

**Effect of Media Environment Diversity and Advertising Tone on
Information Search, Selective Exposure, and Affective Polarization**

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Abstract

This paper examines the effects of our modern media environment on affective polarization. We conduct a computer-based experiment during the last month of the 2012 presidential election using the Dynamic Process Tracing Environment (DPTE) to vary both the choice of media sources available about the candidates, and the tone of political advertisements presented to subjects. We posit that voters in a high-choice, ideologically-diverse media environment will exhibit greater affective polarization than those in a “mainstream” ideologically neutral environment. We also hypothesize that subjects who are exposed to negative rather than positive political ads will show increased affective polarization. We find that the *combination* of a high-choice ideologically diverse media environment and exposure to negative political ads, significantly increases affective polarization. We also find that both overall information search and selective exposure to information are influenced by our experimental manipulations, with the greatest amount of search, and the most biased search, conducted by Romney supporters in the Negative Ads, Diverse Media condition.

Effect of Media Environment Diversity and Advertising Tone on Information Search, Selective Exposure, and Affective Polarization

While there is much evidence that American politics at the elite level has polarized over the last several decades (Jacobson, 2005; Jones, 2010; Poole and Rosenthal, 2001; Stonecash, Brewer, and Mariani, 2003; Theriault and Rohde, 2011), the nature and extent of polarization at the mass level is less clear. Some scholars have found that voters are also becoming more ideologically polarized, while others claim that Americans are still much more moderate than their leaders (see, for example: DiMaggio, Evans, and Bryson, 1996; Fiorina, Abrams, and Pope, 2005, vs. Abramowitz and Saunders, 1998; Jacobson, 2005). However, another facet of polarization at the mass level—*affective* polarization—is now a well-documented phenomenon. That is, more and more partisans are beginning to view members of the other party as a disliked out-group and are displaying signs of inter-group hostility (e.g. Iyengar, Sood and Lelkes 2012; Mason 2015; Westwood and Iyengar 2014).

Some observers have suggested that the changing nature of the media environment may be contributing to this type of polarization (e.g. Iyengar, et al 2012), but there is little direct evidence for this proposition. In this paper we examine the effects of the contemporary media environment on the affective polarization of American voters. Specifically, we experimentally test whether two factors influenced how partisans during the 2012 presidential elections felt about the two major party candidates running for office: the extent to which *ideological diversity* was available in the information subjects could access during the experiment, and the *tone* of the information that was presented in a series of campaign advertisements. Our analysis examines how the availability of diverse, strongly ideological news alternatives, like those found in our modern high-choice media environment, as well as exposure to negative advertisements presented by the candidates,

influence both selective exposure in information search and affective polarization in a presidential campaign.

We have consciously chosen to study the degree of discretionary choice in information search among the mass public, and explicit attempts at manipulation by political elites, because they are key features of the modern media environment. The rapid growth of the number and diversity of media choices available to the public has only redoubled efforts by political elites to influence voters -- see, for example, the explosion in the amount of money spent on political advertising over the past decade (West, 1992, 2013). Previous research has considered both selective exposure and advertising tone individually as possible causes of polarization, but not the two in combination, and in the real world, of course, they occur together. Therefore, we analyze the effects of these two facets of the modern media environment in tandem, and find that the *combination* of the modern high-choice media environment and exposure to negative political ads significantly increases affective polarization among subjects.

Affective Polarization

When most political scientists talk about political polarization, they are referring to the diverging ideologies of party elites, and thus talk about policy stands. At the mass level, there is some controversy about whether the political attitudes of the general public have similarly polarized (Fiorina and Abrams 2009). Some argue that voters are indeed becoming more polarized on policy stances, citing a decline in the number of people who identify as “moderates,” an increase in the ideological distance between Democrats and Republicans, and the fact that the public has “sorted” themselves into more ideologically homogenous parties (Abramowitz and Saunders, 1998, 2008; Levendusky, 2009; Mason, 2014; Ura and Ellis, 2012; Jacobson 2000; Abramowitz and Saunders, 2008; Campbell 2008). Others contend that the public is still

fundamentally centrist and has not expressed more extreme views on policy issues over time (DiMaggio, Evans, and Bryson, 1996; Fiorina, Abrams, and Pope, 2005).

Relying on social identification theory (Tajfel and Turner, 1979), however, Iyengar, et al (2012) argue that a much better indicator of mass polarization is the extent to which partisans view each other as *disliked out-groups*. Iyengar, et al make the case that inter-party affect is a more appropriate measure of mass polarization than policy preferences or ideology, given the repeated findings of many scholars that partisanship is not based on ideology, but rather identity and psychological attachment (e.g. Lane 1959; Converse 1964; Sears and Funk 1999; Jennings, Stoker and Bowers 2009; Mason 2015). Indeed, while feeling thermometer evaluations by Democrats and Republicans of their own party have not changed at all from 1976 through 2008, evaluations of the other party have declined by 12 points over this period. This argument is further bolstered by the fact that rates of other attitudes and behaviors that suggest affective polarization (also referred to as social polarization; Mason 2015) such as intergroup bias, partisan activism, and anger at the outgroup's presidential candidate, have increased markedly (Levendusky 2009; Abramowitz 2010; Mason 2013; Mason 2015). Iyengar and Westwood (2014) even find that hostility toward one's opposing party functions much like automatic prejudices based on race, and that affective polarization can influence behaviors and judgments in non-political situations, leading to bias and outright discrimination.

Many of these recent findings also suggest that affective polarization is not necessarily driven by increased polarization in policy preferences. While evidence of increases in affective polarization has been mounting, by most accounts, there have been only relatively small increases in polarization in attitudes on most issues (e.g. Fiorina and Abrams 2008; Fiorina, Abrams and Pope 2015; Fiorina and Levendusky 2009; Mason 2013). As Mason (2015) suggests, voters may in

fact agree on far more than they realize because of the hostility between the two parties.

If ideological polarization is not driving affective polarization, then what is? It is this question that we seek to answer. Iyengar, et al (2012) suggest that exposure to intense, and often negative, campaign environments is at least one contributing factor that leads to a dislike of out-party members. Building on this finding, we seek to determine what aspects of the media/campaign environment, precisely, lead to affective polarization.

***** Insert Figure 1 about here *****

Figure 1 presents data on two related indicators of affective polarization tied directly to candidate evaluations: the absolute differences in feeling thermometer evaluations of the Democratic and Republican presidential candidates from 1980 through 2012, and the percent of voters who said they strongly preferred their chosen candidate (as opposed to not very strongly preferring him). These two indicators bounce around a bit without much overall change from 1980 to 1996, but then take off and increase 15 points over the next 16 years. This dramatic change is consistent with our argument that media diversity and choice, which dramatically increased over the same period with the rise of the Internet, has something to do with growing levels of affective polarization. We use the absolute differences in feeling thermometer scores and the percent of voters who express a strong preference for their chosen candidate as key indicators of in our study of affective polarization during the 2012 presidential election.

Media Environment and Discretionary Information Search

Before 1980 or so, in what Prior (2007) calls the “Broadcast News Era,” most television viewers had very few viewing options—essentially the three major network channels, which followed the same basic menu. Hence, viewers who watched TV in the early evening were likely to see the national news whether they sought out information or not. ABC, CBS, and NBC all

mostly covered the same stories, from a balanced mainstream perspective. Newspapers and radio shared the same news agenda as TV did. This arguably contributed to relatively moderate, homogenized public opinion (Prior 2007). While it is a mistake to think of the public during this era as merely passive recipients of whatever messages media and political elites chose to air, it was far more difficult several decades ago to avoid the news, or to seek out *additional*, or more partisan, political information beyond what was provided by the mainstream sources.

This all began to change with the spread of cable television in the 1980s and the explosion of new technology and new viewing options that followed, particularly after access to the Internet became widespread. Now people could watch sports or gardening or game shows or old movies or news 24 hours a day, which fostered two different types of *selective exposure*. First, people interested in politics and the national news could follow it more closely than ever before, but at the same time people with little or no interest in politics could now pretty easily choose to avoid it. Not only were there more options available, but technological changes made it simple for people to switch between them, as remote control devices were in 90 percent of American homes by 1990 (Benson-Allott, 2014).¹ This has led to what some scholars have called an increasing “knowledge gap” between those who are interested in politics and have some political information, and those who do not (Prior, 20075).

Second, with more and more cable stations dividing the television audience into smaller and smaller shares, it became economically feasible for cable news stations to aim for specific ideological niches (Stroud, 2011). The Internet has increased choice and ideological diversity

¹Although the remote control was invented in 1955, for example, it was considered an expensive luxury device for several more decades. In 1979 only 17 percent of U.S. households with televisions had a remote control (Benson-Allott, 2014). To switch to another program, most people had to get up off the couch, walk over to the television set, and manually change channels. Although we have no direct evidence on this point, we feel safe in asserting that people were much less likely to change channels in the Broadcast News era than they are today.

exponentially, while making access to information (for example, on the history of the remote control) dramatically easier. All of this has made a second type of selective exposure possible, allowing partisans to actively construct a one-sided media environment where they are primarily exposed to messages they already agree with (Bennett and Iyengar, 2008; Dilliplane 2011; Jerit and Barabas, 2012; Mutz, 2006; Stroud, 2008, 2010; but see Garrett, 2009 for some contrary evidence).

It is this second type of selective exposure that many observers fear is contributing to the polarization of politics in America. The logic is simple, and harkens back to cognitive dissonance theory and post-decisional regret (Brehm, 1956; Festinger, 1957), and motivated reasoning (Kunda 1987, 1990; Lodge and Taber 2000; Redlawsk 2002). Once people have made a decision – I am going to buy a brand X toaster – the last thing they want to learn is that brand Y produces better toast. Learning such information could cause cognitive dissonance, an unpleasant internal state, and to prevent it people will, if possible, selectively and purposefully avoid any information that might suggest that brand Y is better than my brand X. Instead, they seek out information that confirms the correctness of their original choice.²

In politics, the important decision we make is which candidate we are going to support in the upcoming election, and much evidence suggests that voters are motivated reasoners in the same way that consumers of toasters or any other consumer product are. According to motivated reasoning, candidate evaluations are made “on-line,” such that evaluations update as new

²The experimental evidence for selective exposure is, in fact, quite mixed (Sears and Freedman, 1967), but the theory is clear. There are, of course, other motivations besides dissonance avoidance that can guide information search, and would push viewers in the opposite direction. For example, Valentino et al (2009) and Pierce (2014) provide evidence that partisans who believe they will have to justify their candidate preference seek out information from the less preferred candidate so that they will be better prepared to counter-argue it.

information is learned over the course of a campaign (Kunda 1987, 1990; Lodge and Taber 2000; Redlawsk 2002). However, the process of learning is affectively charged, meaning that information that reinforces existing affect is easily assimilated, but information that runs counter to one's feelings is often ignored or discounted (Redlawsk 2002). Selective exposure, then, can be thought of as a motivated reasoner's attempt to maintain his or her existing affective state related to the vote decision.

In the Broadcast News era, there was little payoff from selective exposure even if it were possible, since most of the news took a balanced, centrist perspective. In contrast, in today's ideologically diverse media environment, it is much easier to control the partisan nature of the information individuals receive, and thus the potential reward of selective exposure is much greater than it once was. If partisans, given the opportunity, choose to selectively expose themselves to an ideologically-compatible one-sided media environment, and they are influenced by it, then it is not very hard to see increased polarization in the masses as a likely outcome (see Coe et al (2008); Iyengar and Hahn (2009); Iyengar, Krosnick, and Hahn (2008); Jerit and Barabas (2012); and Levendusky (2013). See Prior, 2013, for a recent and mostly skeptical review).

Clearly, both affective polarization and discretionary media choice have increased over the past three decades. This certainly does not mean that there must be a causal relationship between the two, but the causal chain of *Increased Media Diversity and Choice* → *Greater Selective Exposure* → *More Affective Polarization* is a plausible one, and could help explain the increase in affective polarization over time.

Campaign Advertising and Nondiscretionary Exposure

But just because we now live in a high-choice media environment, and individuals are

able to customize their information search, this does not mean people can completely avoid political messages, particularly if well-funded elites want the messages to be heard. For those living in a battleground state during a presidential election, for instance, it is nigh on to impossible to avoid at least some nondiscretionary haphazard exposure to political ads. And even if the depth of processing of such incidental exposure to a message is considerably less than it would be for some article a person had actively *chosen* to read, still most people, if they see an ad, will get the basic gist of the message the advertiser is trying to convey.

The primary distinction that people who study political advertising make is whether a message is positive or negative – that is, whether it talks about a candidate’s own policies and qualifications for office, or criticizes an opponent’s policies and qualifications for office (Lau et al, 1999). We do not have very good data on the actual prevalence of attack ads and other types of campaign negativism before 1996 or so (Goldstein and Freedman, 2000, 2002, though see Geer 2006), but the popular press, political scientists, and communications scholars all noticed them in the late 1980s (e.g., Ansolabehere and Iyengar, 1995; Jamieson, 1992; Kaid and Johnston, 1991; West, 1993), and research on the topic has exploded since then (Lau, Sigelman, and Brown, 2007; Mattes and Redlawsk 2014). Its alleged growth has certainly coincided with the growing affective polarization in American politics.

There is also good reason to think that exposure to negative ads, as opposed to positive ads, could increase affective polarization (Iyengar, Sood, and Lelkes, 2012), and we expect this effect to hold when in-party and/or out-party candidates “go negative.” First, partisans are probably more likely to react positively to *any* communications from their own candidate, thanks to positive feelings they likely have toward their own in-group. We suspect, then, that they would be likely to perceive and believe any attacks on the opponent from a trusted in-group

messenger (Lau, 1985). Second, partisans are probably more likely to reject or disbelieve attacks on their own candidate from the opponent due to motivated reasoning and disconfirmation bias. These seemingly unfair and inaccurate attacks on one's in-party candidate will likely then lead to more negative affect directed toward the out-party candidate (an already suspect out-group member). Again, the causal chain of *Increased Campaign Negativism* → *Likely Exposure to Negative Ads* → *More Affective Polarization* is a plausible one for explaining the growth of affective polarization, at least for people living in states with highly competitive election campaigns.

Further, it is possible that the *combination* of a negative campaign environment and a high-choice, ideologically-diverse media environment is what actually drives affective polarization. Partisans who are exposed to negative ads may be motivated to seek out more information, generally, than those who only see positive ads. This may be either because they wish to find information that refutes the negative information in the ads and coincides with the positive affect they have for their candidate (as motivated reasoning theories would suggest), or because negative information about one's candidate could lead to anxiety, which, according to Affective Intelligence Theory (Marcus, Neumann and Mackuen 2000), would lead to increased information gathering. Subjects who have the option of selective exposure in this instance may well come away from their information search with only ideologically one-side information, and therefore a greater dislike of their opponent, and thus increased affective polarization. In this case, the causal chain would be: *Increased Campaign Negativism AND Increased Media Diversity/Choice* → *Likely Exposure to Negative Ads, Greater Information Gathering and Selective Exposure* → *More Affective Polarization*.

Hypotheses

The primary dependent variables collected in this study involve 1) *discretionary information search* (the number of articles examined in two treatment conditions where subjects have the opportunity to examine a variety of news articles about Obama and Romney), 2) *selective exposure* (seeking disproportionately more information about a preferred candidate), and 3) *affective polarization* (liking a preferred candidate more than the opponent). In general, we expect the high-choice, ideologically diverse media condition to maximize all of these dependent variables. Information available in that condition might prove to many subjects to be more interesting and/or more trustworthy, and motivated reasoners should find the messages easier to control in the diverse media environment.

Similarly, exposure to two negative ads rather than two positive ads is also expected to increase each of these dependent variables. As Geer (2006) argues, there is usually little to dispute about a positive ad. All candidates love the country, their families, and so on. But when a candidate criticizes an opponent, people want to see the supporting evidence (and/or possibly experience anxiety about their choice of candidate), and that could motivate subjects to seek out additional news stories to confirm or disconfirm the claims made by candidates in their attacks on their opponent. And if exposure to a negative ad from the opponent is more likely to bias information search in favor of their own candidate, it is also likely to increase affective polarization. However, it will be easier for partisans to *find* that supporting evidence in a diverse media environment. Therefore the *combination* of the diverse media environment and exposure to negative advertisements from the two candidates – that is, their interaction -- should maximize all of the measured dependent variables.

Further, this could be particularly true of conservative Romney supporters since there are some suggestions in the literature that Republicans and conservatives are particularly trusting of

conservative media (and particularly *distrusting* of liberal media -- see for example Eveland and Shah, 2003; Iyengar and Hahn, 2009; Lee, 2005). Thus we also look for pre-election Candidate Preference by Media Environment and Ad Tone interactions.

Method

This project was designed to examine the potential influence of media environment diversity and advertising tone on affective polarization. Because we are interested in drawing causal inferences, we utilize experimental methods. At the same time, we are interested in maximizing our external validity, so we chose to conduct our experiment at the end of the 2012 presidential election, asking subjects to learn about and evaluate the actual candidates for president.³ Critics of classic control group/treatment group forced exposure media experiments (e.g., Arceneaux and Johnson, 2013; Bennet and Iyengar, 2008; Gaines and Kuklinski, 2011; Geer, Lau, and Nickerson, 2013; Hovland, 1959; Levendusky, 2013) argue that any observed effects in these kinds of studies are often most likely concentrated among subjects who would not otherwise typically see the ad or news program, which seriously challenges the external validity or generality of those findings. This design presents a “tough case” for our hypotheses, then, as most Americans (including our subjects) were already familiar with the candidates in the race and likely had formed some opinion of them well before participating in our experiment. Any effects on subjects of our manipulations over and above their already-established attitudes and preferences would provide very strong evidence that media environment can and does influence affective polarization, particularly in battleground states where a diverse media environment is often combined with exposure to negative ads.

³Readers who would like to see the experiment can go to <http://dpte.polisci.uiowa.edu/dpte/action/player/launch/471?test=1 &pass=Election2012> Click on the "submit" button, and then click on "Launch Player."

Subjects

We recruited a convenience sample of 489 subjects, all of whom came from one of two different sources, a telephone survey focusing on the presidential election being conducted from late September through mid-October 2012 by the Center for Public Interest Polling at the Eagleton Institute of Politics at Rutgers University; and Amazon's Mechanical Turk (MTurk). Survey respondents were asked about their attention to the campaign, their stands on prominent political issues, their perceptions of Barack Obama and Mitt Romney, and so on. Towards the end of the pre-election interview all subjects were informed that they could also participate in an online study about the election if they have an email address. Respondents were told that the study would take no more than 15 minutes, and would include a chance of winning an iPad if they agreed to participate. Ultimately 147 of the respondents from our telephone poll participated in the experiment we are describing here. While the original phone survey was a nationally representative sample, clearly these volunteers are not.

This study was also posted on MTurk in mid-October as the survey was completing, offering \$2 for a 15 minute pre-election study with a promise of another \$2 to answer four questions after the election.⁴ Another 363 subjects from MTurk completed the study, for a total of 510 persons. Of those, we have complete data from 489 subjects.⁵ All analyses reported

⁴We attempted to contact all subjects again after the election to record their actual vote choice. The very brief post-election portion of the study only asked subjects if they had voted, and if so which candidate they had supported. We obtained post-election data from 256 or 52% of the people who completed the pre-election portion of the study. As we do not examine those data in this paper, however, we make no further mention of them.

⁵Eleven people began the study but quit before they completed it, and we could not use their data. Ten other people missed one of the two "trap" questions that were included to make sure subjects were paying attention, and we eliminated their data as well. Inclusion of these latter subjects does not substantively alter the results reported herein. See Kleinberg et al (2014) for a more thorough discussion of using MTurk subjects in fairly complex, time-consuming

below include a dummy variable distinguishing between volunteers from our initial phone survey and the MTurkers, but in general there were no noticeable differences between our two sources of data.

Our subject pool in part reflects some disproportionate liberal Democratic bias of MTurk workers (e.g., Berinsky, Huber, and Lenz, 2012) although the sample is not dramatically different in partisan identification from Gallup's immediate post-election numbers. For the analyses reported in this paper, the data have been weighted to achieve a better balance on race and pre-election candidate preference, although we certainly do not offer our findings as representative of the American public. Subject representativeness does not affect the causal inferences we can draw from the random manipulations in our experiment, of course, and the unweighted data provide essentially the same results as those presented in this paper (data available from the authors).

Subjects were 53 percent female, with an average of 15 years of education, 41 years of age, with annual income around \$63,000. Seventy-seven percent of our subjects were white, 9 percent African American, and 9 percent Hispanic. Just over a third of the subjects were Protestant, 19 percent Catholic, and 32 percent nonreligious. Thirty-six percent were Democrats, 27 percent Republicans, and 36 percent independents. Thirty-nine percent were very liberal or liberal, compared to 36 percent who were very conservative or conservative. Forty-eight percent expressed a pre-election preference for Barack Obama, while 37 percent said they intended to vote for Mitt Romney.⁶

Design and Procedure

experiments.

⁶The unweighted data were 81% white, and 58% pre-election preference for Obama.

Subjects participated in a 3x2 experimental design in which we varied both *Ad Tone* (positive or negative) and *Media Environment* (a neutral “Broadcast News” era condition, an ideologically diverse “Modern Media” condition, and a “control” condition that provided no additional information⁷).

After reading an online informed consent page, MTurk subjects answered 20 questions about their general political beliefs, and provided basic demographic background information about themselves; questions that telephone survey respondents had answered as part of the telephone poll. Subjects then answered questions about how much they thought they knew (relative to most other citizens) about the policy stands and personal qualities of Barack Obama and Mitt Romney. These four questions were combined into a scale of Subjective Knowledge about the Candidates going into the study ($\alpha = .86$), which was used as a covariate in all of our analyses. To the extent that we observe any effects of our manipulations, they will be over and above how much subjects believed they knew about the candidates going into the experiment.

All subjects were shown two political ads from the 2012 presidential campaign (one from Obama and one from Romney)— both ads were either positive or negative in tone. In order to manipulate ad tone, we selected actual ads used by the two candidates’ campaigns.⁸ Obama’s positive ad had an upbeat “morning in America” tone: “We are a nation of doers and dreamers; all we ask is that our hard work pays off,” with a pointed reference to tax policy and the

⁸Our experiment does not include a pure control group where subjects are exposed to no manipulations and only respond to the dependent variable questions. See the appendix for a discussion of this design decision.

⁸We randomly manipulated whether Obama’s ad or Romney’s ad was shown first, which is treated as a nuisance factor and ignored in the subsequent analysis.

statement “We believe you grow the economy from the middle out.” Obama’s negative ad attacked Romney and Ryan’s abortion and health policies toward women. Romney’s positive ad had Ann Romney talking about her husband’s character: “If you really want to know how a person will operate, look at how they lived their life.” His negative ad focused on the economy and growing unemployment: “Obama’s economy is just not getting better. Romney has a plan for more jobs and more take-home pay.”⁹

In order to examine whether selective exposure, per se, influences polarization, we needed a design that would separate the effects of the ideological diversity of the available news sources from simple availability of more information, generally. In the *mainstream news* treatment condition, subjects could access articles of many different topics that had appeared on the web pages of four different mainstream news organizations: *The Associated Press*, *CBS News*, *Reuters News Service*, and *USA Today*. There were always three articles available about each candidate on each of the topics. This condition was designed to represent the options available to voters before the explosion of choice that came with the spread of cable television and then the Internet. Figure 5 in the Online Appendix shows how the basic article choice page appeared in the mainstream news condition,¹⁰ while Figure 6 in the Appendix illustrates one of

⁹ Selecting which ads to use, out of the dozens of positive and negative ads produced by the campaigns, created many challenges. We selected these ads based upon their: 1) appeal to a national rather than local or regional audience, 2) alignment with the campaigns’ current message focuses (as of mid-September 2012), and 3) relatively low TV exposure (as best we could determine at the time). This, we hope, exposed our subjects to messages that they might plausibly encounter during the point of the campaign they viewed them, but that they were unlikely to have actually seen yet. This created an imbalance in the ads (they spoke about different issues), at the expense of strengthening the external validity of the study by making the ads seem more appropriate to the current tenor of the campaigns. We assume that the campaigns had good reasons for creating these ads and, rather than attempt to match the ads (i.e. have them speak to the same issue), we allowed the campaigns themselves to influence the ads we included, allowing us to observe what effects real ads created in the public.

¹⁰In Appendix Figure 5, articles about Obama are on the left, articles about Romney on the right.

the mainstream articles that was available in this media environment. Subjects were instructed to “look at as many of these articles as you find interesting.”

In the *diverse media* treatment condition (meant to represent the modern ideologically diverse Internet era), stories were available from mainstream news sources (*Associated Press* or *Reuters*), conservative news sources (*Fox News* or the *Wall Street Journal*), and liberal news sources (*MSNBC* or the *New York Times*).¹¹ Again, there were always three articles available about each candidate on each of the different topics. Thus, subjects in the two media environment treatment conditions had the same number of articles available, on the same topics, but two-thirds of the articles were drawn from different media sites. Figure 7 in the Appendix shows what the article choice page looked like in the diverse media condition, while Figure 8 illustrates one of the conservative articles that was available in this media environment.

Subjects in both of the treatment conditions were also exposed to two political ads, one after the 3rd article that had been examined, the second after the 6th article. Because we needed to show subjects in the media environment treatment conditions two political ads, which we wanted to intersperse among the articles they chose to examine, the design of the study essentially required all subjects in the treatment conditions to open at least seven articles before a button appeared that allowed them to answer questions and complete the study. There was no limit on how much time subjects could spend with the study, and subjects had complete discretion over

“Side” (that is, which candidate was listed first) was another random manipulation that we again treat as a nuisance factor and ignore in the analysis.

¹¹ As a manipulation check, we conducted a preliminary study in which all articles were rated on a scale of ideological extremity. As we hoped, the articles available from the two liberal media outlets (mean rating 2.5) were indeed judged to have a significant pro-Obama/Democratic/liberal bias compared to articles from the four mainstream sources (mean of 2.9), while the articles selected from the two conservative sources (mean of 3.6) were judged to have a greater pro-Romney/Republican/conservative bias compared to the mainstream articles. Details about this study are available in the Appendix.

what articles to open, within the menu of options available to them, and what order to open them. We employed Dynamic Process Tracing Environment (DPTE) software (Lau and Redlawsk 2006),¹² which allowed us to track what articles subjects chose to examine in the two treatment conditions, in what order they accessed them, and how deeply they processed those articles.

Following completion of the assigned campaign environment condition, subjects answered a series of questions about what they had learned about the two candidates during the experiment. Finally, subjects rated Barack Obama and Mitt Romney on feeling thermometer scales, and reported whether they intended to vote in the upcoming presidential election, and if so, the direction and strength of their choice.

Given this design, if polarization is greater in the two media environment treatment conditions than in the control condition, it is the easy access to additional information, rather than the diversity of media sources, that is the primary causal factor. But if polarization is more or less equal in the control and mainstream news conditions, but less than in the diverse media condition, then it is the diversity of media sources rather than ease of access that is the primary causal factor.

Results

Discretionary Information Search

We begin our analysis by considering the total number of articles examined by subjects in our two Media Environment treatment conditions. Subjects opened between 3 and 44 distinct articles during the study, with a mean just under 9 (8.99). However, we exclude 6 subjects at the

¹²To learn more about this program, which is freely available to researchers, go to www.processtracing.org. An in-depth discussion of DPTE is available in the Online Appendix for this article.

tails of this distribution as outliers during our analysis.¹³ Doing so has little substantive impact on our results, but does reduce our standard errors, making our results more clear. This reduces the average number of items looked at slightly, to 8.64.

As seen in Table 1, there is a hint of a Media Environment effect in the data, $F(1,207) = 3.76, p < .054$ as well as of Ad Tone, $F(1,207) = 3.56, p < .061$, although neither crosses the conventional .05 threshold for significance. There is a significant Media Environment by Ad Tone interaction, $F(1,207) = 5.86, p < .02$, however, with the greatest search, as expected, in the Diverse Media, Negative Ads condition. The most complete story is told by a significant 3-way interaction between Candidate Preference, Media Environment, and Ad Tone, $F(1,207) = 17.64, p < .001$. The means are shown in Figure 2.

***** Insert Table 1 and Figure 2 about here *****

Subjects in the Mainstream condition looked at approximately the same overall number of items, regardless of their candidate preferences or the tone of the ads they viewed. Likely Obama voters looked at roughly one more article, on average, in the diverse media, negative ads condition, compared to the diverse media, positive ads condition, but these differences are relatively small. Likely Romney voters, on the other hand, looked at nearly 6 additional items in the diverse media negative ad condition, compared to the diverse media positive ad condition.

These latter differences are dramatic, and they accord with our *a priori* expectations. It is

¹³ Our rationale for excluding these cases is methodological, to ensure that we are looking at subjects who are participating in the study and acting within the bounds of normal behavior. Subjects were required to view 7 items before they could complete the information search process, but could get around this restriction by, for example, viewing the same article multiple times. We determined that subjects who viewed any item more than twice were most likely not seeking to truly learn information and but were instead simply speeding through the study rather than truly participating. Looking at the time subjects spent viewing items a second time, which is minimal, also supports this decision. Likewise, we exclude a few subjects who viewed several standard deviations *more* items than everyone else as outliers who were not behaving within the bounds of “normal” subject behavior.

primarily Republicans, in this modern high-choice, diverse media environment, whose information gathering is conditioned by the tone of the political advertising they see.¹⁴

Selective Exposure

But what *type* of articles were our subjects choosing to examine? As seen in Figures 8 and 10 in the Online Appendix, they had many different options from which to choose (112, in fact). Our subjects could have been the ideal citizens of democratic theory, seeking out balanced information about both candidates to try to make some rational decision. But our experiment was in the field pretty late in the campaign, and most of our subjects already had a very good idea how they were going to vote. More realistically, then, we would expect motivated reasoners to engage in selective exposure, to look at more articles about their preferred candidate than about his opponent to try to avoid cognitive dissonance, and to help justify their choice to themselves or their social networks.

We define selective exposure as the difference between the number of articles examined about the preferred candidate minus the number of articles examined about his opponent. Positive numbers reflect motivated reasoning, seeking out more information about the preferred candidate, negative numbers reflect just the opposite, while values close to 0 would reflect balanced search. The observed range of the variable is from -8 to +17, but its mean is -.17: that is, essentially 0. So overall, our subjects did *not* in general engage in selective exposure.

But once again, we are particularly interested in whether our experimental manipulations had any effect on selective exposure. The ANOVA results are shown in Table 2, with the means

¹⁴We ran this same analysis on a dependent variable measuring “depth of processing,” calculated as the amount of time spent reading a particular information item/the total number of words in that item. Results were somewhat weaker, though essentially the same. See the Appendix for more information on this analysis.

displayed in Figure 3. And once again we see a now familiar pattern of results. It is likely Republican voters, in the diverse media, negative ads condition, who stand out from everyone else by engaging in considerable selective exposure. Voters in every other condition of our experiment engaged in relatively balanced search, on average. But likely Romney voters, given the opportunities provided by a modern ideologically diverse “Viewer’s Choice” media environment, and the motivation from exposure to negative ads, take advantage of that situation by reading a lot more stories about their own candidate. They seem particularly determined to avoid the cognitive dissonance that might come from exposure to information that would challenge their candidate preference.

***** Insert Table 2 and Figure 3 about here *****

Affective Polarization

We collected two measures of affective polarization at the end of our first wave of data collection, 100-point feeling thermometer evaluations of Barack Obama and Mitt Romney, where polarization is defined as the absolute value of the difference between the ratings of the two presidential candidates; and strength of vote choice preference, where polarization is reflected in a strong (vs. not so strong) candidate preference.

Note that all of our subjects had already lived through a pretty long (and polarizing?) real world election campaign before they began our experiment. Druckman and Leeper (2012) talk about “pretreatment effects” in experimental research, and this is exactly what we have here. We were not sure if our experimental manipulations, consisting of nothing more than what subjects could have been exposed to or chosen to learn about the candidates themselves, and delivered late in the campaign, would have enough juice, enough punch, to increase polarization any more than the actual presidential campaign already had. Thus the timing of this experiment provides a

very conservative test of our hypotheses.

Table 3 reports the ANOVA results for the feeling thermometer measure from the full model (which includes the “no article search” control condition). First, we should note that the amount of affective polarization in our data is quite large. The mean across all conditions is just over 56, slightly larger than the mean of 48 in the 2012 ANES survey. Candidate preference had absolutely nothing to do with this large difference. Likely Democratic and Republican voters both liked their own candidate, and disliked his opponent, *a lot*. The only significant difference in the ANOVA is the Media Environment by Ad Tone interaction, and its effect is dramatic. As shown in Figure 4, in the control condition, where subjects saw only the two political ads, or the mainstream news condition, where subjects could examine articles only from the web pages of mainstream news outlets, affective polarization was about seven and three points greater in the positive ad condition compared to the negative condition, respectively. It appears that most voters in these conditions largely rejected the attacks from either candidate in the negative ad conditions.

But in the diverse media condition, where subjects had the ability to easily check out the claims made in the attack ads, and the leeway to shape the answer they got, polarization was noticeably greater in the negative ad condition compared to the positive ad condition—about 15 points greater. The average polarization score in the Diverse, Negative Ad condition is the highest seen in this study, 67.6, while the average score in the Diverse, Positive Ad condition is the lowest, 52.7. Thus, we conclude that it is not just the diversity of media outlets, but the interaction between that diversity and the tone of campaign ads, that affects polarization. It is exposure to negative advertising combined with the diversity of media sources available, and not just easy access to additional information, that is the driving force behind polarization in our

experiment.

***** Insert Table 3 and Figure 4 about here *****

This basic pattern of results is replicated if we switch dependent variables to strength of (pre-election) vote preference, which like the feeling thermometer variable, displays a high degree of polarization. Of those who reported a candidate preference, a full 80 percent said their preference was “Strong,” while only 20 percent said it was “Not Strong.” We regressed Strength of Vote Choice Preference on dummy variables representing the various experimental manipulations, and again found a highly significant diverse media by negative ad interaction ($p < .008$). As shown in Table 4, *even controlling for strength of party identification*, the strongest predictor of strength of vote preference we could think of, we still see a very significant diverse media by negative ad interaction. Even very late in the 2012 presidential campaign, our Media Environment and Ad Tone manipulations are having their theoretically predicted effects. The model predicts that strong party identifiers in the diverse media, negative ads condition are a full seven percent more likely to have a strong vote preference, than strong party identifiers in the positive ads control condition.

***** Insert Table 4 about here *****

Discussion

For the past several decades, observers of American politics have worried about a growing polarization of politics in the country, the lining up of partisans into two distinct camps who barely seem to coexist in the same world, who find compromise next to impossible, and who would rather see the other side lose than the country win. The evidence for polarization at the elite level is incontrovertible. While the public has clearly lagged behind elites in this matter, there is growing evidence from at least some indicators of polarization at the mass level as well.

Polarization, almost by definition, is a process that changes over time. If we want to help explain its growth, we must look for causes that have also changed over time. Our study provides strong evidence that the combination of the modern high-choice, ideologically diverse media environment, and exposure to negative political ads, can significantly increase affective polarization among the public. Our experiment manipulated the nature of the media environment to isolate its effect. Unfortunately, no one was studying information search 40 years ago during the Broadcast News era. But we experimentally recreated that era by providing subjects access only to articles from mainstream news sources in one of the conditions of our study. Fast-forwarding 30 or 40 years, the current high-choice, diverse media era was represented in our experiment by access to liberal and conservative news sources, along with mainstream ones. Any change in the degree of polarization over time is represented in our experiment primarily by the difference between these two treatment conditions.

It is almost certainly the case that the proportion of political ads aired has grown more negative over the past 40 years (see for example Geer, 2006). There is incontrovertible evidence that the *amount* of political advertising has increased dramatically over time, however, and these two facts together make it clear that the probability that a voter would have been exposed to at least some negative advertising has increased over time. We found that exposure to negative rather than positive ads led to a 15 point increase in affective polarization in the diverse media condition, but had almost no effect whatsoever in the mainstream media condition. This 15 point effect we observed in our experiment is almost identical to the actual increase in affective polarization that occurred between 1996 and 2012, after the dramatic changes in the media environment that came about with the introduction of the Internet. Affective polarization may be, in effect, what the candidates are *trying* to achieve when they attack their opponents, but the

success of those efforts could have larger systemic implications for our government itself. Recent meta-analytic summaries of the negative campaigning literature have concluded that exposure to negative political ads is reliably associated with drops in both political efficacy and trust in government, two general political attitudes that could have long-term consequences for our system of government (Lau et al, 2007). We offer affective polarization as another unintentional but negative consequence of exposure to attack ads.

As expected, we found strong partisan heterogeneity on information search and selective exposure in the responsiveness of Obama and Romney supporters to our experimental manipulations. As shown in Figures 2 and 3, it is primarily Romney supporters who react to exposure to negative political ads, in the context of our modern diverse media environment, by seeking out additional information, particularly information about their own candidate. This finding is consistent with evidence from Iyengar and Hahn (2009), who randomly assigned current news articles (falling into various “hard” and “soft” news categories) to 1 of 4 different news outlets (Fox News, NPR, CNN, or the BBC) and then asked online respondents which article they would want to read. Compared to selection rates among a control group shown the same stories but without any media labels, Democrats were significantly less likely to select Fox News articles, while by a much larger margin, Republicans were much more likely to want *to read* articles from Fox News.

How can we explain these partisan differences? Although there is much discussion in the political psychology literature about the differential needs and values of liberals and conservatives (see Feldman, 2013, for a recent review), the most straightforward explanation is the role of elite cues. Since at least the time of Vice President Spiro Agnew, Republican political elites have complained about a liberal bias in the mainstream media. Eveland and Shah (2003)

report, with nationally representative survey data collected in 2000, that Republicans are particularly likely to perceive that the media is biased against their party's candidates. The effect of party identification is by far the strongest in their data (see p. 114). Lee (2005) reports similar evidence from the 1996 ANES survey, that even controlling on political cynicism, conservative and Republican identification are both independently associated with distrust of the media. Suspected media bias, then, which conservatives and Republicans hear about regularly from party elites, would be a strong motivation for selective exposure among their faithful. (See also Watts et al, 1999.)

We also want to provide a few thoughts on the ecological validity of our experimental treatments. We were in the field studying a real election during the last month of the 2012 presidential election campaign. We exposed all of our subjects to two actual ads from that campaign, and we clearly should not generalize from this treatment to the entire electorate. One of the least realistic aspects of most experiments on media effects is forced exposure to the manipulated message (Hovland, 1959), which most experimental subjects will pay more attention to than the average person would if somehow exposed to the same message outside of the lab, and our ad-tone manipulation is certainly open to that criticism.

Everyone does not see political ads, even during a presidential election campaign. But *most* people do. And virtually everyone living in battleground states was exposed to many political ads which they did not actively choose to watch. We see no problem generalizing our results to residents of battleground states. We wish we had thought to ask our MTurk subjects what state they lived in, because if we had we could use living in a battleground state as an instrument for likely exposure to many political ads. We suspect that viewing two (additional) positive/negative ads in our experiment reminded subjects of the many prior positive/negative

Obama and Romney ads they had seen during the campaign, and how those ads made them feel. If we are right, then we would predict that our experiment would have had stronger effects on subjects actually living in battleground states. But this is mere speculation, and we have no way of testing it.

Now, the first reaction people in real life have who see a political ad is probably not to go immediately to the Internet to check out its accuracy, as subjects in our experiment could. But that is because most of the time when people in real life are incidentally exposed to a political ad, they are doing something other than browsing the Internet. What our experiment did was to provide effortless access to something like the Internet, an easy opportunity to learn more about the candidates immediately after seeing one of their ads. We would argue that *immediately* going to the Internet after seeing a political ad was an artificial aspect of our study, one necessitated by the experimental method; but getting onto the Internet *at some point* not too long after seeing a political ad (or anything else, for that matter) is an everyday occurrence, given how often people use the Internet these days. And whenever you are on the Internet, you have the opportunity to visit the web pages of all of the news organizations from which we downloaded articles for this experiment. We would argue, then, that the ecological validity of our experiment was pretty high. And if the experiment occurring towards the end of a very intense political campaign means that we have conservative estimates of the effects of our manipulations, as we think is likely, then our findings are all the more impressive.

This study is also important in that it provides strong evidence for the *processes* through which the increase in affective polarization may have come about. The combination of a diverse Viewer's Choice media environment and exposure to negative ads led to significantly greater information search, deeper information processing, and selective exposure disproportionately

favoring subject=s preferred candidate B especially among likely Romney voters. It is important to reiterate that the observed affective polarization was *not* limited to Republicans, however, so our process data is only providing part of the explanation. But having any process data that can help explain an experimental finding is a big plus, and the dynamic process tracing experimental platform we utilized in this study is ideal for gathering that type of data. For all the talk about the dire consequences of selective exposure to one-sided information environments, there is little direct evidence for the phenomenon during an actual political campaign (as opposed to after-the-fact self-reports about media consumption).

We want to close by stressing the importance of continuing to study information gathering as a vital link in virtually any type of attitude formation or decision making. Political communications scholars have begun to think about how selectivity in media consumption alters how we have to study communications effects (Bennett and Iyengar, 2008; Geer et al, 2013; Gaines and Kuklinski, 2011). Arceneaux and Johnson (2013; Arceneaux, Johnson, and Murphy, 2012) have conducted several clever experiments examining choice in watching cable television. Lau and Redlawsk (2006) envision voting as an information gathering process, much of which involves discretionary search, and have devised the DPTE platform as one method for studying how voters process information during political campaigns (see also Andersen, 2011; Ditonto, 2013; Ditonto, Hamilton, and Redlawsk, 2013; Greco, 2014; Kleinberg, 2013, 2014; Pierce, 2014). Valentino et al, 2009, and now we in this paper, are beginning to study information gathering from the Internet. We need these methods (and many more) before we will be able to make serious headway in understanding how the modern media environment impacts political processes and democratic citizenship.

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Table 1
Effect of Media Environment, Ad Tone, and Candidate Preference
on Information Search

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Media Environment (Diverse)	43.16	1	43.16	3.76	.054	.018
Ad Tone (Negative)	40.81	1	40.81	3.56	.061	.017
Candidate Preference (Romney)	6.33	1	6.33	0.55	.459	.003
Media Env. X Ad Tone	67.23	1	67.23	5.86	.016	.028
Media Env. X Cand. Pref.	21.69	1	21.69	1.89	.171	.009
Ad Tone X Cand. Pref.	76.22	1	76.22	6.64	.011	.031
Media Env. X Ad Tone X Cand. Pref.	202.54	1	202.54	17.64	.000	.079
Corrected (Full) Model	556.71	9	61.86	5.39	.000	.190
Error	2376.30	207	11.48			

Note: Analysis includes controls for subjective candidate knowledge coming into the experiment, and sample. N = 217.

Table 2
Effect of Media Environment, Ad Tone, and Candidate Preference
on Selective Exposure

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Media Environment (Diverse)	29.89	1	29.89	3.30	.071	.016
Ad Tone (Negative)	20.41	1	20.41	2.26	.135	.011
Candidate Preference (Romney)	165.87	1	165.87	18.33	.000	.081
Media Env. X Ad Tone	18.56	1	18.56	2.05	.154	.010
Media Env. X Cand. Pref.	20.83	1	20.83	2.30	.131	.011
Ad Tone X Cand. Pref.	22.32	1	22.32	2.47	.118	.012
Media Env. X Ad Tone X Cand. Pref.	39.93	1	39.93	4.41	.037	.021
Corrected (Full) Model	256.15	9	28.46	3.15	.001	.120
Error	1873.40	207	9.05			

Note: Analysis includes controls for subjective candidate knowledge coming into the experiment, and sample. N = 217.

Table 3
Effect of Media Environment, Ad Tone, and Candidate Preference
on Affective Polarization

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Media Environment	846.43	2	423.21	0.70	.497	.003
Ad Tone (Negative)	242.99	1	242.99	0.40	.527	.001
Candidate Preference (Romney)	695.60	1	695.60	1.15	.284	.003
Media Env. X Ad Tone	6547.86	2	3273.93	5.41	.005	.024
Media Env. X Cand. Pref.	1261.57	2	630.78	1.04	.353	.005
Ad Tone X Cand. Pref.	22.80	1	22.80	0.04	.846	.000
Media Env. X Ad Tone X Cand. Pref.	297.48	2	148.74	0.2	.782	.001
Corrected (Full) Model	42361.40	13	3258.57	5.39	.001	.137
Error	267393.09	442	604.96			

Note: Analysis includes controls for subjective candidate knowledge coming into the experiment, and sample. N = 456.

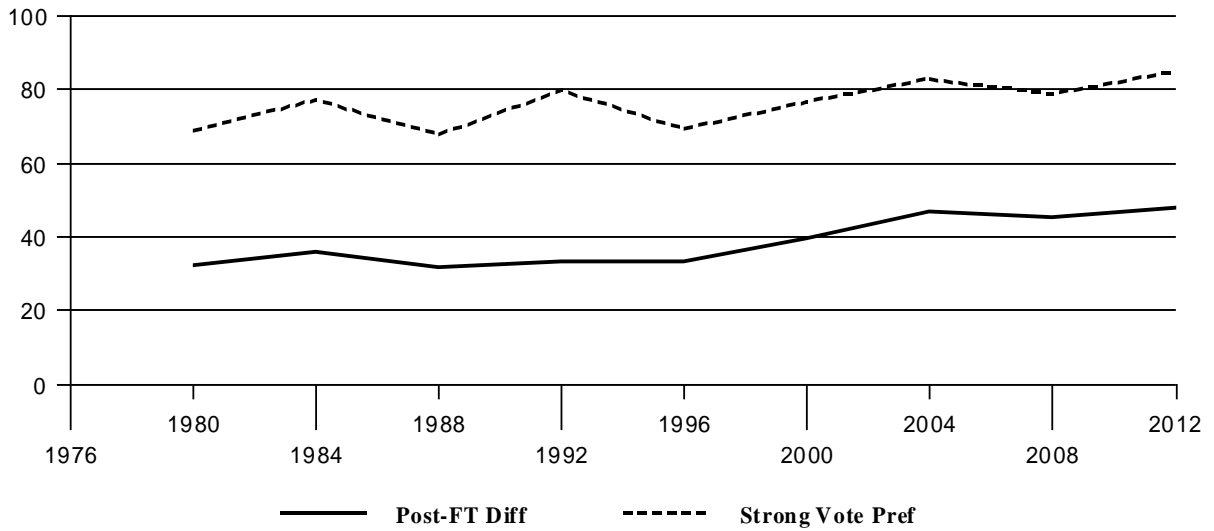
Table 4
Effect of Media Environment, Ad Tone, and Candidate Preference
on Strength of Vote Preference

	B	S.E.
Mainstream News Condition	.253	(.545)
Diverse Media Condition	-.871	(.597)
Ad Tone (Negative)	-.922*	(.416)
Candidate Pref. (Romney)	-.382	(.309)
Mainstream News X Ad Tone	.469	(.723)
Diverse Media X Ad Tone	2.310**	(.874)
Strength of Party ID	2.493***	(.505)
Constant	.971	(.921)
Omnibus Chi-Square	45.48***	(7 df)
Nagelkerke R Square	.22	

* $p < .05$ ** $p < .01$ *** $p < .001$

Note: Table entries are logistic regression coefficients, with standard errors in parentheses. N = 297.

Figure 1
Affective Polarization in the American Electorate, 1976 - 2012



Note: Data come from the 1980 – 2012 American Nation Election Studies.

Figure 2
Effect of Media Environment, Ad Tone, and Candidate Preference on Information Search

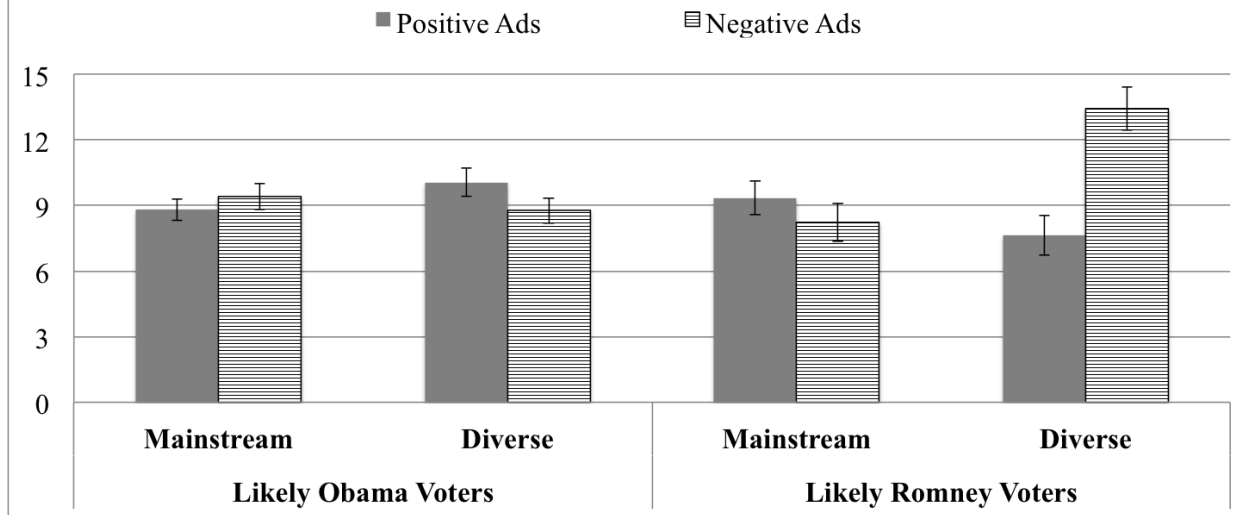


Figure 3
Effect of Media Environment, Ad Tone, and Candidate Preference
on Selective Exposure

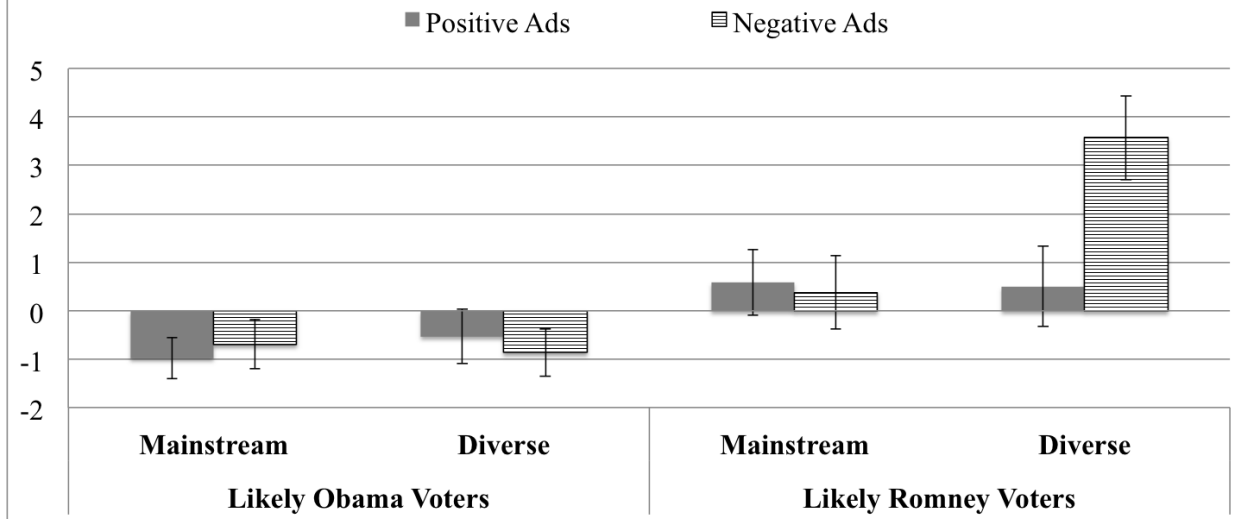
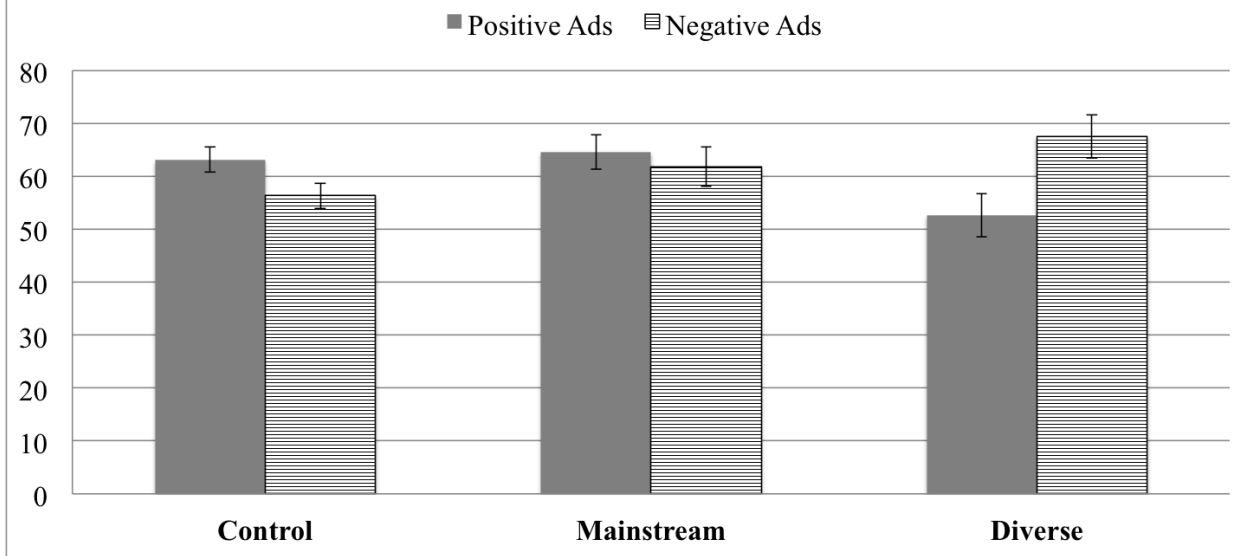


Figure 4
Effect of Media Environment and Ad Tone
on Affective Polarization



Online Appendix

Validation Study: Creation of Experimental Stimuli

Over the summer of 2012 we put several undergraduate interns to work finding brief articles about Obama=s and Romney=s Aposition@ on 23 different topics that we believed voters would like to know about the candidates. The interns were charged with finding at least five articles about each candidate on each topic: three from the web pages of purported mainstream news sources (the *Associated Press*, *CBS News*, *Reuters News Service*, and *USA Today*), one from either of two news organizations with liberal reputations (*MSNBC* or the *New York Times*), and one from either of two news sources with reputations for being conservative (*Fox News* or the *Wall Street Journal*).¹⁵ Three of the 23 topics had to be dropped because we could not find enough stories, but this left us with a total of 40 sets of articles (one about each of the two candidates, on 20 different topics), where each set contained articles from five different ideologically diverse news sources, for a total of 200 individual articles.

To make sure that the articles our interns found on the web pages of these different news organizations comported with their reputations, we recruited a preliminary set of 261 subjects to read and evaluate the 40 sets of articles.¹⁶ To limit the amount of work that any rater would be asked to do, we divided these 40 sets of articles into five distinct groups, where each group

¹⁵We thank Isabella Briones, Michael Chernin, and Carolyn Lau for their invaluable help with different aspects of this project.

¹⁶A little fewer than half (119) of these subjects were students from two of the authors= classes, who were doing the ratings as a class assignment. The remainder (142 people) were recruited from MTurk, and paid \$2 for their time. Fifty-one percent of our subjects were male; 66% were white, 7% black, 11% Asian, and 11% Hispanic. Fifty-nine percent were liberal, 22% moderate, and 19% conservative; 55% were Democrats, 16% Republican, and 2% independent. Thus our pool of raters had a noticeable liberal/Democratic bias. We make no claims about the absolute or objective level of bias in any of these articles, only that subjects could, when confronted with a set of articles about a particular topic, reliably detect that some of the articles on that topic had a noticeable pro-Obama slant, while other articles had a noticeable pro-Romney slant.

included eight sets of articles (four about Obama, four about Romney) on different topics. Subjects were randomly assigned to read the 40 articles in one of these five groups. Subjects were asked to perform one simple task: Rate each article on a 5-point scale ranging from "Strong liberal/Democratic/Pro-Obama Slant" to "Strong conservative/Republican/Pro-Romney Slant." Because we wanted to emphasize comparative ratings, subjects were asked to read all five articles within a set first, and then rate each on the extent to which any of them were slanted in one direction or the other. The order of the articles was randomized within each set. When subjects in our main experiment select any of these articles to read, they will know its actual source. But that was *not true* of the raters in this preliminary study, who performed this task "blind" that is, without knowing the source of any of the articles they were rating. Thus if we find differences across news organizations, it will be due to the actual content of the stories and not to the reputation of the news organization itself.

The results of this preliminary study are shown in Figure 5, averaged across the ratings of all stories from each news source. As expected, stories from *MSNBC* and the *NY Times* were rated as having a significantly more liberal/Democratic/pro-Obama slant ($M = 2.54$, overall) than stories from the four mainstream news organizations ($M = 2.90$, $t = 12.63$), which in turn were perceived to be significantly more liberal than stories from *Fox News* and the *Wall Street Journal* ($M = 3.56$, $t = 17.98$). Of course, stories from the two liberal organizations were rated as significantly more liberal than stories from the two conservative news organizations ($t = 22.66$).¹⁷

¹⁷Both our college students and our MTurk subjects had a noticeable liberal-Democratic bias in their own political preferences, and subject ideology does interact with the rating of the articles. There were no ideological difference in the ratings of the articles from the liberal news sources or the mainstream news sources, but very liberal subjects rated the articles from conservative news sources as more conservative than did subjects from the other ideological

***** Insert Figure 5 about here *****

This is exactly what we were trying to create. The stories available to subjects in the diverse media condition are in fact more ideologically extreme (more liberal in some cases, more conservative in others) than the stories available in the mainstream news condition. It is not just the reputation of the news sources that varies between our mainstream news and diverse media conditions, but the actual news that they choose to report.¹⁸

Additional Detail on Experiment Method

All volunteers for the experiment were directed to a web page where they would begin the study. After reading an online informed consent page, subjects in the ads-only control condition read:

We have collected copies of several political ads that Obama and Romney are showing in different places around the country right now. The computer is going to randomly select one of these 30-second ads from each of the candidates to show you. We apologize if you have already seen either of these ads.

Subjects in the two treatment conditions were instructed:

We have gathered together a series of brief articles from a number of different media sources about each major candidate's policy stands, their personal backgrounds, their families and so on -- the type of information that many people say they like to learn about the candidates before they make their vote decisions.

[Diverse media condition only: Some of these media sources are usually

groups. Controlling on ideology, however, we still see the hypothesized differences between the nature of the articles from the different news sources.

¹⁸At the end of this preliminary study, after they had rated all of the individual articles, subjects were asked to rate what they believed was the ideological bias of each of the eight news organizations from which the articles in this study had been drawn. The ratings of the *reputations* of these eight news organizations closely mirrored the ratings of the actual bias in the stories selected from their web pages.

considered fairly liberal, others fairly conservative, and others pretty mainstream and balanced.] We are studying what information people would still like to learn about the candidates at this point in the campaign.

In a few minutes you will have the opportunity to examine over 100 of these brief articles. All of the available information will be listed in a big table, and all you will have to do is insert a code number (listed in the table), click the "Next" button, and the selected article will appear for you to read. Click the "Close" button and you will be returned to this table to select another article to examine.

All of the articles in our study were taken directly from these organization's web pages. (Sometimes the articles were quite long, in which case we just copied the first few paragraphs to keep all of the stories roughly the same length.) Please look at as many of these articles as you find interesting.

Of course, people do not actively choose to learn everything they end up knowing about political candidates, as you are doing with these news articles in our study. The candidates do their best to expose you to their messages, whether or not you want to hear them. We have gotten copies of several political ads that each candidate is showing in different places around the country right now. The computer is going to randomly select one of these ads from one of the candidates to show you after you have examined your third article, and randomly selection an ad from the other candidate to show you after you have examined your sixth article. (We apologize if you have already seen either of these ads.)

Figure 6 shows how the basic article choice page appeared in the mainstream news condition, while Figure 7 illustrates one of the mainstream articles that was available in this media environment. Figure 8 shows what the article choice page looked like in the diverse media condition, while Figure 9 illustrates one of the conservative articles that was available in this media environment.

***** Insert Figures 6-9 about here *****

Our experiment does not include a “pure” control condition for several reasons. First, our resources were being pushed to the limit, and we did not want to lose the statistical power that would result from devoting a fifth of our subjects, say, to a control condition. We were also interested in how much subjects would think they had learned from the experiment, and we could think of no way to ask such a question of a pure control group. But most importantly, it was not clear what such a “no treatment” control group would represent in the context of our experiment. We were not running a perfectly controlled experiment where all subjects would come into the experiment without any prior knowledge of the candidates. Nor were subjects living in some sort of neutral or median media environment – they were all living in our modern high choice, diverse, partisan media environment. So any “no treatment” control group would actually represent the peculiarities of the 2012 campaign context – not particularly generalizable, and “closer” to some of our treatment conditions than others.

Depth of Processing

When you look at any news article, you can ignore it completely, scan it briefly, or read it carefully and think about the arguments included in the article. Just because likely Romney voters looked at more distinct articles in the Diverse Media, Negative Ads condition, this would not necessarily mean that they should learn more from those articles if they somehow compensated for looking at more articles, by looking at them for less time. To make inferences about effort to learn, we need some measure of depth of processing. In cognitive psychology, a simple indicator of processing depth is how much time a subject spends reading some stimulus (see Carver, 1990; Craik and Lockhart, 1972; or Kintsch, 1999, for much more thorough

discussions). With written material you must control word length, of course, and if possible, for individual differences in reading speed. We estimated normal reading speed by how quickly subjects read several introductory and instructional screens that appeared during the course of the experiment. Reading speed is typically measured in words per minute, and it is standard to take the natural log of this ratio to minimize the weight of very slow reading times (which can often reflect flagging attention as much as slow reading). Controlling on the number of words in any article, depth of processing is then defined as how much slower or faster than their normal reading speed it took a subject to read any given news article. Positive numbers mean a subject spent more time (per word) reading the articles selected about the candidates than they did reading the instructions B that is, they processed the articles more carefully. Negative numbers would mean just the opposite.

Averaged across all subjects and all articles, the mean depth of processing controlling on reading speed was .53.¹⁹ We primarily want to see if our manipulations affected processing depth. The ANOVA results are shown in Table 5, and the means displayed in Figure 10. Although the results for Depth of Processing are not quite as strong statistically as they are for information search, the pattern of results is essentially the same. Not only do likely Romney voters look at significantly more articles in the diverse media negative ads condition, but they also process those articles more deeply. We can therefore expect that they will learn more from those articles as well.

***** Insert Table 5 and Figure 10 about here *****

¹⁹The range was -1.47 to +2.50. It is hard to get an intuitive feel for exactly what this number means. The best we can do is to say that because it is positive, it means that on average subjects spent more time (controlling on number of words) reading the news articles than they did the various instructional screens. If we look at the raw numbers before taking logs, subjects on average read the articles about 70 percent more slowly than they read the instructions.

Perceived Learning about the Candidates

The point of any political campaign is for citizens to learn enough about the competing parties or candidates that they can cast reasonably informed votes. Some of that learning is discretionary, and therefore under the person=s control. Citizens actively choose to listen to speeches, watch political debates, and read newspaper or Internet articles about the issues and competing candidates in an election in order to learn about them. Our experiment gave subjects in our two media treatment conditions the opportunity to learn something about Obama and Romney shortly before the 2012 election. But some of the learning about the candidates and issues in an election is incidental, accidental, obtained while you were doing something else, such as watching your favorite show on television. Candidates try their best to expose even reluctant, uninterested citizens to their campaign messages in the guise of political ads that often flood the airways in the months and weeks before an election.

Our analysis so far has been limited to subjects randomly assigned to the two media environment treatment conditions who could choose to learn more about Obama and/or Romney from a large menu of options. But half of our subjects were in a no discretionary choice control condition and only watched the two (positive or negative) political ads. We expand the analysis now to include these control subjects. After completing the campaign learning portion of the experiment (i.e., viewing the two political ads, and examining whichever web articles they desired), subjects were asked how much they thought they had learned about Barack Obama and Mitt Romney (order randomized) during the study. While we did not have the experimental time available to ask the comprehensive set of objective questions that would have been required to measure actual learning from our experiment (given the large variety of articles subjects could have chosen to examine), we combined answers to these last two questions into a scale of

Perceived Candidate Learning ($\alpha = .83$).

The ANOVA results from analyzing this summary scale are shown in Table 6. There are only two main effects in these data. Likely Obama voters said they thought they had learned a little more from the experiment than likely Romney voters; and the (now three) Media Environment conditions differed significantly from each other. Figure 11 displays these latter results. The least amount of perceived learning occurred in the no discretionary learning control condition, compared to the two treatment conditions where, in addition to the two political ads, subjects had the opportunity to read short media articles about Obama and Romney. This makes perfect sense. A planned comparison revealed that perceived learning in the control condition was significantly lower than the other two cells. But there was no effect whatsoever of Ad Tone on perceived learning, nor any interaction between any of our variables.

***** Insert Table 6 and Figure 11 about here *****

Additional References Cited

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- Craik, Fergus I. M. and Robert S. Lockhart. 1972, "Levels of Processing: A Framework for Memory Research," *Journal of Verbal Learning and Verbal Behavior*, 11: 671-684.
- Kintsch, Walter. 1999. *Comprehension: A Paradigm for Cognition*. Cambridge, UK: Cambridge University Press.

Appendix Table 5
Effect of Media Environment, Ad Tone, and Candidate Preference
on Depth of Processing

Source	Sum of Squares	df	Mean Square	F	Sig.
Media Environment (Diverse)	1.39	1	1.39	3.01	.084
Ad Tone (Negative)	1.04	1	1.04	2.20	.140
Candidate Preference (Romney)	0.00	1	0.00	.00	.999
Media Env. X Ad Tone	.11	1	.11	.24	.626
Media Env. X Cand. Pref.	.82	1	.82	1.78	.184
Ad Tone X Cand. Pref.	1.58	1	1.58	3.43	.066
Media Env. X Ad Tone X Cand. Pref.	1.24	1	1.24	2.68	.103
Error	97.37	211	.46		

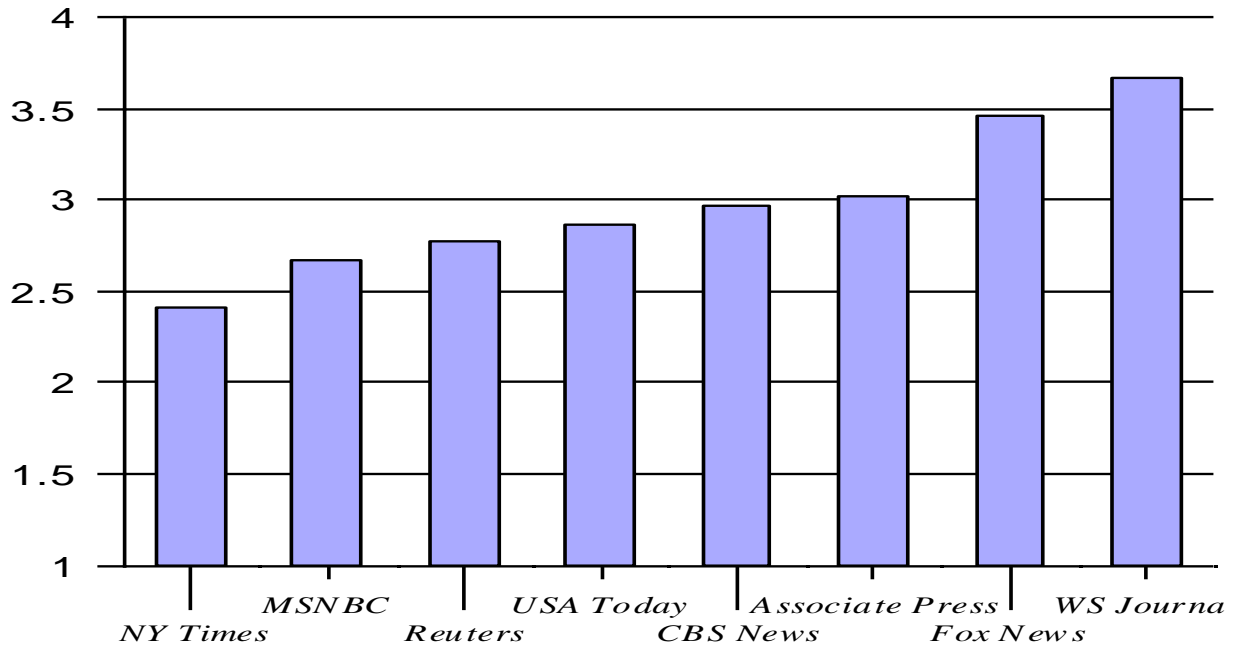
Note: Analysis includes controls for subjective candidate knowledge coming into the experiment, and sample.

Appendix Table 6
Effect of Media Environment, Ad Tone, and Candidate Preference
on Perceived Learning

Source	Sum of Squares	df	Mean Square	F	Sig.
Media Environment (Diverse)	16.29	2	8.15	13.48	.000
Ad Tone (Negative)	.04	1	.04	.06	.809
Candidate Preference (Romney)	3.35	1	3.35	5.54	.019
Media Env. X Ad Tone	1.01	2	.51	.84	.433
Media Env. X Cand. Pref.	.95	2	.48	.79	.456
Ad Tone X Cand. Pref.	.05	1	.05	.08	.782
Media Env. X Ad Tone X Cand. Pref.	1.89	2	.95	1.57	.210
Error	272.60	451	.60		

Note: Analysis includes controls for subjective candidate knowledge coming into the experiment, and sample

Appendix Figure 5
Rated Bias of Stories from Different News Organizations



Note: Scale ranged from 1 (Strong liberal/Democratic/pro-Obama slant) to 5 (Strong conservative/Republican/pro-Romney slant).

Appendix Figure 6
Article Selection Screen, Mainstream News Condition

You may select anything you wish to learn about either of the candidates by entering the number of the article you wish to examine. After you have finished reading an article, click the "Next" button and you will be returned to this screen.

	<i>Obama News Sources</i>				<i>Romney News Sources</i>			
	USA				USA			
	AP	CBS	Reuters	Today	AP	CBS	Reuters	
	<u>Today</u>							
Economic Stimulus	OA12	OC12	OR12			RA12	RC12	RR12
Gov't Spending	OA13	OC13	OR13			RA13	RC13	RR13
Health Insurance	OA14	OC14	OR14			RA14	RC14	RR14
Taxes	OA15	OC15	OR15			RA15	RC15	RR15
Abortion		OC21	OR21	OU21		RA21	RC21	RR21
Education Policy	OA22	OC22	OR22			RA22	RC22	RR22
Gay Rights		OC23	OR23	OU23			RC23	RR23
Gun Control		OC24	OR24	OU24			RC24	RR24
Women's Rights		OC25	OR25	OU25			RC25	RR25
Defense Spending		OC31	OR31	OU31			RC31	RR31
Environment		OC32	OR32	OU32		RA32	RC32	RR32
Immigration	OA33	OC33	OR33			RA33	RC33	RR33
Military Intervention		OC34	OR34	OU34		RA34	RC34	RR34
Terrorism		OC35	OR35	OU35		RA35		RR35
Family	OA42	OC42		OU42		RA42	RC42	
Personality		OC43	OR43	OU43			RC43	RR43
Personal Wealth		OC44	OR44	OU44			RC44	RR44
Political Philosophy	OA45	OC45	OR45			RA45	RC45	RR45
Poll Results				PA52		PC52	PR52	PU52

Appendix Figure 7
Associated Press Article about Barack Obama's Economic Stimulus Plans



Other AP Sites

the essential global news network

ap.org ho

AP Top News at 3:20 p.m. EDT

[Obama outlines veterans jobs programs](#)

In an effort to cut the unemployment rate among veterans, the Obama administration is calling for a new conservation program that would put veterans to work rebuilding trails, roads and levees on public lands.

The administration also will seek more grant money for programs that allow local communities to hire more police officers and firefighters.

Interior Secretary Ken Salazar said that the administration will propose spending \$1 billion that would be used to pay an estimated 20,000 veterans to work restoring habitat and eradicating invasive species, among other activities.

The administration will also propose a training program designed to help veterans wanting to start their own small businesses.

Appendix Figure 8
Article Selection Screen, *Diverse Media* Condition

You may select anything you wish to learn about either of the candidates by entering the number of the article you wish to examine. After you have finished reading an article, click the "Next" button and you will be returned to this screen.

End9 - *I have learned as much as I want; I would like to answer the remaining questions and complete the study now.*

	<i>Romney News Sources</i>			<i>Obama News Sources</i>		
	<u>Liberal</u>	<u>Mainstrm</u>	<u>Conserv.</u>	<u>Liberal</u>	<u>Mainstrm</u>	<u>Conserv.</u>
Economic Stimulus	RL12	RM12	RN12	OL12	OM12	ON12
Gov't Spending	RL13	RM13	RN13	OL13	OM13	ON13
Health Insurance	RL14	RM14	RN14	OL14	OM14	ON14
Taxes	RL15	RM15	RN15	OL15	OM15	ON15
Abortion	RL21	RM21	RN21	OL21	OM21	ON21
Education Policy	RL22	RM22	RN22	OL22	OM22	ON22
Gay Rights	RL23	RM23	RN23	OL23	OM23	ON23
Gun Control	RL24	RM24	RN24	OL24	OM24	ON24
Women's Rights	RL25	RM25	RN25	OL25	OM25	ON25
Defense Spending	RL31	RM31	RN31	OL31	OM31	ON31
Environment	RL32	RM32	RN32	OL32	OM32	ON32
Immigration	RL33	RM33	RN33	OL33	OM33	ON33
Military Intervention	RL34	RM34	RN34	OL34	OM34	ON34
Terrorism	RL35	RM35	RN35	OL35	OM35	ON35
Family	RL42	RM42	RN42	OL42	OM42	ON42
Personality	RL43	RM43	RN43	OL43	OM43	ON43
Personal Wealth	RL44	RM44	RN44	OL44	OM44	ON44
Political Philosophy	RL45	RM45	RN45	OL45	OM45	ON45
Poll Results		PL52	PM52	PM53	PN52	

Appendix Figure 9 Fox News Article about Mitt Romney's Tax Policy



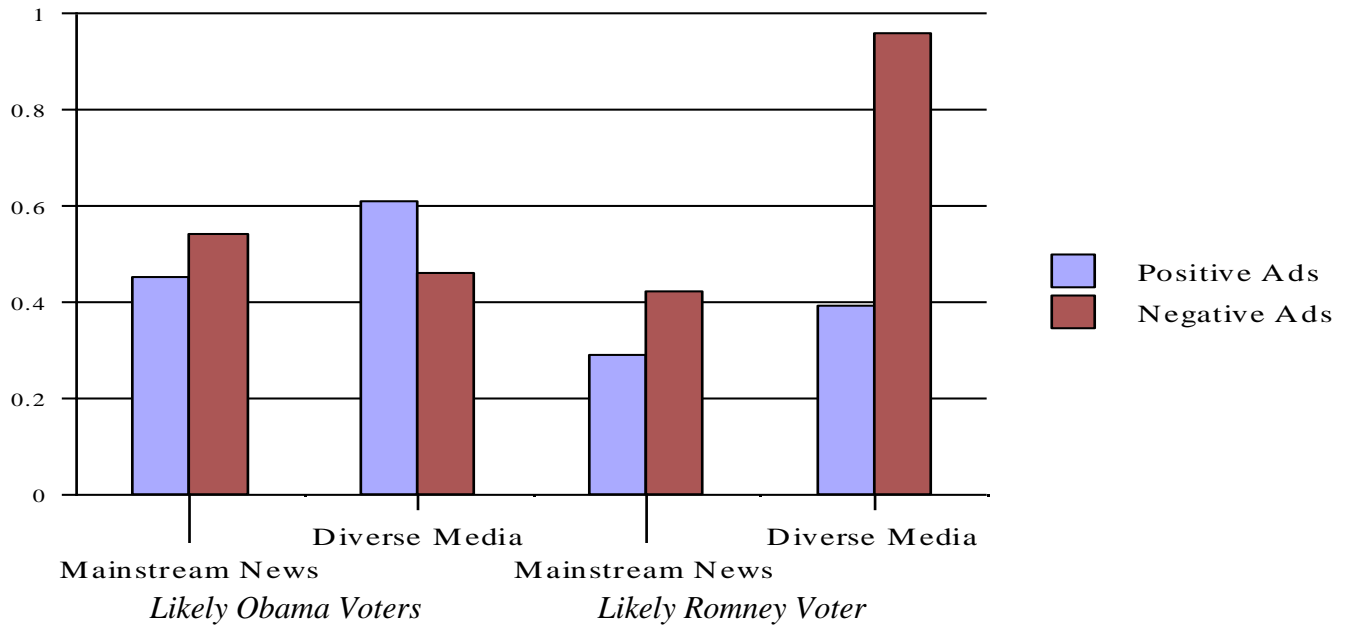
Politics

Romney defends economic plan: I'm not changing progressive tax code

Mitt Romney's economic policy, introduced in detail during a speech in Detroit, would cut individual marginal tax rates by 20 percent 'across the board,' eliminate taxes on capital gains and dividends for families making less than \$200,000, and cut the corporate tax rate from 35 percent to 25 percent.

"I want to get these rates down so we get American workers back into jobs again," he said, adding that he wants to maintain the progressivity of the tax code while lowering the marginal rate across the board.

Appendix Figure 10
Effect of Candidate Preference, Media Environment and Ad Tone
on Depth of Processing



Appendix Figure 11
Effect of Media Environment on Perceived Learning

