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Abstract

The Internet has changed the political world, but its effect on media usage patterns is not well understood. In particular, previous research suggests no clear answer to the question of whether the Internet is a substitute for or a complement to traditional media outlets. We contribute to this literature by applying theories from ecology—namely, the theory of the niche—to examine competition between new and older media. Our study is the first to test hypotheses derived from this theory on a large, national sample. The analysis indicates that people are replacing traditional outlets, especially newspapers, with the Internet. At the same time, however, replacement is not a widespread phenomenon as yet. We find important replacement differences across newspapers and radio on the one hand and television on the other. We also report some of the first evidence regarding the attitudinal consequences of replacement behavior.

Keywords

Internet, media use, niche theory

The changing media environment is one of the most significant political developments of the past decade. The introduction of the Internet, in particular, has affected how people learn about politics (e.g., Kleinberg and Lau 2009), their level of civic engagement (Jennings and Zeitner 2003), and the nature of political discourse (Lawrence et al. 2010). The Internet has also revolutionized virtually every aspect of political campaigns, from candidate communications (Druckman et al. 2009; Margolis et al.

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1997) and grassroots mobilization (Best and Krueger 2005) to fundraising (Dulio et al. 1999; Hindman 2009). Despite the accumulation of research in these areas, a fundamental question remains unanswered: *How does Internet use affect news consumption from more traditional sources?*

Researchers have been examining this topic for more than a decade, but it is still unclear whether the Internet replaces or supplements traditional media outlets such as newspapers and television. With approximately 75 percent of American adults going online to get news (Pew Research Center Poll: 2010 Media Consumption Survey, June 2010), it is important to document the consequences of such widespread Internet usage for other news media. We contribute to this literature by applying theories from ecology to understand the competitive dynamics between the Internet and traditional media outlets. We draw on niche theory, a framework that previous scholars have used to examine competition between new and older media (e.g., Dimmick et al. 2000; Dimmick et al. 2004; Min and Kim 2008). Our study is the first to test hypotheses derived from this theory on a large, national sample and to examine the attitudinal consequences of replacement.

We find that replacement is occurring, especially for certain outlets and among particular subsets of the population. Yet replacement is not a widespread phenomenon. We also observe important differences in replacement behavior across outlets. These findings have important implications for researchers and industry executives who seek to understand the changing nature of the media environment and its effect on the mass public.

The Existing Literature

Historical patterns suggest that the introduction of new media often erodes the audience base for older media technologies (e.g., Becker and Shoenbach 1989; Davis and Owen 1998; Dobrow 1990; Lazarsfeld 1940). The logic behind this relationship is simple. The new medium may do a better job of fulfilling consumers' needs relating to choice, control over content, or some other dimension. Because people have a finite amount of time and money to spend on media consumption (McCombs and Nolan 1992), they devote fewer of these resources to the older medium. For example, the rapid diffusion of television resulted in the displacement of radio (Bogart 1957). More generally, Althaus and Tewksbury observe that "motion pictures, radio, newspapers, and network television all declined in popularity as newer media technologies were developed and diffused" (2000: 22).¹ Given the historical record, it is logical to expect that the expansion of the Internet would come at the expense of traditional media such as newspapers and television. Yet, empirical support for the replacement hypothesis is uneven.

Several studies conclude that the Internet is beginning to supplant older media forms. Dimmick et al. (2004) find that roughly one-third of the respondents in their study report using newspapers and television less often after they started using the Internet. Likewise, in an examination of aggregate patterns of news usage from the

late 1990s, Stempel et al. (2000) report that the use of traditional media outlets declined over the same period that Internet use increased (also see Bakker and Sádaba 2008; Kaye and Johnson 2003; Waldvogel 2002). Refining previous findings somewhat, De Waal et al. (2005) conclude that replacement takes place but only among certain segments of the population. Based on a survey of Dutch adults, De Waal and colleagues find that reading news online is negatively related to reading print news, but that this pattern is driven largely by the behavior of 18- to 37-year-olds.

However, several other studies have come to the opposite conclusion. For example, Althaus and Tewksbury (2000) find little evidence of substitution in their analysis of a "networked community," which for their purposes was a group of college students at a large public university. Examining responses to self-reported media-use questions, they find a *positive* and statistically significant relationship between newspaper usage and days-per-week spent using the Internet for keeping up with current issues and events. There was no relationship between using the Internet for surveillance and hours per day spent watching news programs on television. Based on their study, then, there seems to be a complementary relationship between the Internet and newspaper usage but no relationship between the Internet and television usage (also see Diddi and LaRose 2006). In studies using adult samples from the United States and abroad, other scholars find that the Internet supplements the use of traditional media outlets (e.g., Dutta-Bergman 2004; Hill and Hughes 1998; Neudstadl and Robinson 2002; Nguyen and Western 2006; Riedel et al. 2003). Taken together, the empirical record paints a very complicated picture.

We take another look at the question of whether the Internet replaces or supplements traditional media outlets. However, we adopt a different analytical strategy, one that directly tests the notion of media replacement—specifically, whether there is a relationship between the satisfaction of particular gratifications (e.g., convenience) and replacement behavior. For the most part, existing studies have used an indirect method for assessing the relationship between new and older media. That is, the researcher examines the association in media usage patterns across traditional outlets and the Internet. A positive association indicates that new and older media are complements, whereas a negative association implies that they are substitutes (e.g., Althaus and Tewksbury 2000; De Waal et al. 2005). This empirical strategy is sensible, and the substantive interpretation is sound. However, these analyses remain one step removed from the mechanism underlying the behavior in question—namely, the particular gratifications satisfied by new and older media. The result, Dimmick et al. observe, is that "none of the previous studies . . . directly measure[s] competition between the Internet and traditional sources of news" (2004: 22).

To date, Dimmick and his colleagues have conducted some of the most extensive research on this topic. In their 2004 study, Dimmick et al. collect data on the gratifications satisfied by the Internet and traditional media. However, their small regional sample ($n = 211$) limits their analyses. As a result, although their findings suggest a relationship between "superiority" and replacement—with respondents replacing a traditional medium with the Internet when the latter is perceived to be superior in

terms of specific gratifications—it is unclear whether these patterns generalize to the broader population. Thus, a more comprehensive look at the replacement phenomenon, with a larger and a more diverse sample, is in order.

Theory and Expectations

At the heart of the replacement hypothesis is the notion that individuals select among media based on how well a particular outlet meets their needs and goals. The ecology-based “theory of the niche” is a useful framework for taking this basic idea and more directly examining the competitive relationship between the Internet and older media (e.g., Kaynay and Yelsma 2000; Min and Kim 2008; Okazaki and Hirose 2009).

Niche theory outlines a series of general principles that govern the competition and coexistence among populations, such as animals or plant species. According to the theory, populations that have similar patterns of resource utilization (“overlap”) will compete with one another until one population drives the other(s) into extinction. By contrast, when there is little overlap in the resources needed to survive, multiple populations can peacefully coexist (Dimmick 2003). Thus, the key to the coexistence of different populations is the presence of some ecological difference between them.

Researchers have observed that this framework can be applied to the media industry (Dimmick and Rothenbuhler 1984). In the present context, niche theory predicts that the Internet will replace traditional media if the former satisfies the same needs as the latter and does so more successfully. Thus, two concepts—the *overlap* between two mediums and the *superiority* of one over the other—are fundamental to the replacement phenomenon (Dimmick 2003).²

More specifically, niche theory predicts that people who view the Internet as a superior method for satisfying particular gratifications vis-à-vis a traditional outlet (newspapers, television, or radio) will report less time spent using that traditional outlet. Conversely, people who view the Internet and older media as providing similar gratifications or those who view the Internet as inferior to older media should be less likely to replace traditional media with the Internet. This leads to the central hypothesis implied by niche theory: *Perceptions of Internet superiority should be positively associated with replacement behavior.* This expectation is implied by existing research and so it may seem obvious. To our knowledge, however, no previous study has tested the relationship between gratifications satisfied and replacement behavior at the individual level.

In addition to studying replacement in a more direct way, niche theory may help scholars better understand the consequences of Internet use. One commonly voiced concern regarding media substitution is that the Internet contributes to the polarization of the electorate (e.g., Iyengar and Hahn 2009; Morris 2007; Nie et al. 2010; Sunstein 2001). We examine whether such polarizing tendencies are prevalent among respondents who reported using traditional outlets less since they started using the Internet. If anyone were to show evidence of more extreme attitudes, it should be these individuals.³

Data and Measures

Data for our study came from the 2008 Cooperative Campaign Analysis Project (CCAP), an Internet survey administered by YouGov/Polimetrix (Jackman and Vavrek 2010). The entire project is a six-wave panel survey with an over-sample in battleground and early primary states (Florida, Iowa, Minnesota, Nevada, Wisconsin, New Hampshire, New Mexico, Ohio, Pennsylvania).⁴ A core set of approximately forty questions were repeated in each of the six waves (December, January, March, September, October, and November). However, the independent and dependent variables used in this study appeared only on the September, October, and November waves. The fact that the respondents participated in the CCAP survey via the Internet ensures that we are examining individuals who use the Internet at least on occasion. This feature is an important element of our study and is similar to the screening procedures used by other researchers in this area.⁵

Description of Key Variables

The outcome measure in our empirical analysis is the replacement of a traditional news outlet with the Internet. Drawing on the question wording from the Dimmick et al. (2004) study, we measured replacement with an item that asked, "We are interested in learning how often you get news about politics from various sources. Since you started using the Internet, are you using any of the following sources more or less frequently than in the past?" The answer choices were "Much less frequently," "A little less frequently," "About the same," "A little more frequently," and "Much more frequently." Individuals were asked about their replacement behavior for newspapers, television, and radio (i.e., there were three indicators of replacement, one for each medium). These variables were scored so that higher values indicated replacement (i.e., a respondent is using a traditional outlet less since he or she started using the Internet).⁶

There are some obvious drawbacks with this particular question wording. For starters, recent work by Prior (2009) highlights the problem of measurement error in self-reported media-use questions. Individuals' reports of their media use often differ from independent assessments of their actual behavior. Additionally, the reference point implied by the question (e.g., "Since you started using the Internet . . .") may have different meanings for certain respondents (e.g., younger versus older people). We attempted to validate the replacement measure with various auxiliary analyses, some of which we report in this section and others that appear in the next section.

The first way we validated the replacement measure was by comparing the response distribution of this question with a traditional "days-per-week" item (Althaus and Tewksbury 2007) asked in the September wave of the CCAP survey ("How many days in the past week have you read a daily newspaper," with answer choices ranging from 0 to 7). If our replacement measure is valid, there should be a negative relationship between responses to the days-per-week newspaper question and our measure of newspaper replacement (because higher values on the replacement item indicate less newspaper use).

This is exactly what we found, with Pearson's $r = -.44$ ($p < .001$). Unfortunately, the days-per-week question was not asked in October, nor are there versions of this question for television or radio in any wave. We can, however, draw on a different media-use question appearing elsewhere in the CCAP survey to provide another validation of our replacement measure. This question asked, "How have you been getting most of your information about the election? From television, from newspapers, from radio, from the Internet, discussion with family and friends, or from some other source?" Because this item simply asks people to name a source, and not how much they watch it, it is less prone to social desirability bias. Importantly, answers to the replacement question are a significant predictor of whether someone states that they use newspapers, television, or radio in response to the media-use item. That is, respondents who report using a traditional source (newspapers, television, or radio) less frequently since they started using the Internet are *less* likely to name that source in response to the general media-use question ($p < .001$ in all models). These same people are *more* likely to name the Internet in response to the general media-use question ($p < .05$ in all models). We address the issue of varying time referents in separate analyses reported later in this study.

Respondents also were asked about particular needs (gratifications) and how well each was satisfied by a specific medium. Drawing on studies that have examined the motivations for media use (e.g., Charney and Greenberg 2001; Johnson and Kaye 2003; Kaye and Johnson 2004; Ko et al. 2005; Papacharissi and Rubin 2000), we asked questions about three gratifications.⁷ For all three questions, the referents were newspapers, television, Internet, and radio, and the answer choices were "Extremely helpful," "Very helpful," "Somewhat helpful," "Not at all helpful," and "Not applicable." The first gratification question asked, "How helpful are each of the following sources for stories on a variety of topics?" The next item read, "How helpful are each of the following sources for obtaining news whenever you want it?" Finally, because the CCAP survey was administered in the midst of the 2008 presidential election, we included a gratification item that made reference to the election (also see Kaye and Johnson 2004): "How helpful are each of the following sources for deciding how to vote in the election?"⁸

In the past, researchers have expressed skepticism about gratification questions on the grounds that people may not accurately report the cognitive processes that guide their behavior (e.g., Nisbett and Wilson 1977). Thus, in our study gratification items were corroborated with the media-use question described earlier ("How have you been getting most of your information about the election?"). Findings reveal that responses to the three gratification items significantly predict answers to this question. For example, a person who rated television highly in terms of variety, convenience, and deciding how to vote was more likely to choose "television" in response to the general media-use question (with similar patterns for newspapers and radio). Thus, we believe that the gratification items accurately represent a person's motivation to use a particular source.

One final concern regarding our measures pertains to the general reference to the "Internet," which might carry any number of meanings (e.g., online news sites, blogs, email) for survey respondents. We used the general term because we wanted to replicate the wording from the original study (Dimmick et al. 2004). However, there are an array of items on the CCAP survey that can be used to paint a richer picture of respondents.

For example, in the September wave of the CCAP study, people were asked, "In the last week, how many days have you used the Internet to . . . visit news websites" (with answer choices ranging from 0 to 6). In this same question series, respondents were also asked how many days they had visited political blogs (e.g., Huffingtonpost.com); how many days they had posted comments on a news website or political blog; and how many days they had exchanged political emails with friends and family.

Responses to these questions show a clear pattern: Most Internet usage involves visiting online news websites rather than blogging, posting comments, or sending political emails. On average, respondents said they visited websites like MSNBC.com or Foxnews.com about three-and-a-half days a week. The other activities were more infrequent: People reported sending political emails to friends and family two days a week, visiting political blogs one-and-a-half days a week, and spending less than one day a week posting comments on the Internet. Although we cannot know for certain what respondents were thinking when they answered our questions, their responses to the Internet usage battery suggest that many of them were thinking about the Internet as a place to visit news websites.⁹

Operationalizing Overlap and Superiority

We follow previous work in using responses to the gratification items to operationalize the concepts of overlap and superiority (e.g., Dimmick 2003). Overlap represents the perceived similarity between two sources, and it is operationalized with the following formula:

$$O = \sqrt{\frac{\sum_{k=1}^K (G_i - G_j)^2}{K}},$$

where i and j denote two different media and G represents an individual's rating of how well a medium satisfies a particular gratification, k . In this study, K is indexed from 1 to 3 (for variety, convenience, and deciding how to vote). Our measure of overlap ranges from 0 to 3, with a 0 value indicating that the respondent views two media as satisfying k gratifications to the same degree. Conversely, a rating of 3 means that the respondent views two media as being maximally *dissimilar* in terms of the gratifications they satisfy. Thus, low values of the measure mean that two media are perceived as being very similar, or having a *high* degree of overlap.

The companion concept, superiority, is measured with the formula below:

$$S = \sum_{k=1}^K m = i > j.$$

Here, m represents the value of a person's rating on gratification items in which one medium (i) is rated higher than another (j). For example, when measuring the superiority of the Internet over newspapers, we sum a person's ratings on gratification items when the Internet is rated higher than newspapers. This variable ranges from

Table 1. Distribution of Replacement Behavior across Traditional Media

	Newspapers	Television	Radio
Much less frequently	31.7	11.2	22.0
A little less frequently	12.6	15.0	15.9
About the same	45.3	50.0	45.2
A little more frequently	4.2	9.9	9.0
Much more frequently	6.2	14.0	7.9
<i>n</i>	882	886	882

Note: Cell entries indicate the percentage responding in a category. The question read, "We are interested in learning how often you get news about politics from various sources. Since you started using the Internet, are you using any of the following sources more or less frequently than in the past?"

0 to 12, with the highest value representing a person who gives the Internet a rating of "Extremely Helpful" on all three gratification items (e.g., $4 + 4 + 4 = 12$). Respondents who rated newspapers higher than the Internet or who gave the two outlets the same rating on the three gratification questions receive a score of 0 on the superiority measure. We present additional descriptive information about both variables in the next section.

Empirical Results

In the CCAP survey, 55 percent of respondents said they used the Internet at least once in the past seven days to read about politics. A third of the sample reported using the Internet as their primary source for information about the 2008 election. The purpose of our empirical analysis was to learn more about the consequences of this behavior—in particular, whether these individuals were substituting the Internet for traditional media outlets or using the Internet as a supplement to older media.

Descriptive Analyses

We begin by showing the distribution of our key outcome measure, replacement, for each of the outlets (newspapers, television, and radio). As described earlier, the replacement question asked respondents if they were using traditional sources more or less frequently since they started using the Internet. Table 1 shows the percentage of people in each response category.¹⁰

Across all three outlets, the modal response is "About the same," with anywhere from 45 to 50 percent of respondents stating that they use newspapers, television, or radio about the same amount since they started using the Internet. This is where the similarity across the three media ends, however. In the case of newspapers, almost as many respondents (44.3 percent) stated that they were using this source less frequently since they started using the Internet ($31.7 + 12.6 = 44.3$). At the other end of the

spectrum, just 10 percent of the respondents said they were using newspapers “A little more frequently” or “Much more frequently” since they started using the Internet.

Of course, declining newspaper usage may be offset by an increase in online paper reading. That is, people who report using papers less frequently may be migrating to the online version of their favorite newspaper (e.g., nytimes.com, usatoday.com, washingtontimes.com). Such behavior, were it to be prevalent in our data, would cast the replacement phenomenon in a different light. Fortunately, the CCAP survey contains a series of questions that allow us to investigate this issue. Following the general media-use item described earlier (“How have you been getting most of your information about the election?”), respondents were asked to provide the name of their most used media source.¹¹ We examined responses to this open-ended question to see if people who reported using papers “Much less frequently” were replacing a hardcopy newspaper with its online counterpart. In the CCAP data, this is *not* the case, with less than 1 percent of the “Much less frequently” respondents naming an online newspaper site. Instead, the modal answer was a news portal (e.g., yahoo, Google) or news website such as cnn.com, or msn.com.¹²

The next column of Table 1 shows the percentage in each response category for television. Here we see a different pattern. A little more than a quarter of respondents (26.2 percent) report using television “Much less frequently” or “A little less frequently” since they started using the Internet. This percentage is about half that of the corresponding percentage for newspapers, indicating that substitution behavior may differ across outlets, namely, in this instance, with substitution occurring more frequently for newspapers than for television. Another notable finding is that nearly as many respondents say they are using television *more* frequently since they started using the Internet. Here the combined percentage for the “Much more frequently” and “A little more frequently” categories is 23.9 percent. Thus, nearly a quarter of the respondents say they are using television more, not less, since they started using the Internet. Although the replacement hypothesis is often formulated without regard to specific media, these data show a clear difference in behavior for newspapers and television.¹³ The third column of Table 1 presents the patterns for radio. Here the distribution of responses is similar to that for the newspaper question, with nearly 40 percent of respondents stating they are using radio “Much less frequently” or “A little less frequently” since using the Internet. Few people said they were using the radio more since they started using the Internet (with the combined percentage for “Much more” and “A little more” coming in just under 17 percent), similar to the pattern for newspapers.

In general, Table 1 suggests that replacement is not as widespread as some previous studies have indicated. Moreover, there are important differences across outlets, with the trend toward substitution strongest in the case of newspapers and weakest in the case of television. According to niche theory, these patterns can be explained by differences in respondents’ perceptions of new and older media.

Data pertaining to these perceptions appear in Table 2, which shows the mean ratings on the three gratification items. Recall that these items ask people to rate (on a 4-point scale) how helpful each medium is when it comes to “obtaining news whenever you want it,” finding “stories on a variety of topics,” and “deciding how to vote

Table 2. Mean Ratings on Gratification Questions across Media

Gratification	Internet	Newspaper	Television	Radio
Convenience	3.48 (.03)	2.04 (.04)**	2.53 (.04)**	2.18 (.04)**
Variety	3.08 (.03)	2.28 (.04)**	2.46 (.03)**	2.32 (.04)**
Vote	2.83 (.04)	2.01 (.04)**	2.32 (.04)**	2.10 (.04)**

Note: Cell entries indicate the mean rating on the gratification items. Standard errors (SE) are in parentheses. The question wording for the gratification items was as follows: "How helpful are each of the following sources for obtaining news whenever you want it?"; "How helpful are each of the following sources for stories on a variety of topics?"; and "How helpful are each of the following sources for deciding how to vote in the election?" Cell *N* ranges from 773 to 870.

** $p < .01$ (two-tailed), in comparison of Internet vs. other outlets.

in the election" (labeled "Convenience," "Variety," and "Vote" in Table 2). Focusing on the first column, we see that the typical respondent gives the Internet a score of 3.48 ($SE = .03$) on the convenience dimension. This is the highest rating in the entire table, and it corresponds to an answer choice that is located in between "Very helpful" and "Extremely helpful." Given that one can visit the Internet any time of day to seek out information, it comes as little surprise that respondents rated this source the highest in convenience. Respondents also gave the Internet high marks for variety, with an average rating of 3.08 ($SE = .03$). However, they found the Internet less helpful when deciding how to vote in the election. Here the mean rating is 2.83 ($SE = .04$), which corresponds roughly to an answer choice located between "Somewhat helpful" and "Very helpful." Continuing with the remaining columns, we see that respondents value newspapers (column 2) and radio (column 4) largely for the variety each offers. In both cases, ratings for variety are substantially higher than the ratings for convenience and vote. The ratings for television (column 3) are similar to the pattern for the Internet, with the highest rating for convenience (mean = 2.53; $SE = .04$), followed by the ratings for variety and vote, respectively.

Comparing ratings across the outlets (i.e., reading *across* the rows), on every dimension the Internet is rated more highly than the other three sources ($p < .01$ in a series of *t*-tests). This pattern also makes sense. Compared with traditional news sources, the Internet has several advantages in terms of choice and the extent to which users can personalize their news consumption (which in turn should lead to higher ratings on the variety and convenience dimensions). The Internet's relative advantage over the other outlets is less apparent in the case of deciding how to vote, and this, too, is reflected in the Table 2 ratings. Finally, compared with the Internet, television, and radio, newspapers have the lowest ratings and often by a substantial margin. This relationship is consistent with the central finding from Table 1—that the tendency toward replacement is strongest in the case of newspapers.

So far, the empirical patterns suggest a correspondence between replacement behavior and the satisfaction of particular gratifications. However, Tables 1 and 2 present only an aggregate picture. To test the mechanism implied by the replacement

hypothesis, it is necessary to dig beneath the mean ratings. According to niche theory, a new medium will replace an older one if the new medium gratifies the same need(s) as the older medium and if it is superior to the older form. We begin, then, with an examination of overlap. Fulfilling that condition is a prerequisite to substitution behavior: People will replace traditional outlets with the Internet only if they view the Internet as functionally equivalent to older media.¹⁴

In these data, the overlap between the Internet and the other three sources is relatively high, with values on the overlap measure ranging from 1.10 (Internet-television) to 1.37 (Internet-newspapers). The value for radio is 1.24, which places it in between television and newspapers. In previous research, Dimmick et al. (2004) report a similar pattern, with overlap equal to 1.20 for broadcast television, 1.03 for cable, 1.30 for newspapers, and 1.37 for radio (also see Albarran and Dimmick 1993 and Dimmick et al. 2000). The similarity between the results of our study and those of earlier work is reassuring, and it gives us some confidence that we can study replacement behavior with the questions appearing in the CCAP survey.

Testing Niche Theory

Having established that respondents view the Internet and traditional outlets as functionally equivalent, we turn to the relationship between superiority and replacement. We expect that individuals who view the Internet as a superior method for satisfying particular gratifications vis-à-vis a traditional outlet (i.e., individuals with high Internet superiority scores) will be more likely to engage in replacement behavior. Conversely, people with low Internet superiority scores will be less likely to replace older media with the Internet. In other words, niche theory predicts that there will be a positive and significant relationship between Internet superiority and replacement.

We tested this hypothesis with a series of ordered probit models, in which replacement of a traditional source (newspapers, television, or radio) was the dependent variable. The key explanatory measure was *Superiority*, which indicates the degree to which the respondent views the Internet as a superior medium for satisfying the variety, convenience, and vote gratifications. For now we use the superiority rating from the October wave, but later in the study we will examine whether perceptions of superiority in an earlier wave predict substitution at subsequent time points. Each superiority measure was calculated in reference to a traditional outlet (e.g., Internet-newspapers, Internet-television, Internet-radio) and ranged from 0 to 12.¹⁵ In addition to the superiority measure, we controlled for demographic characteristics that may be related to media use.¹⁶ Table 3 shows the results.

Consistent with expectations, *Superiority* is positive and statistically significant across all three models ($p < .01$). Respondents who think the Internet better satisfies their needs regarding variety, convenience, and deciding how to vote report spending less time using traditional media. For example, the typical respondent who rates the Internet as "Extremely helpful" on all three dimensions (i.e., a superiority score of 12) has a .55 chance of saying they use newspapers "Much less frequently."¹⁷ At the

Table 3. Ordered Probit Analyses Explaining Replacement (October)

	Newspapers	Television	Radio
Superiority	.11 (.01)**	.12 (.01)**	.10 (.01)**
Education	.00 (.19)	.17 (.18)	-.10 (.17)
Age	.61 (.35) *	.01 (.33)	.70 (.31)**
Income	.05 (.24)	.03 (.24)	-.65 (.23)**
Black	-.63 (.22)**	-.42 (.30)	-.06 (.25)
Hispanic	-.08 (.42)	-.13 (.31)	.07 (.29)
Female	-.13 (.11)	-.07 (.11)	.00 (.10)
LR χ^2	93.41***	138.13***	86.22***
Log likelihood	-1024.05	-1095.85	-1146.85
n	874	879	874

Note: The dependent variable is replacement of a traditional outlet by the Internet (5-point measure; higher values = less time spent with newspapers, TV, or radio). Cell entries represent ordered probit coefficients, with standard errors in the adjacent column. Ancillary cut point parameters have been suppressed.

*** $p < .01$, ** $p < .05$, * $p < .10$ (two-tailed).

minimum value of *Superiority*, this same person has only a .11 chance of saying they use newspapers “Much less frequently,” resulting in a first difference of .44 (SE = .04). The corresponding first differences for *Superiority* in the television and radio models are .27 (SE = .03) and .34 (SE = .03).¹⁸ Thus, there is strong support for our hypothesis in Table 3. People’s perceptions of how well a source satisfies their needs and goals are related to the competitive relationship between the Internet and traditional media.

At the same time, there may be some other factor that is casually prior to media perceptions and replacement behavior. The desire for control, which represents the degree to which a person seeks to manage their external environment, is one possibility (see Burger and Cooper 1979 for a discussion of this personality construct). As a medium, the Internet would seem to provide users with more control over their information environments. There also is empirical evidence that desire for control is related to time spent on the Internet (Althaus and Tewksbury 2000). Thus, the more a person desires control, the more likely the person will be to rate the Internet high on particular gratifications and to report more replacement behavior.

We tested for this possibility by rerunning our original models with a three-item desire for control scale.¹⁹ In contrast to previous research, we found no relationship between desire for control and replacement behavior (p -values range from .33 to .80). More importantly, the sign and statistical significance of our key variable, *Superiority*, was unaffected by the inclusion of this term. Likewise, when we control for two other factors that might plausibly be related to media perceptions and replacement behavior—a person’s level of political knowledge and political interest—we obtained results that were nearly identical to those reported in Table 3. Although there was a tendency for more politically interested and knowledgeable people to report higher levels of

replacement, the trend was not consistent across models. Because there was considerable item nonresponse on all three sets of questions (desire for control, interest, and knowledge), we present our results without these variables in the model.

Another concern with the analyses in Table 3 has to do with the wording of the replacement measure. In particular, the reference point implied by the question (e.g., "Since you started using the Internet . . .") may have different meanings for young and old people. We explored this issue by running separate models on young and old respondents (defined here as the upper and lower quartiles on the age variable).²⁰ In these analyses, the coefficients on the *Superiority* term scarcely change. Despite the drawbacks of our question wording, respondents' perceptions of the relative superiority of different media outlets are systematically related to their replacement behavior, as niche theory predicts.²¹

Several other findings in Table 3 merit attention. In addition to *Superiority*, a person's race and age are significantly related to replacement behavior in the newspaper model. Black respondents report less replacement behavior (coeff. = $-.63$; $p < .01$), which might reflect that, historically, African Americans have had less access to the Internet than whites have (e.g., Bucy 2000; Mossberger et al. 2003). In contrast, older respondents are more likely than younger ones to report using newspapers less since they started using the Internet. On its face, this finding seems counterintuitive, since older people would seem less likely to replace *any* medium with the Internet. However, if newspaper reading is not well established among younger people—a pattern confirmed in our data—these respondents would not be likely to substitute the Internet for print news since they would not be giving up a habit they had not acquired in the first place.²²

In the second column of Table 3, the only demographic variable that is related to television replacement is the *Black* term, but it is only marginally significant (coeff. = $-.42$; $p = .17$). In the third column of Table 3, age is positively and significantly related to the replacement of radio with the Internet (coeff. = $.70$; $p < .05$). This may again reflect the fact that younger people are less likely to have established radio-listening habits, which would in turn make them less likely to report replacement behavior.²³ Lastly, there is a negative relationship between a person's level of income and radio replacement (coeff. = $-.65$; $p < .01$).²⁴

All in all, the findings in Table 3 lend strong support to niche theory as applied to the relationship between the Internet and older media. Nonetheless, all the findings really have shown thus far is that a person's superiority scores are associated with his or her replacement behavior. Therefore the next series of analyses examined whether perceptions of the media can be linked to replacement behavior at a later point in time (i.e., whether *Superiority* is causally prior to replacement). Taking advantage of the fact that our gratification and replacement items were asked at three points in time (September, October, and November), we limited our attention to respondents who answered these questions in multiple waves (i.e., panelists).

Table 4 shows the results of an ordered probit analysis in which lagged values of *Superiority* are included as the key independent variable. This term indicates the

Table 4. Ordered Probit Analyses Explaining Replacement (November)

	Model with One Lagged Term			Model with Two Lagged Terms		
	Newspapers	Television	Radio	Newspapers	Television	Radio
Lagged superiority (October)	.09 (.02)***	.13 (.02)***	.09 (.02)***	.07 (.02)***	.11 (.02)***	.07 (.02)***
Lagged superiority (September)	—	—	—	.05 (.02)**	.06 (.02)**	.04 (.02) *
Education	-.07 (.18)	.44 (.18)**	-.14 (.18)	-.31 (.21)	.33 (.20)*	.04 (.21)
Age	.18 (.30)	.24 (.32)	.86 (.30)***	.42 (.32)	.71 (.33)**	.63 (.33)*
Income	.11 (.26)	.20 (.27)	-.61 (.24)***	-.06 (.29)	.02 (.28)	-.62 (.28)**
Black	-.20 (.36)	.17 (.38)	-.14 (.37)	.05 (.29)	.67 (.29)**	.24 (.31)
Hispanic	.31 (.32)	-.11 (.22)	-.12 (.30)	.37 (.43)	.12 (.23)	-.41 (.41)
Female	-.27 (.11)**	.00 (.11)	.20 (.12)	-.29 (.13)**	.01 (.13)	.16 (.14)
LR χ^2	56.51***	117.93***	78.20***	65.96***	106.45***	70.96***
Log likelihood	-831.52	-838.02	-882.94	-534.92	-532.53	-569.71
n	661	667	659	459	462	456

Note: The dependent variable is replacement of a traditional outlet by the Internet, as measured in the November wave (5-point measure; higher values = less time spent with newspapers, TV, or radio). Cell entries represent ordered probit coefficients with standard errors in the adjacent column. Ancillary cut point parameters have been suppressed.

*** $p < .01$, ** $p < .05$, * $p < .10$ (two-tailed).

degree to which the respondent rated the Internet as a superior medium for satisfying the variety, convenience, and vote gratifications in a previous survey wave(s). The dependent variable is the replacement item from the November wave.

For each outlet, two versions of the model are presented: one with a single lagged measure (*Superiority* measured in October) and another with two lagged measures (*Superiority* measured in October and September). Irrespective of how we estimate the model, the coefficient on *Superiority* is positive and statistically significant. Consistent with niche theory, when older media fail to satisfy a person's needs and gratifications, they seek out superior outlets.

So far the analysis has demonstrated the value of niche theory for understanding replacement behavior. Like any study, however, ours has limitations. It is a significant drawback that we do not differentiate cable and broadcast television in the wording of our key measures. The advent of cable television has had a dramatic effect on levels of knowledge, political interest, and turnout (Prior 2007). It is possible, then, that people might view the comparison between mainstream television and the Internet differently than they would the comparison between cable television and the Internet, which would imply that replacement behavior may vary across mainstream and cable television. Using other questions in the CCAP survey, we were able to examine the behavior of self-described cable and mainstream television users (see note 13). In these analyses, we found that *both* types of television watchers are less likely to say they are

replacing television with the Internet.²⁵ Once again, though, even in these models *Superiority* retains its sign and original level of significance.

Media Replacement and Politics

In our last series of analyses, we provide some suggestive evidence regarding the consequences of media replacement. Using niche theory, we can identify the subset of respondents who are “replacers” (i.e., people who are using traditional media less since they started using the Internet) and examine the attitudinal consequences of media substitution. For simplicity, the replacement question was dichotomized, so that a score of “1” represented people who said they were using a traditional source less since they started using the Internet (either “Much less frequently” or “A little less frequently”). All other answer choices were coded to the zero category. This resulted in three indicators, each corresponding to one of the traditional outlets in our study. We then conducted a series of multivariate analyses in which the dependent measures were questions that might plausibly indicate polarization. The items included favorability ratings of the presidential candidates, placements of the candidates and parties on the ideological scale, and a measure of Bush approval.

Our key concern was whether people who report replacing a traditional source with the Internet (“replacers”) were more extreme in their answers than were other respondents. Thus, the analysis focused on “folded” measures of the attitudinal variables (where higher values of the dependent measure indicate stronger favorability ratings, more extreme approval ratings, or more extreme ideological placements).²⁶ The models controlled for a person’s strength of partisan identification, political interest, level of education, income, age, gender, and race. Table 5 shows the results.

Cell entries represent the coefficient on the indicator for replacers. Thus, for example, the positive and significant coefficient for newspaper replacers in the second row of Table 5 indicates that people who reported using newspapers less since they started using the Internet were more likely to rate President Obama’s favorability at one of the endpoints (i.e., either “Very unfavorable” or “Very favorable”). Recall that the coefficient comes from a multivariate model, so this represents a statistically significant effect after controlling for a host of independent variables. As one can see from visual inspection of Table 5, there is only modest evidence of polarization among people reporting replacement behavior.²⁷

The only pattern to emerge in the CCAP data is a tendency for conservatives to use newspapers less frequently since they started using the Internet ($p = .06$; results not shown), and for liberals to report using radio less since they started using the Internet ($p < .05$ results not shown). We have no particular insight into why this is the case, but it too seems like a topic that is ripe for further study.²⁸

In addition to the polarization of the electorate, scholars have speculated that selective exposure (via the Internet) may make people less knowledgeable (e.g.,

Table 5. How Replacement Affects Attitude Strength and Extremity

	Newspapers	Television	Radio
McCain favorability rating ^a	.15 (.12)	-.01 (.13)	.15 (.12)
Obama favorability rating ^a	.35 (.13)***	.06 (.16)	.06 (.13)
Bush approval rating ^b	-.07 (.11)	-.14 (.12)	.37 (.12)***
Ideological placement, McCain ^c	-.05 (.10)	.08 (.15)	.10 (.11)
Ideological placement, Obama ^c	-.16 (.11)*	.09 (.14)	.24 (.12)**
Ideological placement, Rep. Party ^c	-.14 (.11)	.03 (.14)	.18 (.12)*
Ideological placement, Dem. Party ^c	-.19 (.10)*	.06 (.13)	.10 (.12)

Note: Cell entries represent probit or ordered probit coefficients on the *Replacer* variable. *Replacer* indicates respondents who report using a traditional source much less or a little less frequently since they started using the Internet. The models control for party identification, political interest, education, income, age, gender, and race. The dependent variable varies across models (see key below).

a. Dependent variable is a dichotomous folded measure (1 = very favorable/unfavorable; 0 = all other responses). Probit coefficients shown.

b. Dependent variable is a 3-point folded measure (2 = strongly approve/disapprove; 1 = approve/disapprove; 0 = neither approve/disapprove). Ordered probit coefficients shown.

c. Dependent variable is a 5-point measure (5 = very conservative; 4 = conservative; 3 = moderate/not sure; 2 = liberal; 1 = very liberal). Ordered probit coefficients shown.

*** $p < .01$, ** $p < .05$, * $p < .15$ (two-tailed).

Iyengar and Hahn 2009). This raises the question of whether people who replace an older medium with the Internet are less informed about politics. The CCAP study offers unique insight into this question because the survey includes several knowledge items that were asked in the September and October waves.²⁹ We conducted a regression analysis in which the dependent variable was a person's level of campaign knowledge in the October wave. The key independent variables included an individual respondent's answers to these same questions in September and that person's responses to the replacement items. We also include the controls from earlier models (demographics, interest).

In these analyses, prior knowledge is by far the strongest predictor, followed by a person's level of political interest. However, two of the three replacement measures are significant predictors of campaign knowledge. People who said they were using radio less (in the September wave) had higher levels of campaign knowledge in October ($p < .01$). The coefficient on the newspaper replacement variable also was positive but it did not reach conventional levels of statistical significant ($p = .32$). In the case of television, however, the finding was in the opposite direction. People who said they were watching television less (in the September wave) had lower levels of campaign knowledge in October ($p = .13$). Given the limited focus of the knowledge battery, these results should be viewed tentatively. Nevertheless, they do cast doubt on the notion that people will necessarily become less informed as they gravitate from mainstream media to the Internet, or that replacement has uniform effects on knowledge.

Discussion

Previous research on the replacement phenomenon suggests no clear answer to the question of whether the Internet has replaced traditional media outlets. Our analysis indicates that replacement is occurring but that as yet it is not a widespread phenomenon. In the case of television, 75 percent of respondents report using that source about the same amount of time or more since they started using the Internet. Even in the case of newspapers and radio, where the tendency toward substitution was strongest, almost half of the sample stated they were using these outlets about the same amount since they started using the Internet. At the same time, a substantial segment of the population is replacing traditional outlets, especially newspapers and radio, with the Internet. They are doing so because of the perception that the Internet better satisfies their needs when it comes to variety and convenience.

In addition, our analyses revealed that newspaper replacers are different, in terms of their political opinions, from radio replacers. Previous studies have focused on the tendency for people to seek out like-minded sources, with liberals and conservatives preferring distinctive television channels (Iyengar and Hahn 2009) and blogs (e.g., Lawrence et al. 2010). However, in these instances, selective exposure occurs within a particular outlet. Our study raises the possibility that partisans might be systematically abandoning different types of outlets (newspapers, in the case of conservatives, and radio, in the case of liberals).

More generally, this study advances our knowledge of media use in the Internet age. Although previous studies have applied niche theory to the study of media replacement, ours is the first to test hypotheses regarding replacement at the individual level and with a national sample. In the past, scholars have lamented that uses and gratifications measures are, at best, weak predictors of media use (e.g., Larose et al. 2001). By contrast, our *Superiority* term was a strong predictor of replacement, with robust effects across a variety of empirical analyses. We believe this demonstrates the value of using niche theory to understand media replacement.

This study also provides a much-needed update on an important phenomenon. At the time the earliest replacement studies were conducted, only 30 percent of American adults were using the Internet. Now that we are well into the twenty-first century, that figure has more than doubled. Technology has also changed, making it easier for people to obtain information from the web. Thus, the time is ripe for a reappraisal of the relationship between the Internet and older media. Unlike the early years of the Internet's development, when web use was determined largely by computer access or Internet navigation skills (Althaus and Tewksbury 2000), the choice between new and old media today depends on how well an outlet satisfies the interests and needs of individual users. Thus, concepts like overlap and superiority—or some variant of them—are likely to prove useful as researchers seek to understand the long-term trends in media substitution.

Appendix

Table A1. Comparing the CCAP Survey to U.S. Census Data

Demographic Characteristic	U.S. Census, 2005-2007 ACS	2000 U.S. Census	CCAP 2008
Female	50.8	50.9	49.6
African American	12.4	12.5	9.1
Married	50.5	54.4	56.3
College degree +	28.0	24.4	30.1
Income <\$50,000	50.0	57.9	40.5
Age (median)	36.4	35.3	49.0
Population or N	298,757,310	281,421,906	814

Note: The Census data in column one are the combined three-year American Community Survey (ACS) estimates collected between January 2005 and December 2007. The percentages in column three are based on the October wave and were calculated using the survey weights provided by YouGov/Polimetrix.

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Notes

1. Work in this area is loosely based on uses and gratifications (UG) theory, which states that individuals are intentional about their media use. According to UG theory, the choice between new and older media depends on how well the former satisfies particular gratifications.
2. According to niche theory, replacement and displacement are distinct outcomes (Dimmick 2003). Replacement indicates that a new medium causes the extinction of an older medium, such as the elimination of the telegraph by the telephone. Displacement means that a new medium takes away time spent with the older medium. In this study, we use the terms *displacement*, *replacement*, and *substitution* interchangeably, and only to convey that a person is using an older medium less since he or she started using the Internet.

3. We do not argue that Internet use causes polarization. As others have observed, people may turn to the Internet because of their preexisting views (e.g., Nie et al. 2010; Stroud 2010).
4. Because of the sampling frame, the CCAP sample more closely represents states with competitive elections rather than the entire nation (see Table A-1 for a comparison of the CCAP sample and data from the U.S. Census).
5. Dimmick et al. (2004) conducted a random-digit-dial (RDD) survey with a screening procedure. To qualify as a respondent, an individual had to use Internet news as well as one other daily news medium (e.g., broadcast television, newspaper, radio, cable).
6. To reduce the likelihood of response effects, half of the respondents were randomly assigned to receive the answer choices in this order: "Much less frequently," "A little less frequently," "About the same," "A little more frequently," and "Much more frequently." The other half received this order: "Much more frequently," "A little more frequently," "About the same," "A little less frequently," and "Much less frequently." The order of the response options had no effect on answers to this question (average two-tailed p value = .31). Likewise, we randomized the order of the media, so that half of the respondents answered the replacement items for newspapers, television, and radio, and the other half answered them for radio, television, and newspapers. The order of media outlets also had no effect (average two-tailed p value = .55).
7. There is no single "master list" of gratifications from which we could draw on (Charney and Greenberg 2001: 381). We were limited in the number of gratifications we could include on the CCAP survey, so we focused on items that have appeared prominently in previous studies on media usage. As for the question wording, we used the language from Dimmick et al. (2004).
8. Half the respondents randomly received the response options in this order: "Extremely helpful," "Very helpful," "Somewhat helpful," "Not at all helpful," and "Not applicable." The other half got this order: "Not at all helpful," "Somewhat helpful," "Very helpful," "Extremely helpful," and "Not applicable." We also randomized the order of the media, so that half of the respondents answered the gratification items for newspapers, television, Internet, and radio, and the other half answered the questions for radio, Internet, television, and newspapers. Neither ordering had a statistically significant effect (average two-tailed p values are .42 and .33, respectively). Very few respondents chose the "Not applicable" option, so we recoded those cases to missing (to yield four answer choices). The gratification items are coded so that the highest value corresponds to "Extremely helpful." Seven questions (on an unrelated topic) separated the replacement and gratification items, thereby reducing consistency pressures.
9. A separate question, appearing in the October wave, asked about time spent on social networking websites. The item read: "On a typical day, about how much time do you spend on social networking websites (such as Facebook, MySpace, or LinkedIn)?" with options ranging from 0 minutes to 2 hours or more. Nearly 75 percent of respondents said they spent *no* time on social networking sites. The average time reported was less than 15 minutes.
10. We show results for respondents in the October wave. Our conclusions did not change substantively or statistically when we examined the September or November waves. In all of the analyses reported below, we use the survey weights provided by YouGov/Polimetrix.

11. The question read: "Please provide the name of your most used media source. Try to be as specific as possible (i.e., provide the name of your television station, newspaper, radio station, website, etc.)." Respondents provided their answer in a text box that appeared on the screen.
12. This pattern is consistent with a finding we reported earlier—that most Internet behavior consists of going online to visit news sites rather than blogging, posting comments, sending political emails, or visiting social networking websites.
13. Using responses to the open-ended media question described above, we examined the behavior of self-described cable and mainstream television users. Both types of television users show the same pattern as those shown in the television column in Table 1 (i.e., a majority in the "About the same" category and a quarter to a third in the "A little more" and "Much more" categories, combined).
14. As noted earlier, overlap represents the degree to which respondents perceive the Internet and traditional media as functionally equivalent. The measure ranges from 0 to 3, with 0 indicating that the respondent views two media as satisfying the three gratifications to the same degree. A rating of 3 means that a respondent views two outlets as maximally dissimilar.
15. The mean superiority ratings for newspapers, television, and radio are 6.3 (SD = 4.3), 5.2 (SD = 4.5), and 5.9 (SD = 4.4), respectively.
16. We used the *Amelia* II software program (King et al. 2001) to impute missing demographic information. The range and coding for the variables are as follows: education (0–1; 1 = post graduate), income (0–1; 1 = \$150,000+), age (0–1; 1 = 93 years old), black (0–1; 1 = black), Hispanic (0–1; 1 = Hispanic), and female (0–1; 1 = female). We exclude overlap because the variable is correlated with *Superiority* (Pearson's r range from .78 to .82; $p < .001$).
17. The typical respondent is a white woman who takes on the average value of all other variables.
18. The first differences are substantial even when we examine a 1 standard deviation (SD) change around the mean. Those values are .33 (SE = .03), .18 (SE = .02), and .24 (SE = .02) for the newspaper, television, and radio models.
19. The question read, "On the next few screens, there will be statements concerning personal attitudes. Please read each item and indicate the extent to which each statement applies to you. There are no right or wrong answers." Respondents then saw the following statements on separate screens: "I prefer a job where I have a lot of control over what I do and when I do it," "I enjoy making my own decisions," and "I prefer to take the leadership role when I'm involved in a group project." Answer choices ranged from 1 ("Does not at all apply to me") to 7 ("Definitely applies to me"). The items appeared in the September survey and were not repeated.
20. The lower quartile refers to respondents 18 to 42 years of age. The upper quartile refers to respondents 62 and older.
21. Finally, we probed the effects of question wording with a split-ballot survey experiment using adult respondents recruited through Amazon Mechanical Turk ($n = 123$). Half of the respondents received the original question wording ("Since you started using the Internet, are you using television more or less frequently than in the past?"); the other half received

- a modified version ("Compared to the Internet, are you using television more or less frequently than in the past?"). Mean responses to the replacement item were not significantly different across the two versions of the question ($|t| = .40$, $df = 121$; $p = .69$). Additionally, the distributions of the two sets of responses are not significantly different from one another ($p = .72$ for a Kolmogorov-Smirnov equality-of-distributions test).
22. The first differences for *Black* and *Age* are $-.17$ ($SE = .03$) and $.08$ ($SE = .02$), respectively (for a 0–1 change on *Black* and a 1 standard deviation change around the mean for *Age*).
 23. Auxiliary analyses with dummies for age cohorts (e.g., 18–37, 38–50, and 51 and older) show that the age effect is concentrated among the oldest respondents (i.e., people older than 50). There were no other differential age effects. The positive effect is linear across the age range in the newspaper model, and it is uniformly null across age groupings in the television model.
 24. The significant coefficient on *Income* translates into a first difference of $-.08$ ($SE = .02$) for a 1 standard deviation change. The negative result for *Income* does not reflect the radio-listening habits of right-leaning respondents. *Income* remains negatively and significantly related to replacement even when we include controls for Republican and Democratic identification.
 25. We included indicators for cable and mainstream users in the television replacement models in Tables 3 and 4. The coefficients on both terms were negative and significant ($p < .05$).
 26. The question wording for these items was as follows: (*Favorability*) "Here is a list of politicians or groups of people. How favorable is your impression of each or haven't you heard enough to say?" Answer choices: "Very favorable," "Somewhat favorable," "Neutral," "Somewhat unfavorable," "Very unfavorable," "Haven't heard enough"; (*Bush Approval*) "Do you approve or disapprove of the way George Bush is handling his job as President?" Answer choices: "Strongly approve," "Approve," "Neither approve nor disapprove," "Disapprove," "Strongly disapprove"; (*Ideological Placements*) "Thinking about politics these days, how would you describe the political viewpoint of the following individuals or groups?" Answer choices: "Very liberal," "Liberal," "Moderate," "Conservative," "Very conservative."
 27. Given that we only examined a small number of outcomes, additional research is needed on the attitudinal correlates of replacement behavior.
 28. Radio replacers also are more likely to self-identify as Democrats ($p < .01$); newspaper replacers are marginally more likely to self-identify as Republicans ($p = .15$). Controlling for partisanship does not alter the results we report in Tables 3 and 4 (though we do observe some evidence of partisan-specific replacement behavior in those models).
 29. The questions asked respondents about Barack Obama's and John McCain's religious identifications, as well as the ideological location of Obama, McCain, Joe Biden, George W. Bush, Sarah Palin, and the Democratic and Republican parties. Responses to these questions form a 9-point measure of campaign knowledge (mean = 6.1; SD = 2.5).

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