b</sub> (.59)	4.91** (.08)
Mean proportion mentioned	.16 <sub>a</sub> (.14)	.12 <sub>b</sub> (.14)	.08 <sub>b</sub> (.11)	4.55** (.08)
Mean list order	.55 <sub>a</sub> (.38)	.41 <sub>b</sub> (.39)	.28 <sub>b</sub> (.37)	5.34** (.09)
Mean rank order	.55 <sub>a</sub> (.39)	.41 (.39)	.30 <sub>b</sub> (.39)	3.79* (.06)
National problems				
Mean number mentioned	5.81 (3.07)	6.07 (2.51)	5.98 (2.58)	.40 (.01)
Mean proportion mentioned	.81 <sub>a</sub> (.16)	.84 (.19)	.89 <sub>b</sub> (.13)	3.97* (.07)
Mean list order	.55 (.08)	.57 (.11)	.58 (.07)	.95 (.02)
Mean rank order	.56 (.09)	.56 (.08)	.57 (.08)	.18 (.00)
$N$	36	42	42	

*Note.* Standard deviations in parentheses. Means with different subscripts in a particular row differ in planned comparisons at the  $p < .05$  level. Significance levels are reported for one-tailed tests.

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

other subjects. In each of the four international problems analyses, polynomial contrast tests confirm a significant linear structure to these effects, all  $t$ s  $\geq 2.75$ , all  $p$ s  $< .01$ . Repeated measures and simple contrast tests confirm that observed differences between the paper and online groups are significant for mean proportion of international problems mentioned and mean list order for international problems, although the difference in mean rank order of international problem attains marginal levels of significance,  $p = .06$ .

In contrast, only one of the four analyses for national problems returned a significant between-group difference: National problems constituted a significantly smaller proportion of MIP mentions among paper subjects than among other subjects, with polynomial contrast tests confirming the linearity of this relationship,  $t = 2.79$ ,  $p < .01$ . In light of this finding, it is interesting to note that subjects in the paper group did not mention fewer national problems than subjects in the online and control groups. It would appear that the impact of group assignment was to narrowly increase the number of international problems mentioned without affecting the number of national problems brought to mind. In addition, no significant interactions were observed between political knowledge and group assignment. Although the news interests of knowledgeable people may incline them to read a broader range

of public affairs stories than other people, this study finds no evidence that the effects of the group assignment differ as a function of knowledge.<sup>17</sup>

## Conclusion

Two dimensions of exposure to the *New York Times* were examined in this study. The first is the general effect that exposure to the paper has on readers' personal issue agendas. People exposed to the *Times* for 5 days adjusted their overall agendas in part to that suggested by the newspaper. The second dimension studied is the extent to which readers of the online version of the *Times* may acquire a set of issue concerns that differs from the set acquired by print readers. As expected, the overall pattern of findings suggests that, following exposure, print readers modify their agendas differently than do online readers.

Our findings support the conclusion that readers of the paper version of the *New York Times* were exposed to a broader range of public affairs coverage than readers of the online version of the *Times*. More importantly, readers of the paper version of the *Times* came away with systematically different perceptions of the most important problems facing the country. Subjects in the paper group tended to be relatively more concerned about international issues than subjects in the online group. We also found consistent main effects from use of the *Times*, with significant differences between the control and two treatment groups in recall and recognition of news stories appearing during the week of the experiment, as well as in perceptions of important problems, with subjects from both the paper and online groups showing greater concern for international problems than subjects in the control group. However, perceptions that individual stories were more or less important than others did not vary among subjects in the paper, online, and control groups, suggesting perhaps that headlines may be imperfect indicators of story content or that subjects may be good at inferring a story's likely importance even when not directly exposed to it. Finally, it does not appear that the relationship between political knowledge and agenda-setting effects are conditioned by the relative availability of story importance cues in the online versus paper versions of the *New York Times*.

Our experimental study finds stronger agenda-setting effects than most nonexperimental studies using individual-level data (Erbring et al., 1980; Hill, 1985; McLeod et al., 1974; Roessler, 1999), which, as others have pointed out, is due in large part to the great deal of control over news exposure that can be imposed in experimental settings. Where the present study departs from previous experimental work on individual-level agenda setting (Heeter et al., 1989; Iyengar & Kinder, 1987) is in presenting the two treatment

groups with the full population of actual daily news content produced by a major newspaper over 5 consecutive days. With so much room for individuals to select among available stories, it is remarkable in a study with such modest numbers of experimental subjects that this opportunity for selective exposure to the news agenda did not eliminate differences in agenda-setting effects between paper and online readers. In this light, it seems likely that the observed differences between groups might be even more widespread in an experimental setting where the population of available stories was greatly limited.

These findings carry potentially important implications. As more people acquire their public affairs news from the Internet—by using news outlets similar to the one studied here—they may develop issue agendas that are different than those developed by print readers. Many recent assessments of new communication technologies (e.g., Katz, 1996; Neuman, 1991; Sunstein, 2001; Webster & Phalen, 1997) have emphasized the potential for these new technologies to greatly increase the fragmentation of news audiences. By providing users with more content choices and control over exposure, new technologies may allow people to create personalized information environments that shut them off from larger flows of public information in a society.

Some researchers see this development as a cause for alarm. Citizens in such a media environment may become ill-informed about current events and may have increasingly idiosyncratic perceptions about the importance of current events and political issues (Katz, 1996; Sunstein, 2001). To the extent that mass media serve to stabilize societies by providing citizens with shared collective experiences (Abramson, Arterton, & Orren, 1988; Dayan & Katz, 1992; Graber, 1997; Mendelsohn & Nadeau, 1996), common symbolic anchors for organizing political life (Bennett, 1998), or by representing a society to its individual citizens (Bennett, 1996; Carey, 1989; Herbst, 1994), the potential for Web-based information media to further fragment news audiences may be a cause for concern.

Concern of this sort is premised on the assumption that increased use of personalized news will displace use of traditional news outlets like television and printed newspapers. However, several recent studies have suggested that online news outlets seem unlikely to replace television broadcasts and newspapers as the primary source of news for most audiences (Althaus & Tewksbury, 2000; Davis, 1999; Davis & Owen, 1998; Pew, 1999; see also Becker & Shoenbach, 1989). To the extent that these audiences continue to rely on traditional sources of news, the potential for online media to isolate people in highly personalized information environments will remain limited. If this perspective is correct, then the findings reported in this paper, although valid for the artificial environment of the experimental laboratory,

would seem to generalize only to rare cases of extreme isolation from traditional news outlets.

More generally, many concerns about news personalization seem anchored in the normative assumption that ordinary citizens ought to be informed broadly about public affairs, an assumption that is stated nowhere in the 18th-century canonical texts of "classical" democratic theory (Pateman, 1970) and that seems to have been established in the United States within popular political rhetoric (Brown, 1996), particularly around the time of the Progressive Era in the late 19th century (Schudson, 1998). Although a broadly informed polity is likely to produce any number of politically desirable public goods (Delli Carpini & Keeter, 1996), such a polity is by no means considered necessary in most theories of democracy (Held, 1987). One recent analysis of citizenship in the United States (Schudson, 1998) has suggested that the informational needs of today's citizens may be rather minimal given the historical shift of political power from the ballot box to the courtroom. From this perspective, differences in the political agendas of online and paper readers may be less important than the differences between those exposed to some news coverage and those exposed to none at all.

News personalization may also represent a positive development in at least two ways. First, by giving greater control over the flow of news to online audiences, news personalization further erodes the ability of journalists to serve as gatekeepers of the public agenda (White, 1950). The advent of universal suffrage, the development of primary elections, and the widespread use of opinion surveys are signs that the political institutions of modern democracies are today more egalitarian than ever before. A parallel evolution in the technologies of news dissemination could also be seen as a sign of progress, particularly in light of concerns that commercial journalism has abdicated many of its public service responsibilities (Capella & Jamieson, 1997; Patterson, 1993; Sabato, Stencel, & Lichter, 2000). Second, although the linear presentation of news in printed newspapers seems to expose readers to a larger number of public affairs stories, the parallel presentation mode of online news outlets might encourage greater depth of exposure to a particular topic even as it inclines people to be more selective in the topics they read about. Online news outlets might therefore promote the development of "issue publics": small groups in a population that acquire expertise in particular subjects (Converse, 1964; Krosnick, Berent, & Boniger, 1994). It may well turn out that traditional modes of news delivery hinder the development of issue publics because they are geared to provide only a small amount of information about each of a large range of topics. From the standpoint of democratic theory, a news system that produces collective breadth in a popu-

lation’s understanding of public affairs by encouraging individual depth in specialized knowledge might compare favorably to a news system that produces citizens who understand a little about a lot.

Our findings confirm that online news media facilitate greater individual control over news exposure and that this greater control leads online readers to focus on different kinds of information and to develop different perceptions of important problems than audiences of printed newspapers. These findings, however, do not speak directly to the larger question of whether the rising popularity of Web-based news services bodes well or ill for political communication in democratic societies. Online news outlets may ultimately empower audiences by eroding the degree of editorial influence over the public’s issue agenda, or they may erect yet another barrier to effective citizen involvement in politics. Research on the political impact of new media technologies is still in far too early a stage, and the “new” media themselves are still developing at far too rapid a rate to draw firm conclusions about the larger implications of this technological revolution in news delivery. In this light, the need for additional research on these questions could not be more pressing, for a momentous shift in news delivery is underway, and this study’s findings suggest that contemporary incarnations of Internet news are subtly, but consequentially, altering the way that the news media set the public’s agenda.

### *Appendix*

#### *Methodological Details on the Measurement of Story Importance for News Headlines Appearing During the Exposure Week*

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The battery of story importance questions was preceded with the following introduction, which is adapted from the questions developed by Mutz and Soss (1997) to test perceptions of community opinion regarding the importance of local issues:

We are interested in your perceptions of the importance of issues and events currently in the news. Specifically, we would like to know your opinion on three things: how important certain news stories are according to the news media, how important you think these news stories are to other people in the United States (regardless of how you might feel personally), and how personally worried or concerned you are about the topics of these news stories. Each set of issues below contains headlines from news stories that appeared in the *New York Times* this week. For each set of three stories, please indicate their relative importance by ranking them from 1 to 3, with 1 the most important story, 2 the second most important story, and 3 the third most important story. The first set of rankings for each group indicates how important the stories are according to the news media, the second set of rankings indicates how important the stories are to other people in the U.S., and the third set of rankings indicates how important the stories are to you personally. If you aren’t sure of your answers, please give your best guess.

Eighteen questions followed these instructions, each containing a set of three headlines. For example, one of the questions read as follows:

Please rank the relative importance of the following 3 stories for news media, other people, and yourself.

- (a) Clinton Likely to Win Over Senate on Expanding NATO
- (b) Israeli Spy Chief Quits, Taking Blame for the Fiasco in Jordan
- (c) Soviet Defector Warns of Biological Weapons

To the right of the headlines were three columns labeled "Importance in the news," "Importance to others in U.S.," and "Importance to you personally." Each column contained spaces for subjects to rank the stories in order of importance.

All 54 stories used to construct these questions appeared in both the print and online versions of the *Times*. In addition to page number, the stories were categorized as high, medium, and low prominence based on headline width in the paper version, the presence of accompanying pictures or graphics, and the length of text in column inches. To be selected for inclusion in these questions, all 3 stories had to have a clear relative priority on at least three of the four criteria. In the example above, for instance, the biological weapons story ran on the front page with a three-column headline, was accompanied by a prominent picture, and was 31 column inches in length (high prominence); the Israeli spy story appeared on page 3 with a four-column headline, no picture, and was 26 column inches long (medium prominence); the Clinton story ran on page 6 with a two-column headline, had no pictures, and was 15 column inches in length (low prominence).

In cases where the same stories had slightly different headlines in the print and online versions, the headline giving the fullest description of story content was used. To ensure an even topical distribution of headlines from the reading week, a third of the questions dealt with international stories, a third with national stories, and a third with business stories. The questions are also distributed chronologically so that three questions (one each dealing with international, national, and business stories) were constructed from headlines appearing in each of the first 4 days, leaving six that were constructed from stories appearing on the last reading day. The order of most to least prominent story was randomized across questions.

Cases in which subjects assigned the same numerical value to 2 of the 3 stories in a question proved problematic for our analysis. In such cases, it was difficult to conclude whether subjects intended to assign a tie to 2 of the stories or whether they misunderstood the ranking task. A few subjects clearly misunderstood the task, ranking questions horizontally across the questionnaire rather than vertically as they were directed to do. Our solution was to treat any questions with ties, incomplete rankings, or inconsistent rankings as "missing" when calculating the story match totals for each individual.

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## Notes

1. An earlier version of this paper was presented at the annual meeting of the American Political Science Association in Washington, DC, August 31 through September 3, 2000. The authors thank Dawn Basham and George Wickey for their assistance in collecting the data used in this project. Funding for this study was provided by the UIUC Campus Research Board at the University of Illinois at Urbana-Champaign.

2. In an earlier version of this article, our interest centered on between-group differences in the allocation of “most important problem” (MIP) mentions among 11 different topical categories adapted from McCombs and Zhu’s (1995) comprehensive scheme for coding MIP responses: economy, welfare, international issues, law and order, health, environment, education, political scandals, social relations, technology, and other political issues. Given that we lack a comprehensive measure of the news agenda of the *New York Times* during the exposure week, in that earlier paper we were unable to specify expectations for directional changes in each of the 11 MIP categories brought about by exposure to *Times* content. Instead, we could hypothesize only that the paper, online, and control groups should differ in MIP allocations across the 11 topics. Our analysis revealed several significant between-group differences among these MIP categories, but we were dissatisfied with our limited ability to account for the patterns we observed. For instance, our earlier analysis revealed highly significant differences between online and paper subjects in mentions of education as a MIP, but it was not clear to us why this should be. In particular, we were concerned that the large number of coefficients needed to analyze our exhaustive set of 11 topical categories would increase the likelihood of observing statistically significant differences that arose merely from chance. As a consequence of these limitations, we subsequently restructured the analysis by aggregating the 11 MIP topics into two categories that correspond most closely to the organization of the *Times* front section—national and international issues. As a result of simplifying the categorization of MIP mentions, we were able to specify directional expectations regarding the impact of the *Times*’ international focus on the issue agendas of paper versus online subjects. Although our decision to collapse several different MIP topics into a single “national problems” category means that we no longer discuss several significant findings regarding differences in national concerns among paper and online subjects, we believe that this choice makes for a more theoretically grounded and empirically valid presentation of the experimental data.

3. The overall pretest-posttest retention rate was an acceptable 92%, and subsequent analysis using variables from the pretest confirmed that the few incompletions did not bias the remaining pool of subjects. A check of the random assignment process confirmed that there were no significant between-group differences in a wide range of relevant individual-level variables, but this check did reveal a slight imbalance in the gender distribution of subjects: 76% of subjects in the paper group were women, compared to 60% in each of the other groups. Although a chi-square analysis determined that this small difference was statistically insignificant, we nonetheless included gender as a control variable (coded 1 = female, 0 = male) in all of the analyses reported below.

4. In practice, subjects in both of the exposure groups read for an average of approximately 40 minutes per visit.

5. In addition to the posttest reported in this study, subjects in the online and paper groups completed a short questionnaire following the Friday reading session that was designed to assess their news consumption habits on that particular day. Data from this “midtest” are reported elsewhere (Tewksbury & Althaus, 2000) but are not used in the present analysis.

6. The index is a summary measure of correct answers to four open-ended questions (“What job or political office does [Newt Gingrich, William Rehnquist, Boris Yeltsin, Benjamin Netanyahu] hold?”) and four forced-choice questions: “Who has the final responsibility to decide if a law is constitutional or not [The president, the Congress, the Supreme Court, don’t know]?”; “Whose responsibility is it to nominate judges to the federal courts [The president, the Congress, the Supreme Court, don’t know]?”; “Which party has the most members in the House of Representatives in Washington [Republican, Democratic, don’t know]?”; and “Which party has the most members in the U.S.



Senate [Republican, Democratic, don't know]?" Each correct answer was scored as 1, and each incorrect or "don't know" answer was scored as 0. The knowledge scale consists of the sum of correct answers for each individual divided by the number of items in the index. In the case of the open-ended questions, full credit was given for both fully correct (e.g., "Gingrich is the Speaker of the House") and partially correct answers (e.g., "Gingrich is a member of Congress").

7. Of the 7 international stories, 4 gave prominent attention to the United States and its officials, as with a story about President Clinton's reaction to a new United Nations weapons inspection accord with Iraq.

8. A few of these events generated a number of related articles in the *New York Times*, as was the case with a United Nations arms inspection accord with Iraq. Our analysis of recall accuracy considered statements about all such related stories as valid responses, even if the details recalled were not about the specific topic in question.

9. These topical categories are constructed from the major subdivisions of the McCombs and Zhu (1995) listing. We collapsed their General International Issues, Soviet/Europe, Asia, Mideast, and Latin America/Africa categories into a single International Problems category, and the remaining items in McCombs and Zhu's list were collapsed into a single National Problems category. Some responses could be coded as neither international nor national problems (i.e., the 400-level codes in McCombs and Zhu's list), and these were coded into a Miscellaneous Other category that is ignored in the following analysis.

10. The full "most important problem" question read "What do you think are the most important problems facing this country? Please list as many as you can in the spaces given below. After you have completed your list, please rank the items from most to least important by noting the position of each in the blanks on the right. Give the most important problem the rank of 1."

11. Several alternative coding schemes were tested for cases in which multiple mentions were made of the same topic, including one which summed (rather than averaged) the ranking values of each problem mentioned within the same topical category. Each alternative coding scheme produced similar results in the analyses that follow, so for ease of interpretation, the average ranking of a topic was retained.

12. Ranking variables were constructed separately from the pretest and posttest surveys using the following formula:

$$\frac{(T_i + 1) - R_{ti}}{T_i}$$

where  $T$  is the total number of topics mentioned by subject  $i$  in that wave of the survey and  $R$  is the ranking value (1, 2, 3, . . . ,  $n$ ) assigned by subject  $i$  to each MIP topic  $t$ .

Order variables were constructed separately from the pretest and posttest surveys using the following formula:

$$\frac{(T_i + 1) - O_{ti}}{T_i}$$

where  $T$  is the total number of topics mentioned by subject  $i$  in that wave of the survey and  $O$  is the order (1, 2, 3, . . . ,  $n$ ) in which each MIP topic  $t$  was listed by subject  $i$ .

13. This definition of public affairs stories, although excluding stories appearing only in the business section, captures the population of news items that would be the most likely source of information relevant for MIP considerations.

14. The findings for international stories reported in Table 1 exclude data from the Israeli spy story, which on the day it appeared received front-page attention on the online version of the newspaper but only little attention in the printed version of the *Times*.

Including the Israeli spy story produces the following results for international stories (standard deviations in parentheses):

	Paper	Online	Control	<i>F</i>	<i>p</i>
Recognition	2.13 (1.61)	1.70 (1.39)	.69 (.81)	14.19	.000
Recall	1.53 (1.33)	1.14 (1.28)	.33 (.61)	13.04	.000

Polynomial contrast tests confirm that between-group effects are linear,  $t(122) = -5.09$ ,  $p < .001$  for recognition;  $t(122) = -4.90$ ,  $p < .001$  for recall. Repeated measures and simple contrasts show that observed differences between both exposure groups and the control group are one-tailed significant at the  $p < .05$  level, but observed differences between the paper and online group are one-tailed significant at the  $p = .067$  level for recognition and the  $p = .066$  level for recall.

15. Significant coefficients for the main effects of political knowledge were found in all four of the analyses, international recognition  $F(1, 122) = 13.90$ ,  $p < .001$ ; national recognition  $F(1, 122) = 13.50$ ,  $p < .001$ ; international recall  $F(1, 122) = 8.56$ ,  $p = .002$ ; national recall  $F(1, 122) = 8.38$ ,  $p = .003$ . In each of these analyses, the high-knowledge group recognized and recalled significantly more stories than the low-knowledge group.

16. The main effects of political knowledge, however, were significant in two of the six analyses. For the importance of international stories in the news, subjects in the higher knowledge group had a 56% accuracy rate in identifying the most prominent *Times* stories, whereas subjects lower in political knowledge had a 48% accuracy rate,  $F(1, 114) = 4.06$ , two-tailed  $p = .05$ . For the importance of national stories to themselves, high-knowledge subjects selected the most prominent *Times* story in 45% of cases, compared to 37% of cases for low-knowledge subjects,  $F(1, 114) = 7.07$ , two-tailed  $p = .01$ .

17. Nonetheless, the main effects of political knowledge were significant at the  $p < .05$  level for the number and proportion of international and national problems mentioned as well as for the average order of international problems. Less knowledgeable subjects in each of the groups mentioned more international problems on average and listed them earlier than more knowledgeable subjects. Conversely, less knowledgeable respondents mentioned fewer national problems than more knowledgeable subjects. Given the tendency for the least knowledgeable people to isolate themselves from exposure to news of international affairs (Price & Zaller, 1993), we would expect the opposite: Mentions of international problems should be more prevalent among the most knowledgeable subjects. Yet the odd direction of these relationships makes sense in light of a prominent foreign policy crisis between the U.S. and Iraq that was resolved in the period between the administration of the pretest and the first reading day for the exposure groups. At the time of the pretest administration, the United States was widely expected to launch air strikes against Iraqi targets within a matter of hours in retaliation for Iraq's refusal to readmit United Nations weapons inspectors into the country. During the early morning hours between the pretest and the first reading session, an inspection agreement was brokered by U.N. Secretary General Kofi Annan that led President Clinton at the last minute to turn back American bombers that were on their way to bomb Iraqi targets. The resolution of this crisis was especially prominent in news coverage during the first few days of the reading week. In light of these events, the observed patterns are consistent with Zaller's (1992) conclusion that the more politically aware citizens are quicker to update their preferences in light of current events than are the less aware. Iraq received a great deal of attention in the *Times* during the reading week, and that amount of coverage may have served as an importance cue to less knowledgeable subjects or simply made the topic more accessible to

the least knowledgeable subjects. In contrast, more knowledgeable subjects may have recognized that the looming crisis had been resolved at least for the moment. This pattern could similarly result from accessibility effects among the most knowledgeable, who more easily call to mind the particular stories from the latter days of exposure.

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