

Medium Matters:

Newsreaders' Recall and Engagement with Online and Print Newspapers

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Increasingly, newsreaders are abandoning the print newspaper in favor of online news. This experimental research asks: Do reader engagements towards news stories vary by media? Half of a subject pool (N = 45) perused *The New York Times* and half browsed its accompanying Web site. Both groups answered questions on the extent to which the news stories made an impression. The results reflect prior research that shows print subjects remembered more news stories than online subjects and suggest that the development of dynamic online story forms in the past decade have had little effect toward making them more impressionable than print stories.

Keywords: Advertising, Newspapers, Online vs. Offline, Quantitative

MEDIUM MATTERS: NEWSREADERS' RECALL AND ENGAGEMENT WITH
ONLINE AND PRINT NEWSPAPERS

In Plato's *Phaedrus*, the dialogue between Socrates and Phaedrus closes by questioning the value of the written word. Writing things down "will atrophy people's memories," Phaedrus muses.¹ Since the act of writing will make people rely on the thoughts of others, "writing will make the things they have learnt disappear from their minds."² Plato's prognostications, and the effect the introduction of new media would have on people's memories, would be debated for generations hence, including at the arrival of Gutenberg's hand-operated printing press in the 15th century and their eventual replacement by steam-powered rotary presses, which ushered in an era of bulk printing.

By the mid-17th century, after the British burned the Library of Congress, Thomas Jefferson began donating his personal library of books, his collection of 50 years. As the last wagon left Monticello, Jefferson was consumed by regret: "I cannot live without books," he wrote to John Adams.³ It was a sentiment that spoke to Jefferson's lifelong conviction in the belief that a citizenry informed by the written word was a hallmark of a healthy democracy. It is a doctrine that resonates today in the free press that Jefferson helped to establish.

Today, journalism practitioners and scholars find themselves mired in a new debate: How has the message of the written word changed with the introduction of yet a new method of delivery? In this new age of information, discussions about the role of new media now revolve around topics crossing the interdisciplinary spectrum, including psychology, linguistics and neuroscience, which explores the cognitive processes of how

the brain works. At the heart of this discussion, as it was in Plato's time, is how memory is affected by different media.

Generally missing from contemporary conversations about the democratic role of modern journalism through an informed citizenry is the extent to which someone not just becomes informed, but *remains* informed — an inherent function of a person's memory inasmuch as a person's ability to know something is based on a person's ability to recall it. If a news item, for example, slips out of a person's memory, has that information served any useful purpose other than to satisfy some fleeting gratification of information consumption? The most direct application of this idea from a journalistic perspective is the citizen in a voting booth. The vote they cast, the epitomic act of a democratic society, relies on his or her ability to recall information that the journalist has provided. But how that voter chooses to receive that information has changed dramatically in recent years.

From the arrival of the penny papers, print newspapers were around for more than 100 years when in the 1930s they saw their heyday as the media most used in the U.S. for news.⁴ But the Internet took less than 15 years to claim that mantle when, at the end of 2010, the Pew Research Center's Project for Excellence in Journalism found that for the first time, more people got their news from the Internet than from newspapers.⁵ This monumental transformation occurring in the news media landscape raises questions anew about the effect that the Web is having on newsreaders, including their ability to recall the news. This study seeks to update past research by examining the difference in users' experience in both media — including recall, credibility and amount of story read — at a time when online news consumption has crested a tipping point.

Few other newspapers are at the fore of innovation and experimentation during this time of unprecedented change in journalism than *The New York Times*. With more than 30 million unique domestic visitors a month, NYTimes.com is the most visited newspaper site in the world.⁶ Considering that it has begun a tiered pay model online that “may be the most watched experiment in American journalism,” the *Times* is an ideal newspaper to utilize for this experiment.⁷ This research is important because, as McLuhan pointed out, medium matters.⁸ As the U.S. public gets its news more from online newspapers and less from print newspapers, the way in which they process the information they read, including the things they recall and how trustworthy they find the news, will have profound effects not just on the way we consider our citizenry informed, but also on the role newspapers have traditionally played in a democratic society.

Literature Review

News content recall has long been the focus of scholarly research. For at least six decades, researchers have examined the extent to which people recall what news they consume across all media. For example, in 1949, Harrell, Brown, and Schramm found that radio listeners were more apt to remember stories that dealt with human-interest news than stories of more substantive public affairs.⁹ Modern research built upon this concept by examining the online interactivity of radio newscasts. Researchers created a real newscast that was recorded and manipulated into four versions: a traditional radio newscast, an online newscast played with one click, a linear interactive netcast with a click for each news item, and a support activity condition in which additional links for details were added. The study showed that nonlinear news listening yields better levels of news recall and comprehension, and moderate levels of interactivity on sites of radio

news caused better memory performance compared to lower and higher levels of interactivity.¹⁰

The 1950s saw much research in the area of broadcast media. In one of the first comparisons of message recall across several media, Williams, Paul and Ogilvie found that television viewers and radio listeners were more likely to remember messages than those consumers exposed to print items, though the research did not delve into news items or newspaper coverage.¹¹ Booth examined newscasts from seven radio stations and six television channels as well as news items from two local newspapers in 1962 and found that news items that were assigned a favorable location were recalled more readily than news items that were not. Booth concluded that since news organizations clearly have the power to decide a story's placement and prominence, they thus have the power to make certain news stories reside longer in readers' memories.¹² In essence, by altering the frequency, time, space, location and pictorial content in their presentation of news events, users' consumption of news can be altered. However, if someone is particularly interested in a specific topic, the effect of manipulating those variables is limited.¹³

Katz, Adoni and Parness found in 1977 that those who saw and heard news on television recalled slightly more than those who only heard the news on the radio alone, giving credence to the idea that pictures help in the recall process.¹⁴ They also found that better-educated subjects were significantly more likely to recall the news than less-educated subjects. Both areas would be explored in greater depth in future years.¹⁵

By the 1980s, when newspapers began incorporating more use of color graphics, charts and maps, researchers found that such elements improved reader performance and recall only slightly.¹⁶ Broader, more large-scale research in which subjects were exposed

to news stories in one of four media — newspapers, computers, television and radio — found that users remembered significantly more facts from news stories via newspapers and computer screens than the same news stories from television and radio.¹⁷ That research incorporated the use of controlled conditions, including simulated newspapers and screens as stimuli. At the time of the research in 1992, researchers acknowledged that the computer screen was not commonly used as a news medium. Nevertheless, researchers suggested that the very nature of the media might offer an explanation; radio and television are media that are not exclusively dedicated to news and might be apt to be used in conjunction with other daily activities. Overall, researchers found that the newspaper presentations were remembered best followed by the computer screen, the television and radio, though the difference in recall between the newspaper and the computer screen was not significant (which may be attributed to the fact that online newspapers had not yet reached a critical mass at the time of the research). “Many people are not accustomed to using computers, and it was felt that nervousness might interfere with learning,” the researchers concluded.¹⁸

Multimedia components of online newspapers were examined to test to see the extent to which such interactive elements aided in reader comprehension. Berry tested 84 undergraduate students, asking them to view one of two versions of the same Web site — one with multimedia and one without. Findings did not support a significant difference in comprehension, recall, or response arising from the presence or absence of multimedia.¹⁹

In 1990, the Poynter Institute began using equipment that would allow researchers to follow readers’ eyes in order to see where they landed on a page. In the first EyeTrack study, researchers found that print newspaper readers entered a printed page through the

largest image on the page. That was followed by the headline before the text of a story. Captions under photos were the third most frequently visited part of the printed page.²⁰ In their second iteration of the study, researchers focused on the Web and found, to their surprise, that unlike print readers who entered the page through images, online readers entered through text and headlines. The finding confirmed a suspicion that reading online was more like reading a book, where one concentrates on the text and prefers the photos to appear separately so as not to interrupt the flow of the narrative.²¹

By 2003, new EyeTrack research found that particular elements of online text, such as underlining, actually discouraged reading, that text rather than photos was the entry point to pages, and that short paragraphs were read more than long ones.²² Finally, in their 2007 report, Poynter found that readers were apt to read deep into a story, including the jump text, in print and online if the story was of particular interest to them; online readers tended to scan stories while print readers tended to be more methodical; and, contrary to previous research, alternative story forms, such as Q&As, timelines, lists and fact boxes, helped readers remember facts presented to them.²³

While the EyeTrack technology can show researchers how long a reader rests on an item, it cannot measure comprehension of how much information a reader retains. To do that, Poynter researchers created prototypes, three in print and three online. After five minutes of reading, participants were asked to stop and given nine questions on a computer to test their recall. Overall, researchers found that print readers remembered more than online readers.²⁴ One explanation was that the fixed nature of the print prototype, where all the information on a topic was available on a single broadsheet page

(as opposed to the online prototype, which appeared on as many as six screens), made readers absorb the details of the story better and more effectively.²⁵

Testing the knowledge gap theory and the extent to which education level might impact the storage and retrieval process, researchers found that people with lower education (those with no more than a high school education) encoded, stored and retrieved television news best while showing less memory capacity for newspaper and Web sites. At the same time, for those with higher education (those with college degrees), the opposite occurs; they had better memory for newspaper and Web versions of news, compared to television.²⁶ Researchers did not enlist undergraduate students in the experiment and instead recruited 41 participants through e-mail solicitation and posted flyers at community centers. The research was one of the few in the scholarly literature that attempted to achieve a true measure of ecological validity in the presented stimuli. Deciding to sacrifice some level of experimental control in favor of ecological validity, researchers used stories from the *Philadelphia Inquirer*, the ABC news affiliate in Philadelphia and their accompanying Web sites. Thus, unlike other experimental studies of news media recall,²⁷ the newspaper and Web versions of the story were not verbatim the same, which was a better reflection of real-life media exposure. Overall, researchers found that “the higher education group was relatively bored with the experimental stimuli compared to the lower education group, but they still gained more information from exposure.”²⁸

Tewksbury and Althaus examined the difference in memory retention of *The New York Times* print and online edition in 1998²⁹ at a time when the *Times*' Web presence was still in its infancy and its Web page looked very different than it does now.

Researchers, who queried groups of mostly undergraduates by exposing them to *The New York Times* print and online versions — again, not exact duplicates — in a classroom-like setting over a week-long period, found that online readers were less likely to begin their reading with international, national, and political news. They were also less likely to spend a large portion of their reading time with those sorts of news stories, thus less likely to recall them.³⁰ Researchers offered a possible explanation: online newspapers (in 1998) were apt to provide fewer cues about news story importance, thus giving readers more control over story selection, creating a scenario in which they read and acquired less information about national, international and political events than print readers.³¹ In this way, “the mode of delivery had its greatest impact on the *most prominent* stories of the day. That the channel had less impact on relatively trivial events should come as no comfort to those worried about the impact of Internet news reading.”³²

A decade later, researchers reached similar conclusions in a comparison of television and online news. Concluding that people had a higher recall for television news than online news, researchers posited that the lack of salience cues on an index-style Web page allowed users to explore a wider variety of stories when compared to the linear format of television, thus diminishing their recall ability.³³ Both of these studies supported the idea that online newsreaders are generally creating their own list of top stories without the agenda-setting influence of the news organization, a practice that has an effect on their ability to remember what they read.

Some researchers have rejected the notion that there’s a difference in the reading and retention habits of online and print newsreaders. Sundar et al. found no significant difference in memory retention for news story content across print and online media,³⁴

and D’Haenens and Jankowski, in their research comparing news recall for print and online readers in the Netherlands, concluded that readers’ attention to news stories varies depending on the newspaper and the news category. They found that news consumption appears to be more dependent on the news category, readers’ gender and interest in a particular topic than on whether the news appears in print or online and that, in general, there was no evidence to suggest that online readers consume and retain news differently from print readers.³⁵ “It seems that the manner in which readers consume and recall news provided by online and print newspapers is more complex and varied than is reflected by the foci of this study.”³⁶

Other researchers have tested the effect on memory retention over time. Wicks, in his research of the benefits of acquiring “common knowledge” from the news rather than specific facts, found that time is an important variable in helping people to remember news if they use it to think about new information in the context of previously stored knowledge.³⁷ Meeter, Murre and Janssen conducted an Internet news test they called the *Daily News Memory Test*, which drew online volunteer participants from the general public worldwide with the goal of testing their memory on news items.³⁸ Questions were fashioned from current events, and participants were given four multiple-choice answers as well as an open text field. Over a four-year period, in which more than 4,200 people participated, researchers found the test to be, overall, moderately difficult, with participants answering 65% of the four multiple-choice questions correctly. Testing within a wide range of time delay — from two days to two years — researchers found that performance dropped with the age of the question; retention of a news item dropped off the older the news item was, demonstrating that participants across all ages tend to

forget things over time.³⁹ Older adults and those who were regular consumers of the news were most likely to correctly recall news events. In a second similar experiment, in which more than 7,100 people participated, the number of correct responses dropped to 52%.⁴⁰ A final test included nearly 4,000 participants, who answered news recall questions correctly 64% of the time. Overall, researchers found that participants who read many newspapers did not exhibit faster or slower forgetting than did participants who read few newspapers. “This implies that forgetting is independent of the degree of learning,” the researchers concluded.⁴¹

Other research has examined the extent to which visuals and Web page design affect retention of news items among readers. For example, researchers found that recall was significantly higher after participants read an online story with text only or with photo and caption options compared with an online story that only had photos with captions or animated graphics.⁴² Contrary to the Poynter study, researchers concluded that from a recall perspective, text alone or text with photos or graphic elements combined are the best method for presenting information online. “News organizations...should focus on what they do best — write news stories and provide photos and/or graphics that illustrate them,” which, researchers added, is what the news industry has already been doing for 200 years.⁴³

Few studies have examined people’s assessment of the credibility of information found on the Internet,⁴⁴ and research on the credibility of traditional versus Internet information sources has not produced consistent findings. For example, Johnson and Kaye found in 1996 when the Web was still an emerging medium that self-described politically interested Internet users found online political information sources more

credible than their traditional media counterparts, although respondents had an overall low opinion of the credibility of the information in both media.⁴⁵ The researchers updated their research and found that online information credibility scores jumped in 2000, then declined in 2004. Overall, online issue sources were judged the most credible and online broadcast TV news sources the least credible.⁴⁶

Another survey of Internet users found that news sources were not found to be significantly more credible than traditional sources.⁴⁷ Researchers found that there was only a slight tendency for people to believe that they could find more accurate information online than in a newspaper or on the television news. Still other researchers found that traditional media sources were deemed by newsreaders to be more fair and unbiased than their Web counterparts for political information.⁴⁸

Flanagin and Metzger examined people's perceptions of the credibility of various categories of Internet information compared to similar information provided by other media. The researchers found that while respondents reported they considered Internet information to be as credible as information obtained from television, radio and magazines, they considered newspaper information to be more credible.⁴⁹ While the Internet was used far more for information retrieval than virtually all other media, including books, magazines, television, newspapers, the telephone, e-mail and face-to-face communication,⁵⁰ it differed from other technologies used for information retrieval in key ways regarding reliability and credibility as an information source.⁵¹ Their research, conducted in 1998 and 1999 at a time when many online newspapers were only a few years old, found that newspapers were rated significantly higher in credibility than the other media regardless of the type of information considered, including news,

reference, entertainment, or commercial information. Internet information was found to be as credible as information found in magazines and on radio and television. “Given the potential for misinformation on the Internet and user inexperience relative to more traditional media,” researchers wrote, “this finding is somewhat alarming since it suggests that people are not taking an especially critical stance toward what is arguably the least critical medium.”⁵²

The current research updates the research of DeFleur et al. and Flanagan and Metzger, and also builds on their model, as well as others,⁵³ which have incorporated the use of simulated newspapers, by conducting an experiment with a real newspaper and its actual, real-time accompanying Web site in order to better emulate real-world conditions. This research intentionally set out to avoid artificiality by using the naturally occurring flow of news as it is happening. As Tewksbury and Althaus pointed out, “rather than having read a highly stylized version of the news, subjects...read the actual news of the day in precisely the format that hundreds of thousands of people across the country read it.”⁵⁴ This research thus seeks to update prior research⁵⁵ to gauge the extent to which the vast development of the Internet has changed newsreaders’ ability to recall the news.

Considering these ideas, the following research questions are asked:

RQ1: Does type of medium affect users’ recollection of news stories?

RQ2: Does type of medium affect users’ recollection of specific traits of news stories?

RQ3: Does type of medium affect the amount of news stories consumed?

RQ4: Does type of medium affect the credibility of news stories?

RQ5: For online users, which news item format was the most popular?

RQ6: For online users, which multimedia tool was most engaged?

Method

All participants for the study were undergraduate journalism-related majors at a large U.S. university. Interested participants, solicited through an open-call e-mail to the department, were prescreened for the study by completing a short e-mail questionnaire. In order to randomly assign participants to either of two conditions (the print or online version of *The New York Times*), all eligible participants needed at least a minimum level of comfort reading the news in each of these formats; therefore, subjects who indicated that they “almost never” read the news in one or both of these media were thanked for their interest but not allowed to participate in the study.

A subset of eligible participants ($n = 11$) was randomly selected for two rounds of pretests. These subjects completed the full study but were asked for detailed feedback on the research design and survey instruments during debriefings. Data collected from these participants was also analyzed to refine the experimental tools for the study and improve internal validity. Pretest subjects were then ineligible for the primary study.

The primary sample ($N = 45$) for the study was drawn from the remaining eligible participants. The sample size was comparable to other studies that considered recall across print and online media.⁵⁶ Seventy-three percent of participants were women, and the mean age of the sample was 22 years old. Besides the prescreening questionnaire, participation involved a one-day, one-hour lab session, and all participants were compensated with a \$10 gift card to a local business and were entered into a random drawing for an iPod Nano, which was later awarded to a participant.

Following the earlier work of Tewksbury and Althaus,⁵⁷ content from *The New York Times* was selected as the stimulus for the study. A number of reasons informed this selection. As the nation's newspaper of record, *The New York Times* has historically offered content that is considered trustworthy, complete and balanced.⁵⁸ Because the subject matter of the news read by the participants of the study was not the primary area of inquiry, *The New York Times* offered mainstream news that would not likely distract readers from the study's tasks. Additionally, the format of this news organization's presentation was likely familiar to participants since the print version is distributed daily for free on campus, and the Web site is the most visited newspaper site in the world.⁵⁹

The same-day hardcopy morning edition and live Web site from *The New York Times* were used on each day of the study. Previous studies of news content recall have used constructed or manipulated media products to control for exposure effects.⁶⁰ However, as the present research endeavored to approximate a real-life newspaper reading experience, the authentic news products served as more appropriate stimuli. The full editions of *The New York Times* and its Web site offer a sophisticated level of content, both editorial and advertising, that cannot be matched by a constructed news product, as well as the real-world form and functionality that readers are accustomed to.

Participants who passed the prescreening were informed that they would be taking part in a study that explored the modern newspaper reading experience. Eligible participants were randomly assigned to one of two possible conditions for the experiment—hardcopy (n = 25) and online (n = 20)—and given a session date and time two weeks in advance. On the day prior to their session, participants received an e-mail asking them to conduct a news “blackout” on the day of their session by avoiding any

news consumption that morning. Sessions were scheduled at 8 and 9 a.m. to aid with the news blackout. Each session included between 5-10 participants and took place in a campus computer lab.

Upon arriving at the lab and being briefed on their rights as subjects in an experimental research study, participants in each condition were given two tasks: 1) read that day's newspaper for 20 minutes, and 2) complete a short online survey. Those assigned to the hardcopy condition were given a new copy of that morning's *New York Times*, while those assigned to the online condition were directed to the main-page of the *Times*' Web site. Participants were instructed to use the reading period to peruse the newspaper product in any manner they wished and informed that they would be completing a short survey afterward.

To begin the second task, participants were instructed to use the desktop icon on the computer at their reading station to access the online survey. Survey questions asked participants to recall information on news articles that they encountered during the reading period. More specifically, the survey asked for information on headlines, topics, and main points related to news stories, as well as the participants' perceptions of how credible they found the stories, and how much of the story they read before turning to other content (see Appendix A). Participants were prompted to recall information on any content they consumed, and the survey task took 20-30 minutes for most subjects to complete. At the conclusion of all sessions, participants were debriefed as a group on the purpose of the study and asked not to discuss the nature of their participation until all study sessions were completed.

Data on recall was collected one news item at a time, and separate text boxes were used to capture information on “headline,” “general topic,” and “main point” for each item. Participants were instructed to fill in all information they could recall for each news item and leave blank any fields they could not recall. Questions then asked participants if they agreed that the news item was credible, using a five-point Likert scale (“1” = strongly agree, “5” = strongly disagree), and how much of the news item they read (“1” = the entire item, “5” = merely glanced at it). Finally, participants were asked if they could recall another news item; if “yes,” they were taken to a fresh page to enter information on the next item; if “no,” they were taken to a final survey page on media use and demographic information.

Prior to data analysis, researchers inspected the data collected during the study’s sessions. First, obvious response errors or inconsistencies that could have affected the results were removed. For example, if a participant rated the credibility of a news item without recalling any information about the item, that data on credibility was ignored. Two such instances were deleted from the data set. Second, news item responses that strongly suggested only a proximate recall of information were given half the weight of responses that suggested full recall when the data was statistically analyzed. Last, responses such as, “I don’t know exactly” and “no idea,” which showed no evidence of information recall, were not considered valid and were not used in the data analysis.

Results

The main objective of this study was to examine whether readers’ recollection of news stories varies by medium. For background information, the study queried participants for their main source of news. While 76.9% of respondents reported their

main source of the news is the Internet, only 19.2% of respondents reported that their main source of news is a print newspaper. About 17.3% and 7.7% of respondents reported their main news source was television and radio, respectively. The study also queried participants for the frequency of consumption of both print and online newspapers (see Table 1).

TABLE 1
Frequency of Print and Online News Media Consumption

Frequency	Print	Online
Never	1 (2.3%)	0 (0%)
Less frequently than once a month	3 (6.8%)	4 (8.9%)
Once a month	5 (11.4%)	3 (6.7%)
Two or three days a month	9 (20.5%)	1 (2.2%)
Once a week	8 (18.2%)	8 (17.8%)
Two or three days a week	15 (34.1%)	17 (37.8%)
Everyday	3 (6.8%)	12 (26.7%)
Total	44	45

The first research question asked if type of medium affects readers' recollection of news stories. In order to increase the precision of the experiment by reducing within-group error variance and eliminating confounds, an analysis of covariance (ANCOVA) was conducted. The study assumes that print and online newspaper readership frequency is related to news recall. An ANCOVA makes it possible to statistically remove the effect of covariances (frequency of newspaper readership) that might affect news recall. The result shows that the main effect was significant, $F(1, 40) = 4.14, p < .05$. Print news

readers (M Print = 9.56) remember significantly more news stories than online news readers (M Online = 7.32) (see Table 2).

TABLE 2
Analysis of Covariance of Recollection of News Stories for Print and Online Newspaper with Frequency of Newspaper readership as Covariate

Test	df	MS	F	<i>p</i>	Partial Eta Squared
Covariate					
Freq. of print news readership	1	6.53	.56	.46	.01
Freq. of online news readership	1	6.83	.58	.45	.01
Main effect					
A type of medium	1	48.66	4.14*	.04	.94
Error	40	11.75			

Note. Partial Eta Squared is a measure of effect size.

**p* < .05

The second research question asked if type of medium affects readers' recollection of specific traits of news stories. Participants were asked to recall headlines, topics and main points featured in recalled news stories. A multivariate analysis of covariance (MANCOVA) was run to see if the type of medium affects three dimensions of news story recalls (headlines, topics, and main points), covarying out two variables (frequency of print and online newspaper readership) that presumably confound the main effect. The results showed a significant effect for the type of medium on two specific traits of news stories, Wilks Lambda (3, 38) = .78, *p* < .05. The results specifically showed that print newsreaders (M Print= 4.16) remembered significantly more topics than online newsreaders (M Online= 2.82), $F(1, 40) = 8.68, p < .01$. Also, more main points of news stories were recalled by print newsreaders (M Print = 3.96) than online news readers (M Online = 2.82), $F(1, 40) = 6.31, p < .05$. However, readers in print and

online groups did not show significant differences in their recollection of headlines of the news stories they had read (see Table 3).

TABLE 3
*Analyses of Covariance of Headlines, Topics, and Main Points
for Print and Online Newspaper with Frequency of Newspaper readership as Covariate*
ANOVA
F (1, 40)

Source	MANOVA F (3, 38)	Headline Recall	Topic Recall	Main Point Recall
Covariate				
Freq. of PNR	.98	.70	.20	.46
Freq. of ONR	.96	.01	1.24	1.35
Main effect				
A Type of Medium	.78*	.28	8.68**	6.31*
Error				

Note. F ratios are Wilks's approximation of F. ANOVA = univariate analysis of variance; MANOVA = multivariate analysis of variance; PNR (print newspaper readership), ONR (online newspaper readership)

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

The third research question asked if type of medium affects the amount of news stories recalled. A one-way between-subjects ANCOVA was calculated to compare the amount of news consumption between two groups. In order to examine the effect of a type of medium on the amount of news consumption, the confound variable of participants' frequency of newspaper readership was set as a covariate. The results showed that print newsreaders (M Print = 3.99) read less of a news story than online newsreaders (M Online = 4.15). Although there was a minor difference between two groups regarding the amount of news consumption, the difference did not generate significant results, $F(1, 40) = .65, p = .43$.

The fourth research question asked if the type of medium affects the credibility of news stories. The results showed that online newsreaders (M Online = 4.26) gave more

credibility to news stories than print newsreaders ($M_{\text{Print}} = 4.18$). Although a difference between two groups existed, the difference was not significant, $F(1, 40) = .54, p = .47$.

The fifth and sixth research questions sought to discern the ways in which multimedia components of online newspapers were utilized. Research question 5 asked participants assigned to the online group about what multimedia formats were utilized. The news story was the most popular (61.7%) format followed by blogs (14.8%). Research question 6 asked whether they engaged in online multimedia tools. While 69.1% indicated they just read text, only 8.8% reported they clicked on hyperlinks embedded in text and scrolled through photo galleries (see Table 4).

TABLE 4
Summary of Online Groups' Use of Format and Multimedia Tools

Format	Use (n = Yes)	Multimedia Tools	Engagement (n = Yes)
News story	50 (61.7%)	Just read text	47 (69.1%)
Blog	12 (14.8%)	Clicked on a hyperlink embedded in the story	6 (8.8%)
Photo gallery	6 (7.4%)	Scrolled through photo gallery	6 (8.8%)
Stand alone graphic	4 (4.9%)	Watched interactive graphics	3 (4.4%)
Video	4 (4.9%)	Clicked on advertisement	2 (2.9%)
Others	4 (4.9%)	Took a poll	2 (2.9%)
Photo gallery with audio	1 (1.2%)	Listened audio	1 (1.5%)
		Watched video	1 (1.5%)
		Posted a comment	0 (0%)
Total	88	Total	45

Discussion

This study updates prior research conducted at a time when online newspapers were still somewhat of a new phenomenon in the mass media landscape by reasserting the advantages of print over online newspapers as a more effective medium at spurring recollection. This research demonstrates that the development of dynamic online story forms (at least in the past 13 years) have had little effect toward making them more impressionable than print stories.

Scholars have offered up a variety of reasons as possible explanations. The very nature of the Web as a medium that has subsumed virtually all others makes it a site for a variety of uses, including commerce, communication, news consumption, gaming and other entertainment. The print newspaper, however, is generally dedicated to news, thus in choosing a particular media, users bring pre-formed attitudes about what to expect. Unlike print news, online news is ephemeral; it can appear and disappear without warning, thus creating an element of distraction, what DeFleur and Davenport called “factors of contextual interference.”⁶¹ It can also hasten the impression that since the text and headlines — things Poynter researchers found to be the entry point for Web readers — are apt to vanish, they are perhaps not worth remembering. At the same time, the knowledge that the information they can find online, even if it disappears, is immediately archived and thus imminently retrievable may make readers less apt to feel they need to store it in their memory.

This research has also shown that print newsreaders remembered significantly more topics than online newsreaders. Part of why online readers tend to scan stories while print readers tend to be more methodical might be explained by research that found

newspapers offer news stories with more depth and breadth than online stories.⁶² Maier found that newspaper coverage was significantly more extensive than was online coverage for every news topic examined. Maier also found that online news outlets were more opinionated; about 2.6% of leading online news was labeled as analysis while 1.1% of front-page print stories were labeled as such. Maier concluded that the results provide “evidence that newspapers are less sensationalist than their online counterparts.”⁶³

Researchers have also pointed to not just the fixed nature of the print news story but how all the information is usually available on one or two pages. Online news stories, which are sometimes interrupted with an online ad in the middle of the text, are more apt to appear or be available on several pages of a newspaper’s Web site under different headings; the scattershot nature of the online news story coupled with its fleeting nature make the online news consumer’s experience quite different than that of a print reader.

Finally, a common explanation for the reason newsreaders found print news more impressionable than online news stories was the design of each medium. Online newspapers are apt to give fewer cues about the news story’s importance, thus giving readers more control over story selection. In this way, part of the agenda-setting function of the newspaper is lost in the online version. Online readers are apt to acquire less information about national, international and political events than print newsreaders because of the lack of salience cues; they generally are not being told what to read via story placement and prominence — an enduring feature of the print product.

One of the most interesting findings of this research demonstrates how users are not inclined to engage multimedia tools on online newspaper Web sites. Most readers favored the text of a story, and subsequent engagement with multimedia tools such as

blogs and photo galleries dramatically dropped off. This lack of multimedia use may be a result of the experimental setting (lacking earphones, for example) and the limited reading period. The findings perhaps also explain the lack of significant differences in credibility assessment and amount of story consumed, as online reader habits still seem to mirror hardcopy reader habits.

Carr cites the work of media theorist Marshall McLuhan, who pointed out in the 1960s that media are not just passive channels of information. Rather, “they supply the stuff of thought, but they also shape the process of thought,” Carr wrote. “And what the Net seems to be doing is chipping away at my capacity for concentration and contemplation.”⁶⁴ Carr argues that with the ubiquity of the Internet, the very nature of the way we read has changed. In this way, we can begin to think of the printed word and the digital word not as two distinct media but rather how one begins to affect the other. With the undeniable rise of news media consumption online, the way that people read the news online — hastily, dismissively and disengaged — begins to inform how they read the written word, particularly printed newspapers. The effect, Carr points out, is an inevitable scenario whereby “old media have little choice but to play the new-media rules.”⁶⁵

The implications of the research should inform the resource priorities of newspapers as they continue to undergo sweeping changes in the readership habits of their print and online audience. Newspapers, as they continue to place a high priority on strengthening their online presence and building brand loyalty, should be aware of the shifting ways readers are engaging both media and the extent to which their role in preserving democracy through an informed citizenry is being transformed.

NOTES

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Appendix A

1. Please recall a news story you read and fill in the corresponding boxes below.

For example, if you recall a news story about the new health care law, you'd answer:

Headline: Insurance Pool to Offer Reduced-Rate Coverage

General topic: Health care reform

Main point: New health care law offers affordable coverage for uninsured Americans

Dominant image: No image

If you cannot recall a particular category, leave the box blank. Partial answers are OK.

Headline:

General topic:

Main point:

Dominant image (if there's one):

(Online condition only)

1.1 What was the format of the news item? If the news item had more than one format, select all that apply.

News story

Blog

Video

Photo gallery only

Photo gallery with audio

Stand-alone graphic

Other (please specify)

(Online condition only)

1.2 List all the ways you used multimedia tools to engage with the online newspaper. Select all that apply.

Watched a video

Listened to audio

Posted a comment

Clicked on an advertisement

Scrolled through a photo gallery

Clicked on a hyperlink embedded in the story

Took a poll

Watched interactive graphic

None (just read the text)

Other (please specify)

2. To what extent do you agree that the news item you read was informative or illuminating?

- Strongly agree
- Agree
- Neither agree or disagree
- Disagree
- Strongly disagree

3. How much of the news item did you read?

- The whole thing
- Most of it
- About half of it
- Little of it
- Practically none of it (glanced over it)

4. To what extent would you agree that the news item you read was credible?

- Strongly agree
- Agree
- Neither agree or disagree
- Disagree
- Strongly disagree

5. If you can recall another advertisement, click "Yes." If you recall no more advertisements, click "No."

- Yes
- No