The Informative Power of Campaign Advertising

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To Joyce & Robert Motta – who made this project, and all others, possible.

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Chapter 1

Something for Nothing: Can Policy Advertising Address America's Policy Voting Problem?

Many Americans struggle to vote for candidates whose policy interests match their own. This is hardly a controversial claim in the study of American political behavior, and nearly seven decades worth of scholarship has identified a compelling reason why. Americans simply lack the knowledge about politics necessary to connect their preferences on major policy issues to those of individuals running for elected office.

This poses an important problem for Americans' representation in government. If Americans have difficulty recognizing which politicians hold views that match their own, they may elect individuals who are unsympathetic or outright opposed to their policy concerns. This is *especially* problematic if those who have the most trouble voting in line with their policy interests are also those who are disadvantaged in other ways.

Unfortunately, Americans' knowledge about politics tends to be raced, classed, and gendered. Those holding the least knowledge tend to come from groups traditionally under-represented in government. This dynamic implies that representational inequalities resulting from Americans' difficulties with policy voting tend to reflect existing social and political inequalities.

Well-documented gaps in citizen knowledge may suggest a grim picture of contemporary American politics. However, in *The Informative Power of Campaign Advertising*, I identify a potential source of optimism – the millions of short, televised, advertisements Americans encounter regularly over the course of presidential election cycles.

Classic economic theorizing suggests that the political information Americans encounter by chance – sometimes called "free information" – should help those who are the least knowledgable about American politics "catch up to speed." Exposure to free information should help *close gaps* in what Americans know about politics. Although free information can come in a variety of forms, one especially pervasive form of it are the millions of short advertisements that hit the airwaves every election cycle.

Puzzlingly, though, much research on the subject has failed to support the predictions from this theory. Free information in the form of televised political advertising has been shown to either have little effect on closing knowledge gaps, or to actually exacerbate them. Here, I challenge conventional wisdom about the informative power of campaign ads.

1.1   The Informative Power of Campaign Advertising

In the chapters that follow, I build a theoretical and empirical case that the advertisements citizens regularly encounter in the course of presidential campaign cycles do, indeed, close gaps in what they know about politics. Along the way, I offer new data, methods, and insights for studying how Americans learn from the advertisements they see on television, and how that information helps voters select candidates who share their policy sympathies.

I begin by noting that the study of policy voting is typically concerned with public knowledge of basic facts about civics. While civic knowledge is certainly important, I argue that information about where politicians stand on key issues of the day – which I call "campaign knowledge" – is *theoretically required* for policy voting. I demonstrate that campaign knowledge is a strong predictor of whether or not Americans vote in line with their policy preferences – more so than the knowledge of basic civic facts.

I then consider how Americans might acquire campaign knowledge over the course of political campaigns, focusing on campaign advertising. Previous research has typically studied advertisements *en masse* – some of which contain information about where politicians stand on major policy issues ("policy ads"), and some which do not. I argue that policy-focused ads should be uniquely good at informing the public about where politicians stand on the issues, and should ultimately be effective at closing gaps in what people know about where politicians stand. I find strong support for both sets of expectations.

My research suggests that policy-focused advertising can help provide Americans with the information they need to select candidates who share their policy sympathies. Of course, policy advertising is not a panacea. However, so long as Americans are exposed to policy-focused campaign messages, there reason for optimism about Americans' abilities to represent their interests in Washington.

1.2 Why Focus on Presidential Campaigns?

In the chapters that follow, I study the informative power of campaign advertising in *presidential elections only.* There are two reasons for this. First, observing how citizens acquire information about presidential candidates' issue positions poses some-

what of a "tough case" for assessing learning effects. Presidential races are highly
visible (Pew 2016), and basic knowledge about presidential candidates tends to ex-
ceed that of candidates running for office in House and Senate races (Delli Carpini &
Keeter 1993, 1996). Consequently, the amount of latitude that ads have to increase
knowledge about presidential candidates' issue stances may be somewhat smaller than
it otherwise might for less visible races.

Second, there are important data constraints to take into account. As will be-
come apparent later, collecting data about the knowledge of presidential candidates'
issue positions usually entails crafting knowledge items unique to the candidates in
a particular election year. This is an intensive data collection process, and would
necessarily feature items simply not available in extant data.

Of course, I do not mean to suggest that studying knowledge in more localized
contexts, like bi-annual Congressional races, is not important. It certainly is. Instead,
I think of this project as presenting more of a "first step" in offering a new take on
how the public learns from the ads it sees on television, and what those effects imply
for Americans' representation in government.

1.3 The Data

In order to test my theoretical expectations, I bring two different types of data into
an empirical conversation with one another. One source is public opinion data from
nationally representative surveys fielded in three presidential election years: 2008,
2012, and 2016. These surveys asked Americans about their knowledge about basic
political facts, voting behavior, television-viewing habits, and a diverse range of other
politically-relevant questions.

The second data source details the characteristics of millions of political advertisements aired across the United States, over the same timespan. These data can answer basic questions about how many advertisements were aired in a particular area, on a particular day, and on a particular television program. But they can also answer much more sophisticated questions about ad *content*, including the policy issues it talks about, the musical score it features, the images it uses, and much more.

My basic objective is to combine information from both sources to approximate Americans' exposure to campaign advertising over the course of the campaign, and then track how exposure leads to change in individuals' knowledge about politics over the course of each election cycle. Because I will be using these data frequently in several different ways in the pages that follow, I want to provide a brief introduction to each dataset before moving on. I provide more-detailed information about the basic properties of each one as necessary, later on.

The public opinion data I study here come from three different sources – panel (longitudinal) data from 2008 American National Election Study (ANES), cross-sectional data from the 2012 ANES, and longitudinal data from the 2016 Center for the Study of Political Psychology Panel Election Study (CSPP). The 2008 ANES panel study originally recruited 4,240 Americans (by phone) to take part in more than a dozen surveys between early 2008 - 2009. Four of those waves had information necessary to conduct the analyses presented later, conducted in June (N = 1,420), September (N = 2,586), October (N = 2,628), and November (N = 2,665). These data are nationally representative, and respondents were not required to participate in each wave in order to be eligible to take part in future waves.

The 2012 ANES cross-sectional study interviewed more than five thousand Amer-

icans face-to-face (N = 2,054) and online (N = 3,860). This study is also nationally representative, and interviewed respondents prior to the 2012 presidential election, from early September to early November. Finally, I make use of data from three pre-election waves of the CSPP panel study, conducted in July (N = 3,552), September (N = 2,020), and October (N = 1,234). Respondents were initially recruited online in July, and were permitted to take later waves of the survey even if they didn't complete the previous wave. Unlike the ANES studies, however, the CSPP data are not strictly nationally representative. I weight all three studies to national demographic benchmarks (e.g., race, gender, age, educational attainment, income) in order to account for potential asymmetries between the composition of each sample and the American population more broadly.

The political advertising data were formerly collected by the Wisconsin Advertising Project (2008) and are now collected by the Wesleyan Media Project (WMP 2012, 2016b). Based on video files and basic ad meta-data (e.g., information about where and when an ad was aired) provided by the Campaign Media Analysis Group (CMAG), trained coders at WMP content code each ad on hundreds of dimensions. The ad airing data includes spots aired in all 210 media markets (or what Nielsen calls Designated Market Areas, DMAs).

Finally, it is important to note that the empirical approach I adopt here is primarily *observational*. I study how Americans respond to real advertisements that they have the potential to see on television, over time. This is certainly not the only way to study ad effects. Nor is it perfect. However, as I review in much more detail in Chapter 4, this observational approach has an important benefit; it provides unique and externally valid insights into how real-world campaign dynamics influence

campaign advertising effects.

1.4 Dissertation Outline

My dissertation is organized as follows. In Chapter 2, I outline my theoretical expectations. I begin by noting that what Americans know about politics is an important determinant of whether or not they vote in line with their policy preferences. Leading theories and empirical work conceptualize political knowledge as Americans' understanding of basic civic facts. Drawing on classic theorizing in public opinion research, I make the case that what Americans know about politicians' stances on major policy issues – what I "campaign knowledge" – is theoretically required to vote in line with one's policy preferences. Civic knowledge, on the other hand, is likely less relevant.

I then consider how Americans might acquire campaign knowledge over the course of political campaigns. I summarize two competing theoretical expectations about the link between exposure to political advertising and what citizens know about politics. One theory, and associated empirical findings, suggests that ad exposure is likely to best inform those who are already quite knowledgable about and interested in politics. I call this the "Exacerbation Thesis." A competing theory, which I call the "Equalization Thesis," contends that ad exposure should best inform those who are the least interested and informed about politics.

I then present a theoretical alternative. Whereas these two theories conceptualize political advertisements *en masse*, I argue that what ads *actually say* influences their capacities to inform. I make the case that while the Equalization Thesis provides a reasonable way for understanding ad-based learning effects, it it is in need of revision. I argue that policy-focused advertising should be uniquely good at not just informing

the electorate and closing gaps in citizen knowledge.

Chapters 3 and 4 define, measure, and validate two core concepts. Chapter 3 describes the conceptual differences between civic and campaign knowledge, presents a strategy for measuring campaign knowledge in public opinion surveys, and assesses its distributions and correlates. Critically, I find that while both campaign and civic knowledge are in fairly low supply in the mass public, and share similar correlates, the two *are not* suitable proxies for one another.

Chapter 4 walks through the process by which I estimate Americans' exposure to policy-focused advertising in the 2008 - 2016 presidential election cycles. My strategy combines information about when, where, and on what programs political ads were aired – as well as whether or not they talked about policy issues – with information about what respondents in public opinion surveys regularly watch on television to create exposure proxies. Although I am not the first to use this approach, I offer several methodological innovations along the way. Validation tests suggest that these measures seem to in fact capture what they purport to measure.

Chapter 5 studies the effect of policy ad exposure on citizens' levels of campaign knowledge in each election cycle. The analyses presented in this chapter serve two purposes. In addition to offering a test of predictive validation for the measures designed in Chapter 4, they provide a proof of concept analysis for my theoretical argument. If the policy content of ads actually influences their informative power, it should be the case that increased exposure to policy-focused advertising is more-tightly associated with gains in campaign knowledge than measures that pool many different types of ads together. Chapter 5 shows that policy ads are broadly informative, and that pooled measures of ad exposure tend to under-estimate learning

effects.

Chapters 6 and 7 test my core theoretical expectations. Chapter 6 pits the Exacerbation Thesis versus my revised take on the Equalization Thesis. I find strong evidence in favor of the idea that increased exposure to policy-focused advertising best informs Americans with the low levels of civic knowledge, political interest, and education. Chapter 7 then studies the link between information Americans acquire from policy-focused advertising (i.e., campaign knowledge) and policy voting. I find that campaign knowledge is strongly associated with voting in line with one's policy preferences, even when accounting for what citizens know about civics (as is typically done in the literature). I find that these results hold across several different estimation strategies, and cannot be explained away by voters updating the policy preferences in response to elite position-taking (what Lenz 2012 calls "following the leader.")

I conclude in Chapter 8 by considering the normative implications of this research. Policy-focused advertising provides Americans with the information they need to vote for candidates who share their concerns on major policy issues. This is an encouraging set of findings. However, I also note that policy-advertising is not a panacea. While they are good at providing Americans with "the basics" about politicians' policy stances, policy ads cannot completely eliminate low levels of political knowledge in the mass public, or erase difficulties with policy voting. Keeping this in mind, I describe what I think political scientists can learn from this research, and offer several directions for future work in this area.

Chapter 2

"Rags to Riches" or "Rich Getting Richer?" How Citizens Learn from Campaign Advertising

Disparities in what people know about politics is a well-known source of inequality in contemporary American politics. Scholars have long understood that Americans' knowledge about even basic political facts tends to be quite low. Worse, the distribution of political knowledge is far from random. It is classed, gendered, and racialized.

This inequality reflects a broader *power imbalance* in our representative democracy. Political knowledge enables people to connect their abstract preferences to concrete political choices. For example, knowledge can help voters identify which candidates have policy views closest to their own, so that they can vote for those candidates at the ballot box. This benefit of political information is an important one, because when people send representatives to Washington who care about the same policies as they do, they increase the likelihood of having those views represented in government.

Consequently, the unequal distribution of knowledge in the American mass public creates what Delli Carpini and Keeter (1996) call a "political caste system." Tradi-

tionally well-represented social and economic groups also tend to more knowledgeable, thereby perpetuating their political privileges at the ballot box.

How might this system be interrupted? Political campaigns offer a potential solution. Specifically, I argue that policy-focused campaign advertisements should provide citizens with information that helps them vote in line with their policy preferences. These ads should be particularly good at informing those who *need them the most* – such as people with low levels of prior knowledge about politics.

In this chapter, I offer a theoretical framework for understanding the informative power of policy-focused campaign advertisements. I begin by describing what a "political caste system" is, and outline the problems it poses for American democracy. I focus specifically on the idea that Americans lack of knowledge about where candidates stand on major policy issues inhibits their ability to vote for candidates whose policy preferences match their own.

This discussion introduces a theme that I will expand on in much more detail in (Chapter 7). Much of what we know about the role that knowledge plays in helping people vote in line with their policy preferences is based on what people know about civics. Even though knowledge about where politicians stand on the issues is theoretically required for policy voting (Campbell et al., 1960; see also Lupia 2015) it is seldom studied in the literature.

This theoretical requirement opens the door for campaigns to provide a potential remedy to our political caste system, as knowledge about where politicians stand on major policy issues is precisely the type of information people should be learning from the campaign advertisements they see on television. Consequently, after describing several paths by which citizens might acquire information about politics and current

events, I then turn to campaign advertising specifically.

In reviewing the literature on campaign advertising, I note that extant research presents a puzzling mismatch between theory and reality. In theory, the "Rags to Riches Model" (or Equalization Thesis) supposes that ads should best inform those who need them the most. However, the "Rich Get Richer Model" (or Exacerbation Thesis) has found much more empirical support in the literature, and suggests that exposure to campaign ads actually *worsens* knowledge inequality between the least and most informed.

I offer a potential resolution this puzzle by proposing a theoretical alternative, the Revised Equalization Thesis. This new theory shares much in common with the Rags to Riches Model, but notes that prior research on what citizens learn from ads has tended to treat all ads equally – irrespective of whether or not they provide information relevant to the type of knowledge being studied. I make the case that *ad content* needs to be brought back into how we think about learning effects. Policy-focused ads contain the information necessary to determine where politicians stand on key issues, which in turn should help citizens vote in line with their policy preferences.

I conclude by foreshadowing how my theoretical predictions can be put to the test. Campaign advertisements should have a role to play in mitigating an important power imbalance in American public life. To do this, I must show that policy-focused campaign ads are not only informative – especially for those with the least prior knowledge about politics – but that citizens actually use this information to vote in line with their policy preferences.

2.1 American Democracy: A Political Caste System?

2.1.1 Understanding an Important Power Imbalance

When citizens vote for politicians who share their concerns about major policy issues, they increase the likelihood that their concerns will be represented in Washington. The ability to do this is often referred to as *policy voting.* Policy voting enhances citizens' representation in government by electing politicians who share voters' policy concerns, and (or) by punishing those who fail to do so (Stimson, Erikson, & MacKuen 1995; Mansbridge 2003). Because political elites fear electoral retribution (Mayhew 1974; Fenno 1978), policy voting creates an incentive for politicians to defer to public opinion "on the issues," or risk being replaced.

Clearly, policy voting has positive implications for voters' representation in government. Unfortunately though, as many scholars have noted, policy voting tends to be fairly uncommon in the mass public (Campbell et al., 1960; Knight 1985; Lenz 2012; Goren 2013). Citizens' knowledge about basic political facts can help explain why.

A rich body of prior research suggests that those who know more about politics and current events should be more likely to have coherent policy preferences, and understanding of how those positions map on to their available candidate choices. Indeed, many scholars have shown that those who hold higher levels of knowledge about basic political facts have been are more likely to partake in policy voting (Delli Carpini & Keeter 1996; Goren 1997; Galston 2001; Kinder 2006).

This poses an important problem for representative democracy in America. Citi-

zens' knowledge about basic political facts is not just low – it is also *highly unequal*. The distribution of political knowledge tends to reflect well-known sources of political privilege in the United States. Individuals who are wealthier, more highly educated, white, and male tend to be disproportionately likely to hold high levels of knowledge about politics (Delli Carpini & Keeter 1996; Mondak 2001; Dolan 2011; Highton 2009).

This dynamic creates what Delli Carpini and Keeter term a *political caste system*. This simply means that the unequal distribution of knowledge in the U.S. allows traditionally privileged groups of people to perpetuate their political advantages. For example, because knowledge enhances citizens' abilities to represent their views in government (e.g., via policy voting), and because that knowledge tends to be classed, gendered, and racialized, traditionally well-represented groups (e.g., wealthy white males) are disproportionately likely to reap the representational benefits of policy voting.

2.1.2   Can Political Campaigns Mitigate this Power Imbalance?

Political knowledge is political power. Americans who are poorly informed about basic political matters are at an increased risk of casting ballots for politicians who do not share their policy sympathies. How might this power imbalance be rectified? Since the public's lack of knowledge about politics can help explain low levels of policy voting, informing the public seems like a fairly reasonable solution.

Of course, this solution raises several questions of its own. What exactly does the public need to know? And how might they be informed about it? In this chapter,

and the chapters that follow, I hope to provide some potential answers to these two questions.

Classic theorizing on American political behavior can help point to some potential clues. In their classic 1960 book *The American Voter*, Campbell and colleagues suggest that voters must do the following three things in order to cast a policy vote. First, they must be generally aware of what the key issues of the day are, and what certain positions on them might mean. Second, they must have some position of their own on those issues. Third, they must know where politicians actually stand on those issues, so that they can map their own preferences to those of various political elites.

While this third step is critical for policy voting, it has been virtually ignored in the literature. All of the work described earlier, which suggests that people with more knowledge about politics are better at voting in line with their policy preferences, has focused on what people know about civics. Civic knowledge encompasses information about the basic workings of American government, including its key players (e.g., identifying the name of the Speaker of the House of representatives) and mechanisms (e.g., knowing the number of lengths in a Senatorial term).

This is an important shortcoming, as it is unclear why holding high levels of knowledge about civics helps people vote in line with their policy views. Lupia (2015) cautions that widely-used measures of civic knowledge may be neither necessary nor sufficient in their relationship to various aspects of political behavior – such as policy voting. Facts about civics are not likely to be necessary for formulating opinions on issues or understanding where politicians stand on them, which casts doubt on the relevance of civic knowledge for policy voting.

However, as the above review suggests knowledge about where politicians stand on

the issues *is necessary* for policy voting. Here, and in the chapters that follow, I will refer to this type of knowledge as "campaign knowledge." I describe what campaign knowledge is in much more detail in Chapter 3, and expand on its importance for policy voting, *vis a vis* civic knowledge, in Chapter 7.

For now, it is important to recognize that the theoretical link between campaign knowledge and policy voting creates a potential role for campaigns to play in eroding our political caste system. While political campaigns care first and foremost about winning votes, they may in the process provide citizens with information about where candidates stand on the issues. For example, most political ads, especially those that attack or contrast candidates (Geer 2006; Motta & Fowler 2016), are likely to mention where at least one of the candidates stands on major policy issues.

To get a sense of how prevalent discussions of issues are in campaign advertisements, Figure 2.1 below plots the policy content of all advertisements aired in the three most recent presidential cycles, as recorded by coders at the Wesleyan Media Project (formerly the Wisconsin Advertising Project; 2008, 2012). White bars correspond to the number of ads aired each day (from September first through election day each year) that mention where at least one of the candidates stands on one or more policy issues. Black bars represent all other types of advertisements, such as those focusing on candidates' personal lives. Advertisements that make mention of both policy and other factors are not displayed (23% of ads aired in 2008, 18% of ads aired in 2012), as to avoid double-counting.

Figure 1 shows that policy advertisements often outnumber all other types of ads on the airwaves. While mention of personal and other factors, in all cycles, tend to become more common on the airwaves in the final weeks of the campaign, policy

Figure 2.1: The Policy Content of Political Advertising (Daily Pres. Airings, 2008-2012).
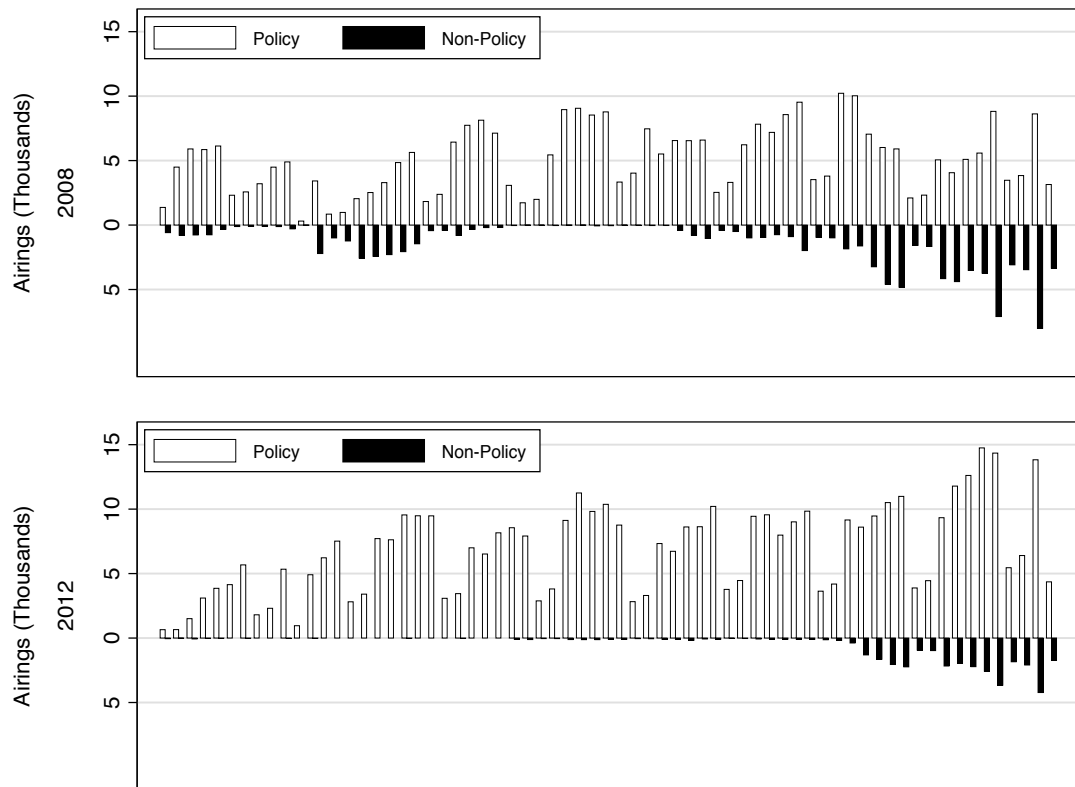
Note: Data were coded by the Wesleyan Media Project. Airings represent all presidential spots aired from September 1 through Election Day in each year. Ads appealing to candidates policy positions and personal matters are not pictured, to avoid double-counting.

advertising is featured consistently over the course of the cycle.

However, this trend may be in decline. The most recent 2016 presidential campaign not only had fewer total airings than the cycles before it, but it also featured considerably less policy-focused advertising than 2008 or 2012, In addition to seeing fewer total airings than the cycles before it, as is shown in Figure 2 (see also: Fowler, Franz, & Ridout 2016). While policy ads still hit the airwaves thousands of times per day, personal (and other) factors were featured more prominently. I will return to this figure later on (Chapter 8), in order to take stock of whether or not the beneficial effects of policy advertising that I highlight here will continue into the future.

The key takeaway from this review and descriptive analysis is that campaigns provide citizens with the type of information that may ultimately prove quite useful in enabling voters to vote for candidates whose policy preferences best match their own. Because discussions of policy issues, and where politicians stand on them, are common in policy-focused advertisements, they might offer a solution to the representational problems created by low levels of public knowledge.

It is important to caveat that when I refer to political advertisements as "policy focused," I am not necessarily commenting on their quality or veracity. Ads that feature discussions of major policy issues may not talk about those issues in much detail, and may (in some cases) misrepresent certain facts about the candidates. It would therefore be somewhat of a stretch to say that policy ads provide Americans with a deep understanding of major policy issues. Ad makers' primary goal, of course, is to win elections – not to improve public knowledge about politics.

However, and more realistically, policy ads at least have the potential to inform citizens about "the basics" of campaign knowledge – i.e., knowledge about where

Figure 2.2: The Policy Content of Political Advertising (Daily Pres. Airings, 2016)
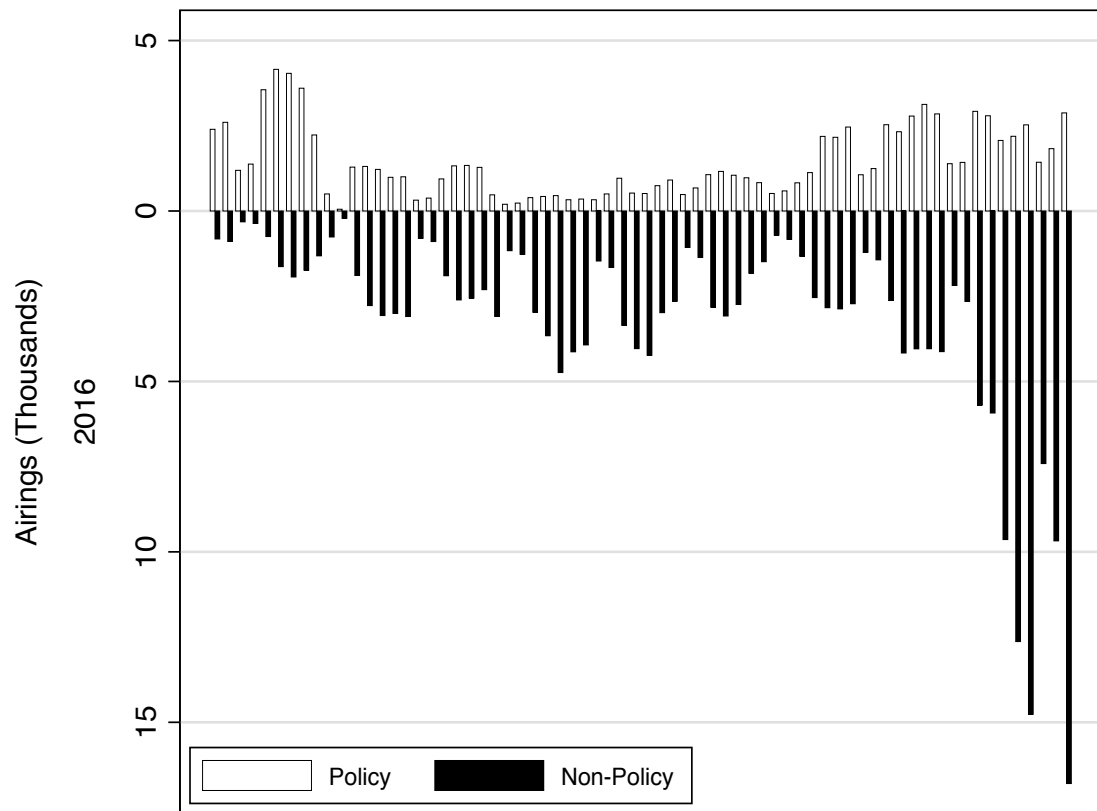
Note: Data were coded by the Wesleyan Media Project. Airings represent all presidential spots aired from September 1 through Election Day in 2016. Ads appealing to candidates policy positions and personal matters are not pictured, to avoid double-counting.

politicians stand on the issues in relation to one another. In the process of trying to win votes, advertisers have the opportunity to increase public knowledge, even if doing so is not their primary intention. As will become obvious in later chapters, Americans still have much to learn about the basics of campaign knowledge, and this information plays an important role in helping voters select candidates whose policy views match their own.

In order to entertain the possibility that policy ads are a particularly-good candidate to inform the public about policy matters, it is first necessary to review how citizens might learn from other aspects of political campaigns, and political media more broadly. To preview this survey of the literature, political advertising not only informs the public about where politicians stand on major policy issues, but is uniquely well-suited to reach those voters who need that information the most (e.g., those with low levels of prior knowledge about or interest in politics).

2.2   How do Citizens Learn About Presidential Campaigns?

2.2.1   Newspapers & Televised News

One potential path by which citizens can become informed about politics is through televised and print news (both in newspapers and online). Indeed, the idea that news viewership increases knowledge about politics is well-documented in the literature. In an extensive analysis of public knowledge about more than forty different policy positions from 1992-2003, Jerit and colleagues (2006) demonstrate that the more

coverage the issues received on the televised evening news and in the newspaper, the more the public knew about the issues. Whereas newspaper coverage led to knowledge gains amongst the most highly educated, television did so irrespective of education. Jerit and colleagues' findings may result (at least in part) from the fact that the audio-visual format of televised news is more easily understood than printed text (Graber 1994, 2004), which requires some amount of literacy and verbal skills (Neuman, Just, and Criegler 1992). The comparative ease of understanding news presented in an audio-visual format comports well with empirical findings suggesting that increased television viewership decreases educational gaps (Miyo 1983; Kwak 1999; Eveland & Scheufele 2000) and gender gaps (Jerit & Barabas 2016) in what citizens know about politics.

However, an important caveat bears mentioning about the informative power of television news. Before the widespread availability of cable television and the internet, exposure to *broadcast* news was associated with increased knowledge about current events (Prior 2005, 2007). Due to limited programming choice in the Broadcast Era, though, those hoping to watch television in the early evening were forced to either watch some amount of news or (unthinkably) to step away from the television. Today, individuals with cable and internet access, and who prefer to view entertainment relative to political programming, have become *less knowledgeable* than their counterparts who elect to watch political programming.

Overall, the literature suggests that television news clearly has the potential to inform broad swaths of the mass public. It can even help close gaps in what citizens know about politics. But, in today's high choice media environment (Prior 2007; Stroud 2011), *it must be sought out.* Learning effects are most likely to be concen-

trated amongst those who are most interested in politics, and who therefore watch more televised coverage of the election. Newspapers may also have some informative power, but these effects are also likely limited to those with the highest levels of literacy and education.

2.2.2 Presidential Debates

Another path by which citizens might become informed about the key players and issues in presidential elections is through the debates taking place in the fall of each election cycle. Debates between the two major party candidates for president have been held consistently since 1976, and are conventionally thought to boost knowledge about the campaign[1]. In the most recent general election in 2016, the presidential debates had unprecedentedly-high viewership ratings[2].

The idea that debates inform the public is generally supported in the scholarly literature. As Holbrook (1999) suggests, survey respondents interviewed following debates, relative to those taking surveys before them, generally exhibit higher levels of knowledge about the candidates. This is especially true early-on in election cycles, and for those candidates about whom public knowledge is low. Debates have also been shown to close gaps in what the most and least educated know about the candidates in presidential campaigns (Holbrook 2002; although see Lemert 1993).

However, these claims bear an important qualification. Even though coverage of debates is likely to extend to local and national news (and, perhaps even to Saturday Night Live), their informative power is concentrated amongst those who actually view them (Holbrook 1999). This caveat may have borne less relevance in years where half

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[1] See quote from founders of CPD: http://www.debates.org/index.php?page=2016debates
[2] http://www.debates.org/index.php?page=2016debates

of American households tuned in to watch the debates, but it likely quite relevant today. Even though the 2016 campaign broke debate viewership records for *overall* viewership, only about a third of households actually tuned in (Frostenson 2016).

Therefore, and much like exposure to television news, debates certainly have the potential to inform large segments of the mass public. But their ability to do so is limited to whether or not individuals opt to watch the debates, which most voting-age adults do not do.

2.2.3   Social Networks

Still another path by which citizens might learn about politics and current events is through their online and offline social networks - a possibility which has received considerable empirical attention in recent years (e.g., Huckfeldt & Sprague 1987; McClurg 2003; Ryan 2011; Sokhey & McClurg 2012; Bode 2016). The transmission of information in networks has long been of interest to social scientists (Lazarsfeld, Berelson, & Guadet 1944). Today, it is often studied in two ways: (1) observationally (where social network composition is recorded via survey self-reports, may be endogenous to geographic, political, and other personal factors) and (2) experimentally (where social networks can be assigned exogenously by the researcher).

Offline, in both observational (Sokhey & McClurg 2012) and experimental studies (Ryan 2011), scholars have recently suggested that individuals in more-knowledgeable and ideologically homogenous networks rely on their social networks as cognitive shortcuts. These individuals tend to vote for candidates who best represent their policy interests, due in part to the political discussions they have with others.

Online, however, the use of social networks as heuristics is a bit more compli-

cated. While platforms like Twitter and Facebook certainly have the capacity to inform, observational and experimental tests suggest that the extent to which they do so is limited (Bode 2016). Experimentally, Bode shows that exposure to political information on social media boosts recall of basic political facts, but not with high levels of detail. This may be the case because individuals in online social networks prefer to open (and potentially read) news stories that have a high amount of "buzz," rather than seek out other additional sources of information (Pierce, Redlawsk, and Cohen 2016). Observationally, Bode also shows that learning about politics tends to be highest amongst users of Twitter (and not Facebook) users – a platform where individuals have particularly high amounts of choice over what content they see (i.e., who they choose to "follow").

While more work in this area remains to be done, it is important to note that exposure to political information in social networks is not purely by chance. Both on and offline, individuals may select into peer groups that eschew discussing political matters, and have the ability to "block" (avoid) politically-vocal friends and family. A recent Pew survey found, for example, that while most Americans come across at least some political content when browsing online social networks, nearly 40% of users have blocked someone before for posting political content – including those who post messages with dissonant ideas, and those who simply talk about politics too much (Duggan & Smith 2016). This selectivity is an important limitation of the "networks as heuristic" approach to thinking about knowledge acquired socially.

2.2.4   Televised Political Advertising

What most notably sets televised advertising apart from the forms of political communication listed here is that citizens are most likely to encounter advertisements *incidentally.* Downs (1957) referred to this type of messaging as "free information," as individuals need not expend much effort to seek it out. Citizens are most likely to encounter them while watching their favorite programs on television.

Of course, advertisements require some amount of time (usually thirty seconds) and mental effort to process, and are therefore not completely cost free. However, the cognitive and attentive burdens they pose are minimal. Like television news, political advertisements present information about politics in an easily-understood and attention-grabbing audio-visual format (as several authors have noted: Atkin & Heald 1976; Patterson & McClure 1976; Ansolabehere & Iyengar 1995; Freedman, Franz & Goldstein 2004; Franz et al., 2007; Ridout & Franz 2011), and impose only a minimal time commitment for the viewer (i.e., most television spots are thirty seconds long).

Moreover, citizens need not expend much energy seeking out campaign advertisements, as they are a ubiquitous and increasingly important fixture of American elections. As I show later on, most Americans are exposed to at least *some* amount of advertising on television. Even though most Americans live outside of the swing states likely to be inundated with local "ad buys" in the course of an election cycle, many still gain incidental exposure to spots aired on national programming. Alternatively, and more effortfully, some may also be exposed to them on nationally televised programming, or via coverage in the news (Ridout & Smith 2008; Fowler & Ridout 2009). Moreover, advertisers even create videos and other content designed for

dissemination through individuals' social networks (Fowler, Franz, & Ridout 2016a).

Perhaps unsurprisingly, then, exposure to political advertising has been shown to increase what citizens know about the politicians and issues discussed in presidential (and other) campaigns (Ansolabehere & Iyengar 1995; Zhao & Chafee 1995; Brians & Wattenberg 1996; Freedman, Franz, & Goldstein 2004; Ridout et al., 2004; Franz et al., 2007).

However, it is important to caveat that not all advertisements have equal capacities to inform. Most extant literature on this point has focused on the asymmetric informative power of negative advertisements. Negative ads, and negativity in political messaging more generally, has been shown to be attention-grabbing and memorable (Lang 1991; Geer & Geer 2003; Geer 2006; Soroka & McAdams 2015). Many negative ads feature emotional appeals to fear may, in line with Affective Intelligence Theory (Marcus, Neuman, & MacKuen 2000), encourage individuals to put aside their prior beliefs and pay closer attention to the information presented in ads (Brader 2005, 2006). Moreover, negative ads are predominantly issue-focused, and are considerably more likely than positive ads to back up the claims that they make with references to outside sources like newspaper articles or legislative roll-call records (Geer 2006; Motta & Fowler 2016). Even though popular wisdom suggests that the public dislikes negative advertising (Brooks 2000), recent survey research suggests that most are receptive to negativity if it contains useful information about policy issues (Mattes & Redlawsk 2014).

The idea that advertising informs, and that some advertisements inform better than others, is generally agreed upon in the literature. What is much more contentious, however, is determining *for whom* advertisements offer the largest gains in

knowledge about where politicians stand on the issues. In what follows, I highlight a tension between theoretical predictions of the Rags to Riches (Equalization) model – which suggest that ad exposure should best inform those with the least prior knowledge about politics – and the Rich Get Richer (Exacerbation) model – which suggests that ad exposure exacerbates inequalities in what citizens know about politics. I conclude by noting that both models are in need of revision, and offer an updated theory of my own.

2.3 Rags to Riches: The Equalization Model

2.3.1 Rational Choice Origins

The Equalization Model predicts that campaign advertisements inform most members of the mass public, but tend to *best* inform those with the lowest prior levels of knowledge and interest in politics – those with the most factual ground to make up. The historical and conceptual bedrock of this model is grounded in rational choice theory, as articulated by Anthony Downs in his classic (1957) book, *An Economic Theory of Democracy.*

Downs notes that the price of gathering information about politics is time consuming and cognitively effortful. Given the extremely low probability of casting the pivotal (i.e., tie-breaking) vote in any given presidential election, the costs of becoming informed are not larger than the potential electoral benefits. In this sense, becoming informed about politics is not rational *per se.*

To resolve this paradox, Downs introduced the concept of "free information" – information which voters encounter with minimal to no effort. Campaign advertise-

ments can be thought about as a type of free information. Because advertisements are easy to comprehend and are encountered by chance (e.g., while individuals are watching their favorite programs on television), they are essentially cost free.

This basic principle offers a potential path by which those least interested and informed can become acquainted with basic facts about politicians and policies in election campaigns. Because they have much to learn, less informed individuals are more likely to learn a thing or two about politics in the process of encountering political advertising in their daily lives. More-informed individuals, who are already familiar with "the basics," will encounter these messages too. However, they should be less likely to learn from these ads because, as their levels of knowledge are already high (this is sometimes known as a "ceiling effect"). This presents a notable contrast to the exacerbation model, which supposes that highly informed people have at least some amount of room to learn from campaign ads.

2.3.2 Empirical Evidence

Patterson and McClure (1976) first put the Equalization Model to the test by tracking what citizens exposed to campaign advertising learned about the 1972 presidential campaign, based on self-reported logs of television viewing. In support of Downs' theorizing, the authors found that gains in knowledge over the course of the campaign were comparatively larger for those with the most to learn – those with the lowest levels of political interest and education.

While these results ought to be recognized as a pathbreaking use of panel data to study media effects (as Bartels 1999 also notes), Patterson and McClure's measure of advertising has been critiqued on methodological grounds (e.g., Ansolabehere and

Iyengar 1995; Ridout et al., 2004). I describe these critiques in more detail in Chapter
4. The key limitation with this measure is that the measure assumes that people who
watch equal amounts of television will see equal numbers of campaign advertisements.
Due to variation in where and when advertisements are aired, this assumption is
unrealistic.

In recent years, few scholars have been able to replicate Patterson and McClure's
classic findings. Observational measures of ad exposure that merge geocoded adver-
tisement airing data into survey data containing self-reports of program watching
behavior (a measure I describe extensively in Chapter 4), find that advertisements
are generally informative. But they do not consistently find evidence of gap closing
across various measures of knowledge (Freedman, Franz, & Goldstein 2004; Franz et
al., 2007). Not only is there little evidence (beyond Patterson and McClure's 1976
book) of cap closing, but other research finds that ad exposure might actually *increase*
gaps in what citizens know about politics. I consider this possibility in turn.

2.4 Rich get Richer: The Exacerbation Model

2.4.1 Psychological Origins

Like the Equalization Model, the Exacerbation Model predicts that campaign adver-
tising exposure informs most members of the mass public. However, the Exacerbation
Model differs from the Equalization Model in that it supposes that ads best inform
those who are *already highly knowledgeable* and interested in politics. In contrast to
the economic origins of the Equalization Model, the conceptual background for this
model is grounded in cognitive psychology.

Both the Equalization and Exacerbation Models recognize that highly-knowledgeable individuals have less knowledge-based "ground to make up." However, the Equalization Model posits that highly-knowledgeable people have a greater *capacity to learn* than those with less knowledge. This difference is key for understanding the different predictions the two models have to offer.

Prior knowledge serves an important context in the acquisition of new information. Individuals who are highly knowledgeable about a particular subject matter tend to have an easier time acquiring more information about related subjects (Hambrick et al., 2007). For example, general knowledge about civics has been shown to facilitate the acquisition of new information about the *specific* politicians and issues involved in political campaigns (Hambrick et al., 2008). In political science, Delli Carpini & Keeter raise this possibility in their conceptualization of knowledge about civics as "fishing hooks." The more hooks one casts (i.e., the more pieces of general knowledge about politics one has), the more likely one is "catch" something (i.e., a specific fact or set of facts about the campaign).

If campaign advertisements are truly easy to understand, rife with political information, and likely to be encountered by chance over the course of the campaign, this theory would suggest that those *most* informed about politics should learn comparatively more from them.

2.4.2   Empirical Evidence

The Exacerbation Model has received some empirical support in recent years, although the results are mixed. Laboratory studies, for example, have shown that exposure to campaign advertisements tends to increase knowledge amongst the most

knowledgeable (Valentino & Williams 2004), and most educated (Ansolabehere & Iyengar 1995). However, Ansolabehere and Iyengar caution that these effects may be limited to when advertisement exposure is particularly high. These results are consistent with observational results that gaps in what citizens know about politics persist throughout most parts of the campaign (Holbrook 2002; see also Miyo 1983), including those weeks late in the campaign when advertising levels tend to be relatively high.

Overall, the picture emerging from the Equalization and Exacerbation Models is, at best, murky. Advertisements do not consistently close gaps in what citizens know about politics, and may even increase them. What *is* clear, however, is that the initial gap-closing optimism offered in theory by Downs, and demonstrated in Patterson and McClure's panel studies, has yet to be consistently demonstrated in the literature.

2.5 The Revised Equalization Model

My Revised Equalization Model offers an alternative to the two models described here. It suggests that *policy-focused* campaign advertisements should not only be better at providing the public with campaign knowledge than ads focused on other matters, but should inform best those who need them the most.

Its primary departure from previous research is that it incorporates advertisement content into the study of how citizens learn from ads. It begins with the simple premise that all campaign ads not created equal with regard to in their capacities to inform. Policy-focused advertising, according to my model, has a superior potential to do so. This basic idea is reflected in what I call the *relevancy principle*.

The relevancy principle contains the following two arguments. First and foremost,

it suggests that policy-focused advertisements contain more information relevant to being informed about where politicians stand on key issues, compared to ads primarily focusing on other matters (e.g., candidates' personal lives, leadership skills, etc.). When campaigns promote one candidate's policy vision, attack someone with an opposing view, or contrast two candidates' positions, they provide citizens with the opportunity to learn about candidates stances. Ads that downplay or neglect policy are less likely to provide voters with this information, and should therefore be less likely to inform.

While the relevancy of policy-focused ads may seem reasonable – perhaps even obvious – it is important to point out that it is rarely incorporated in extant research. Even though scholars are often interested in studying whether or not people learn more about the issues as a result of the ads they view on television, ad exposure is often operationalized as the *total number of ads* people might see on television. It may therefore be unsurprising that the field lacks consensus about the informative power of campaign advertising. Extant research may be relying on measures of ad exposure that do not accurately capture the type of information we expect people to learn over the course of the campaign.

Table 2.1 offers evidence consistent with this point. It shows that previous studies in the field care about determining whether or not citizens acquire campaign knowledge as a result of the ads they see on television. However, researchers often look at individuals' exposure to *all ads on the airwaves*. They do not limit their analyses to only the types of ads containing information that is most-relevant to the learning criteria defined in that study.

Second, the relevancy principle suggests that people view advertisements as being

Table 2.1: Operationalizing Learning and Advertisement Exposure in Prior Work on the Knowledge Gap

Article/Book	Learning	Ad. Exposure	Gap Closing?
Patterson & McClure 1976	Facts about '72 campaign.	Total ad exp. (observational)	CLOSES
Ansolabehere & Iyengar 1995	Facts mentioned in ads	Experimental Stimulus	MIXED
Valentino & Williams 2004	Knowledge about Bush/Gore issue positions	Experimental Stimulus	WIDENS
F.F.G. 2004	Likes/dislikes about candidates & issue positions	Total ad exp. (observational)	MIXED
C.K.G 2005	Issue positions, Group endorsements	Total ad exp. (self-report)	MIXED[1]
Franz et al. 2007	Likes/dislikes about candidates & issue positions	Total ad exp. (observational)	MIXED

Note. All reviewed works study the knowledge gap in relation to campaign advertising exposure, in some capacity, and so they must have some measure of advertising exposure and what people learn from it in order to be counted. F.F.G stands for Freedman, Franz, & Goldstein 2004; C.K.G for Craig, Kaine, & Gainous 2005. MIXED describes cases in which advertising exposure either had countervailing effects, or not consistent set of effects. [1] Caveats that in the C.K.G 2005 paper, ad exposure was studied only as a main effect, but general exposure to the was considered as a moderator. The later analysis yielded evidence of widening knowledge gaps.

more relevant to their personal interests when they focus on policy, as opposed to personal information about the candidates. This point has strong empirical support in the literature. Conventional wisdom suggests that voters dislike advertising, especially negative advertising (Brooks 2000). But, recent research suggests that these claims overlook voters' affinities for policy-focused advertisements – even those that are negative.

For example, Mattes and Redlawsk (2014) show that voters hold generally positive views toward advertisements that focus on issues. Most people are unlikely to classify ads that focus on policy as "negative," and rarely report being angered by them (see: table 3.2). Moreover, in experimental studies, the authors note that most respondents find advertisements that focus on issues to be somewhat or very helpful in formulating decisions about for whom to case their vote. For example, while few (about 11%) of subjects find advertisements that focus on candidates' religion to be helpful, the overwhelming majority (81%) believe that ads contrasting candidates' views on the issues are useful in making an electoral decision.

In sum, my Revised Equalization Hypothesis argues that – because policy advertisements are (1) directly relevant to voters' interests, (2) related to the way political scientists typically measure learning, and (3) most informative for tasks individuals are expected to perform in the course of elections, these ads should be particularly likely to increase campaign knowledge. This basic idea may explain quite a bit about the current state of the literature, as displayed in Table 2.1. One reason why studies in the past do not find evidence of knowledge gap closing may simply be that measures capturing total advertisement exposure do not necessarily capture differences in the distribution of how many policy advertisements individuals likely saw. If policy ads

are, in fact, the most informative type of campaign ad, current empirical tests that measure total ad exposure may not be giving the possibility of ad-based gap closing a fair shot.

2.6 Conclusion

The unequal distribution of political knowledge in the United States poses an important problem for citizens' representation in government. Political knowledge is political power, and those who wield it are disproportionately likely to be the recipients of prior political privilege. In this chapter, I have argued that campaign advertising poses a potential solution to this representational problem.

In order to determine whether or not this is true, I will need to provide empirical evidence consistent with the following points. First, policy-focused political advertisements should not only inform most voters about where candidates stand on the issues, but should best inform those with low levels of prior knowledge about politics. Second, campaign knowledge – the type of information individuals learn from policy advertising – should increase citizens' abilities to represent their policy interests in government.

To foreshadow the argument I will make in the coming chapters, I find consistent evidence in favor of both points. First, while campaign advertisements have been hypothesized to be uniquely effective at informing citizens about the candidates and issues relevant in political campaigns, the empirical evidence is quite mixed.

After proposing and validating an updated measure of campaign advertising exposure in Chapter 4, I show that policy advertising exposure is broadly associated with gains in campaign knowledge in Chapter 5. Most importantly, I put the Revised

Equalization Model to the test in Chapter 6. The results show policy-focused campaign advertisements do in fact close gaps in what citizens know about candidates' stances on key policy issues.

Second, and somewhat surprisingly, the relationship between campaign knowledge and policy voting has largely been overlooked. After describing the distribution and correlates of campaign knowledge (compared to civic knowledge) in Chapter 3, I test whether or not campaign knowledge increases citizens' likelihood to vote for candidates who share their policy preferences in Chapter 7. I find that campaign knowledge, more so than conventional measures of civic knowledge, boosts the likelihood that citizens vote their policy preferences.

Broadly, I advance the argument that campaign advertisements are a healthy component of American democracy. Ads best inform those who need them most, ultimately improving their representation in government.

Chapter 3

Two Faces of Political Knowledge

Before we can take stock of what citizens learn from campaign advertisements, and determine whether or not people use that information to vote in line with their policy interests, we first need to answer two questions. What type of information is *necessary* to vote in line with one's policy preferences, and what types of campaign advertisements *actually provide* that information?

In the previous chapter, I made the case that "campaign knowledge" is the answer to the first question, and policy-focused campaign advertisements is the answer to the second. However, to this point, I have not explained either concept in much detail. In this chapter describe what campaign knowledge is, and how it differs from more commonly studied measures of knowledge about civics. (Note: I will do the same for policy-focused advertising in Chapter 4).

I begin this chapter by drawing a conceptual contrast between civic and campaign knowledge. Then, I describe how I measure each one in the analyses that follow. In doing this, I provide a descriptive empirical overview of how the two measures relate to one another – considering the similarity (or difference) of their distributions throughout the mass public, as well as their correlates.

One key insight that emerges from this analysis is that – while civic and cam-

paign knowledge share similar distributions and correlates – the two are only weakly correlated with *one another*. This casts doubt on the idea that civic knowledge is a suitable conceptual or empirical "proxy" for campaign knowledge. I conclude by noting that these analyses establish a useful conceptual and methodological framework for testing the predictions outlined in the previous chapter.

3.1 Conceptualizing Civic Knowledge

When scholars refer to "political knowledge," they often have a specific conceptualization of it in mind (Lupia 2015). Political knowledge usually refers to citizens' performance on a short battery of civic knowledge questions developed by Delli Carpini & Keeter (1993), pertaining to what individuals know about civics (Galston 2001; Lupia 2006, 2015). Specifically, civic knowledge consists of information about what government "is and does" (Barber 1969), as well as who government is (Delli Carpini & Keeter 1996).

Civic knowledge is usually measured by asking survey respondents questions about (for example) the present federal minimum wage, the ability to recall the name of the Vice President, Speaker of the House, or Chancellor of Germany, knowing the number of justices on the Supreme Court, and reporting the correct proportion of Congressional votes needed to over-ride a presidential veto. These questions have been featured regularly in major public opinion surveys like the American National Election Study, and a wealth of scholarly research (see Galston 2001 and Kinder 2006 for extensive reviews).

Political knowledge, operationalized as civic knowledge, is a central concept in the study of political behavior. Its centrality in predicting a wide range of normatively

desirable political attitudes and behaviors lead Delli Carpini and Keeter (1996) notably refer to it as "the currency of democratic citizenship." Perhaps unsurprisingly, scholars have sought to explain a diverse range of political phenomena as a function of what people know about politics, ranging from Americans' abilities to vote in line with their policy interests, issue preference consistency, support for democratic values, and political participation (Galston (2001).

3.1.1   A "One-Size Fits All" Measure of Political Knowledge?

The field's broad reliance on civic knowledge – both as a measure of political knowledge *and* in terms of explaining political behavior – creates what can be thought about as a "one size fits all" measure of political knowledge. As Lupia (2015) reviews, scholars are certainly aware of other domains in which individuals might hold knowledge about politics. However, civic knowledge is often assumed to stand in for (i.e., "proxy") these more specific domains of knowledge about politics, both in terms of substance and predictive power (e.g., Delli Carpini & Keeter 1993, 1996; see also Lupia 2006 and 2015).

While this move is in many respects justified, it also has some important drawbacks. One justification for the widespread employment of civic knowledge scales concerns their normative relevance to American democracy. Democratic theorists have noted on several occasions that knowledge about basic civic facts has important benefits for democracy. As Delli Carpini and Keeter (1996) review, knowing what the government "is and does" – its values and basic mechanics – is a normatively essential component of democratic citizenship. Theoretically, civic education helps provide citizens with the information they need to participate effectively in democratic

self-governance (Dewey 1916), in part by providing a common context for political discussion (Habermas 1989). It also helps citizens understand how to participate in politics in a way that advances their economic, political, and other interests, which Delli Carpini and Keeter term *instrumental rationality*. Indeed, as I review in more detail in Chapter 7, the idea that civic knowledge enhances instrumental rationality has been supported well supported empirically in the past.

There are also several practical matters to consider. Due to time and monetary constraints, administering lengthy knowledge batteries may not be feasible for many researchers. This limits not only the number of questions researchers can ask, but the number of politically-relevant knowledge domains they can include in their tests. In developing their popular five-item civic knowledge index, Delli Carpini and Keeter (1993) are aware of this constraint. While they note that lengthier tests tend to be more reliable than shorter tests (see also: Ansolabehere, Rodden, & Snyder 2008), they find that their five-item test has acceptable levels of internal consistency ($\alpha > 0.70$), and is highly correlated with lengthier tests ($r > 0.90$). The widespread use of this five-item test additionally has the advantage of being available in high quality national public opinion surveys, making it possible for researchers to easily "benchmark" observed levels of knowledge in their own studies vis-a-vis reliable national estimates. Consequently, relying on a well-validated, short, and readily-available civic knowledge test may be simply a matter of convenience for many researchers.

Third, scholars may defend the use of civic knowledge tests as a *proxy* for a more-general and unobserved *political sophistication* construct. A politically sophisticated citizen, according to Luskin (1987), holds (1) numerous attitudes about (2) a wide

range of political matters that are (3) highly organized some a set of guiding principles, both ideological (e.g., Converse1964; Knight 1985) and otherwise. According to this model, the extent to which individuals are politically sophisticated depends on their abilities (e.g., cognitive ability, education), motivations (e.g., interest in politics), and opportunities (e.g., exposure to political information in the mass media) to gather, formulate opinions about, and organize political information (Luskin 1990). Because citizens' knowledge of basic civic facts tends to be correlated with all three sets of factors, Delli Carpini and Keeter (1993, 1996) conclude that civic knowledge is a suitable proxy for sophistication more broadly.

However, while the use of civic knowledge scales is certainly justified on normative, practical, and theoretical grounds, its broad usage in the literature a key drawback. Critically, civic knowledge may be *neither necessary nor sufficient* to carry out many of the political tasks that citizens regularly perform. In his 2015 book, Lupia recommends that, prior to investigating the link between knowledge and political behavior, research ought to "align an appropriate subset of the questions with the kind of knowledge one wishes to measure" (pp. 235-236) – where a particular knowledge criterion is identified based on its "necessary or sufficient relationship" between individual items and an outcome of interest (p. 236). In other words, scholars must ask themselves what individuals *need to know* in order to be considered competent.

A key insight emerging from Lupia's work is that the extent to which civic knowledge satisfies this standard is *always conditional* on the outcome being studied. For example, as reviewed earlier, it is *theoretically necessary* that citizens know where their available choices stand on certain policy issues issues in order to vote for candidates whose positions match their own (Campbell et al., 1960; Goren 2013). In this

example, questions gauging public knowledge about where politicians stand on the issues would therefore provide a fairer test of the link between knowledge and policy voting than would questions about presidential term lengths, or the size of the federal trade deficit.

3.2 Conceptualizing Campaign Knowledge

As I argued in Chapter 2, information about where politicians stand on major policy issues is readily featured in many (but certainly not all) campaign advertisements, and is an important determinant of whether or not they vote in line with their policy preferences. I have referred to this type of knowledge as *campaign knowledge*, and offer a more in-depth discussion of what it is below.

Campaign knowledge, though studied with less frequency than civic knowledge, has nevertheless been the subject of some empirical research in the past (albeit under different names). Luskin (1987) conceptualized individuals' abilities to place candidates to the ideological left or right of one another as a component of political sophistication more broadly. Others have used these placement items as a measure of "political awareness" (Zaller 1992; Zaller & Feldman 1992), or as a distinct form of "placement knowledge" in their own right (Freeder, Lenz, & Turney *forthcoming*). Relatedly, knowledge about where individual candidates (but not necessarily comparisons between them) stand on issues have also been employed as domain-specific forms of "policy-specific" political knowledge (Jerit, Barabas, & Bolsen 2006; Barabas & Jerit 2009; Barabas et al., 2014).

Barabas and colleagues (2014) provide a particularly useful approach for thinking about campaign knowledge, as I conceptualize it here. The authors argue that what

citizens know about politics varies across two descriptive strata: whether or not pieces of information change or are static over time, and whether or not they are general or policy-focused. Knowing where the Democratic Party's presidential nominee stands on universal health care issues with respect to the Republican nominee is a policy-specific and dynamic fact. It focuses on a particular issue, and the correct answer may change as policy platforms and candidates change. In contrast, knowledge of the number of associate justices on the Supreme Court is a static and generally-focused fact. It pertains to an aspect of civic knowledge that is unlikely to change much over time.[1]

At this point, some might ask why I term knowledge of where candidates stand on the issues as "campaign" knowledge. After all, knowing where candidates stand on the issues is only one type of knowledge citizens might acquire over the course of the campaign. Facts about candidates' personal lives, the promises they have made in the past, and even simply knowing where/how to vote are all pieces of information that may be discussed – and (or) useful – over the course of the campaign.

To clear up any conceptual ambiguity this term might suggest, I *do not* mean to imply that some individuals are more knowledgeable about the campaign *writ large* than others. Campaign knowledge is not a conceptual or empirical stand-in for broad awareness about a particular campaign. Really, this terminology is, on some level, a matter of practical convenience. Campaign knowledge could be referred to in terms like "candidate issue stance knowledge" or "policy knowledge." But these labels too are imperfect. The former term is specific, but cumbersome. The latter term is more

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[1] Interestingly, Barabas and colleagues find that political media coverage of dynamic policy issues *decreases* public knowledge about them. Later on, I will show that campaign knowledge – one form of this broader type of knowledge – appears to grow in response to viewing advertisements on television.

concise, but vague (e.g., it could be interpreted as knowledge about specific policies, not necessarily politicians' views on them). I prefer to stick with the term "campaign knowledge," and to draw careful attention to what it is, and what it is not.

3.3 Operationalizing Civic and Campaign Knowledge

Keeping these considerations about the nature and usefulness of civic and campaign knowledge in mind, I next describe in detail how I operationalize both sets of variables in the remainder of this chapter, and in the chapters that follow.

3.3.1 Civic Knowledge

I measure civic knowledge by summing up the number of correctly-answered questions on short factual tests, similar in style to the abbreviated test proposed by Delli Carpini & Keeter (1993). These items were featured in all three datasets described in Chapter 1, and were not administered longitudinally (in the panel studies).[2] Complete information about the questions asked can be found in the Chapter 3 Appendix. Examples of the questions include:

1. (2008 ANES Panel): How many Senators are there from each state? [Respondents type a valid number. Correct answer = 2].

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[2] In the 2008 ANES some respondents were asked the civic knowledge questions in February, others in November, and some were not administered the battery at all. For the purposes of including as many respondents as possible in my analyses, I pool pre and post scores into a single measure. Though some might worry that the November scores are higher, on average, than February scores (e.g., due to learning about civics over the course of the campaign), they are not ($M_{Feb.} = 0.64$, $M_{Nov.} = 0.65$).

2. (2012 ANES): On which of the following does the U.S. federal government currently spend the least? [Foreign aid, Medicare, National defense, Social Security. Correct = Foreign aid.]

3. (2016 CSPP): What job or political office does Paul Ryan currently hold? [Speaker of the House, Secretary of the US Treasury, White House Chief of Staff, Attorney General. Correct = Speaker of the House]

Though the content and number of the civic knowledge questions differs across datasets, respondents' on the knowledge test – as will be seen shortly – was quite similar across the three studies. Moreover, resulting scales also produced similar (and moderately high) levels of internal consistency in all three years ($\alpha = 0.60$ in 2008, 0.62 in 2012, and 0.58 in 2016).

3.3.2 Campaign Knowledge

In contrast to civic knowledge, for which there was a relatively-standardized measurement procedure across datasets, the operationalization of campaign knowledge is more varied. Below, I describe how two distinct – but conceptually related – approaches to measuring campaign knowledge in the three datasets used in this study. As was the case when measuring civic knowledge, all constituent questions can be found in the appendix for this chapter.

The first approach to operationalizing campaign knowledge is the *placement approach*. In the 2012 ANES, respondents were asked to place the two major-party presidential candidates on seven different bipolar scales. Each anchor of the scale featured a different policy stance. Placement closer to each pole indicates that a

particular candidate more-closely shares that view. For example, if the left pole of a scale featured the position "the federal government should greatly decrease defense spending," and the right pole featured the position "... should greatly increase defense spending," a correct answer would place Republican Mitt Romney closer to the right pole than would Barack Obama (the Democrat), and vice versa, regardless of the distance between them or the distances from the midpoint. Correct placements of the candidates were then summed up to form placement knowledge scales.

One notable benefit of this approach is that it may circumvent the problem of "forgetting" basic facts about politics. Lupia (2015) argues that one reason why people may appear to forget basic facts about politics is that they simply do not make use of that information in everyday life – at least, not in the form of specific, discrete facts. Instead, according to the On-Line Model of political information processing (Lodge, Steenbergen, & Brau 1995), individuals may forget discrete pieces of factual information, while nevertheless allowing that information to update prior political attitudes.

The placement approach to measuring campaign knowledge does not require that individuals recall specific declarative facts about candidates plans or policy stances. People must simply know the comparative *ordering* of candidates with respect to each pole of the scale in order to be scored as knowledgeable. For example, one can forget that Mitt Romney campaigned on applying floors of 4% of GDP on defense spending proposals while still generally recalling that he is closer than Obama to the pole advocating more defense spending, whereas Obama is closer to the pole in favor of decreasing defense spending, even though he campaigned on only modest decreases (Klein 2012).

A second approach, used in the 2008 ANES and 2016 CSPP Panels, is the *stance approach*. Respondents were asked to answer a number of questions about particular policy stances, and assess whether or not a particular politician supports (favors) or opposes that measure. For example:

1. (2008 ANES): Does John McCain favor, oppose, or neither favor nor oppose raising federal income taxes for people who make more than $200,000 per year? [Favor, Oppose, Neither. Correct = Oppose]

2. (2016 CSPP): Does Hillary Clinton support or oppose an increase in the federal minimum wage to at least $12? (Support, Oppose, Unsure (Don't Know). Correct = Support].

It is important to note a few differences in the way the stance knowledge batteries were administered in the 2008 ANES and 2016 CSPP study. First, in the 2008 ANES, respondents were asked the same set of eleven questions about both John McCain and Barack Obama. In the 2016 CSPP study, respondents were asked three different questions about each of the two candidates (Hillary Clinton and Donald Trump).

Second, as the above examples demonstrate, response options varied slightly across the two studies. Respondents were given the option to say that a candidate neither supported nor opposed a particular stance, and could offer could offer a "Don't Know" response. In contrast, the 2016 CSPP study provided an explicit "Don't Know" option, but did not provide the option to say that neither candidate supported a particular stance. As I expand on shortly (see: Figure 1), these differences had little impact on the resulting distributions across datasets. Moreover, the resulting scales in both the 2008 ANES ($\alpha = 0.74$) and 2016 CSPP ($\alpha = 0.76$) panels had strong levels of internal consistency.

3.3.3 Addressing the Problem of "DK" Responses

Before describing the distributions, correlates, and other properties of civic/campaign knowledge, it is necessary to address the coding of "don't know" (DK) responses. When measuring campaign knowledge, across both methods, I score all "don't know" (DK) responses as *incorrect answers.*

The decision to do this is not an easy one. While the approach has been taken before in measuring campaign knowledge (Freeder, Lenz, & Turney *forthcoming*), extant research suggests that citizens vary systematically in their propensities to admit that they do not know the answer to factual knowledge questions. Those who are more psychologically open to risk-taking – a disproportionate number of whom tend to be male – are especially likely to forego providing a DK response (Mondak 1999, 2001). Moreover, individuals who provide DK responses may have at least some amount of knowledge about a particular topic (Lupia 2006, 2015).

While it is important to recognize the drawbacks of this measurement decision, it also offers a critical benefit. I conceptualize extent to which citizens learn about where politicians stand on the issues can be thought about as taking one of two forms – "corrective learning," and "elucidatory learning." Corrective learning occurs when an individual moves from providing an incorrect answer to, later, providing a correct answer. Elucidatory learning, on the other hand, occurs when an individual moves from admitting that they do not know an answer to then providing a correct answer.

Corrective learning is captured in my measures of campaign knowledge – irrespective of whether or not DK answers are included as incorrect answers. However, capturing this second form of knowledge is only possible if DK answers are treated as incorrect. Consequently, I code DK answers as incorrect on both forms of campaign

knowledge tests. For consistency, I do the same across civic knowledge batteries.

3.4   Comparing Civic and Campaign Knowledge

Having described how I conceptualize and operationalize campaign knowledge, I conclude this chapter by considering how the campaign knowledge measures compare to one another (i.e., across datasets), and in contrast to political knowledge as it is conventionally understood (i.e., civic knowledge). First, I ask whether or not campaign knowledge and civic knowledge are distributed similarly throughout the mass public. This analysis not only assesses whether or not different measures of civic and campaign knowledge are similar to one another, but can answer questions about whether or not campaign knowledge, like civic knowledge, is in low supply in the mass public.

Second, I consider whether or not the distribution of campaign knowledge throughout the mass public is unequal in the mass public. Previous research suggests that the public's knowledge about policy is – much like civic knowledge (Delli Carpini & Keeter 1996; Mondak 2001; Dolan 2011; Highton 2009) – influenced by educational, socio-economic, and gender factors (Jerit, Barabas, & Bolsen 2006; Barabas et al., 2014; Jerit & Barabas 2016). Do the same sets of factors that make individuals more likely to be highly knowledgeable about civics also make them more likely to hold high levels of campaign knowledge?

Third, and building off the previous two analyses, I take up the question of whether or not civic knowledge is a suitable proxy for campaign knowledge. Delli Carpini and Keeter (1996) argue that the knowledge of basic civic facts is a good indicator of political sophistication – which, by some accounts, includes knowledge about where candidates stand on the issues (e.g., Luskin 1987, 1990; Zaller & Feldman 1992; Zaller

1992). If this account is correct, the two sets of measures should be at least moderately correlated with one another. This would suggest that the effort undertaken so far – to conceptualize, measure, and describe campaign knowledge – might be superfluous. However, if the two measures are sufficiently different from one another, there would be little reason to suspect that civic knowledge can serve as a suitable proxy for campaign knowledge.

Last, I exploit the longitudinal design of the 2008 ANES and 2016 CSPP studies to assess whether or not campaign knowledge tends to increase over the course of presidential campaigns. Because I suspect that policy advertisements boost the public knowledge about where politicians stand on key issues, it is important to first demonstrate that campaign knowledge does in fact increase over the course of the campaign. A lack of learning effects in the aggregate would indicate that campaign knowledge does not move much over the course of the campaign, which could (potentially) cast doubt on possibility that policy-focused ad exposure can increase campaign knowledge.

3.4.1 Aggregate Distributions

Figure 1 plots the aggregate distributions of civic and campaign knowledge across each of the three datasets. These are kernel density plots, portraying campaign knowledge scores with a solid black line, and civic knowledge scores with a dashed black line. For consistency across datasets, I rely on campaign knowledge scores obtained in September (as all three datasets featured a September wave that contained campaign knowledge questions). The figure makes two key points about the distribution of campaign knowledge.

First, the figure shows that distributions of campaign knowledge scores are generally similar to one another over time, and across estimation strategies. In all three datasets, the campaign knowledge distribution is single-peaked, and – in 2008 and 2016 – tends to be normally distributed about the scale's midpoint. Correspondingly, weighted mean levels of campaign knowledge were nearly identical in 2008 (M = 0.54) and 2016 (M = 0.55). The two stance knowledge batteries, despite their methodological and contextual differences, therefore appear to be distributed quite similarly.

In 2012, the distribution of campaign knowledge was moderately skewed to the left (skewness = -1.12), indicating that fewer individuals scored below the scale's midpoint than in 2008 or 2012. Consequently, the 2012 data produced a higher average performance on the scale (M = 0.74). While this might suggest that demonstrating campaign knowledge via placement knowledge batteries might be an easier task for most people, it is important to point out that the 2012 election is the only one featuring an incumbent (Barack Obama). While these data cannot disentangle methodology from context, it is important to bear in mind that performance on the 2012 campaign knowledge items may be somewhat higher than those in the other studies due to the presence of an incumbent.

Second, the figure also highlights only small differences in the distributions of civic and campaign knowledge throughout the mass public. In all three studies, civic knowledge is normally distributed and tends to peak around the scale's midpoint. While scores on the civic knowledge scale were somewhat higher than campaign knowledge scores in 2008, the reverse was true in 2012, and there appear to be no major differences across distributions in 2016. Therefore, there does not appear to be any

consistent asymmetry between the public's levels of each form of knowledge. To echo an all-too-familiar refrain in the study of political sophistication, civic and campaign knowledge appear to be in relatively short supply in the mass public.

3.4.2 Correlates

Next, I consider several potential correlates of campaign knowledge, and assess how they compare to known correlates of what individuals know about civics. To do this, I regress (using OLS) individuals' levels of civic and campaign knowledge on a series of demographic and political factors that might be associated with holding knowledge in one or both areas, including their household income, educational attainment, gender, employment status, marital status, race, interest in politics, and the direction/strength of their partisan identity (see the Appendix for more information about how these were measured across studies).

Figure 3.2 summarizes the results of these models by plotting parameter estimates (diamonds in 2008, circles in 2012, and triangles in 2016) and 95% confidence intervals for several predictors of civic and campaign knowledge. Because all variables are coded to range from 0-1, the parameters' effect sizes can be interpreted as percent change in levels of knowledge, moving from the minimum to maximum observed value of each independent variable. Statistically significant results (at the $p < 0.05$ level, two-tailed) do not overlap with the dashed line spanning zero.

First, as noted earlier, education is often thought about as the single-best predictor of who is knowledgeable about civics (Delli Carpini & Keeter 1996; although see Highton 2009). Consistent with prior research, Figure 2 shows that having a college degree is significantly associated with increased civic and campaign knowledge, with

Figure 3.1: Aggregate Distributions of Civic and Campaign Knowledge (2008 - 2016)
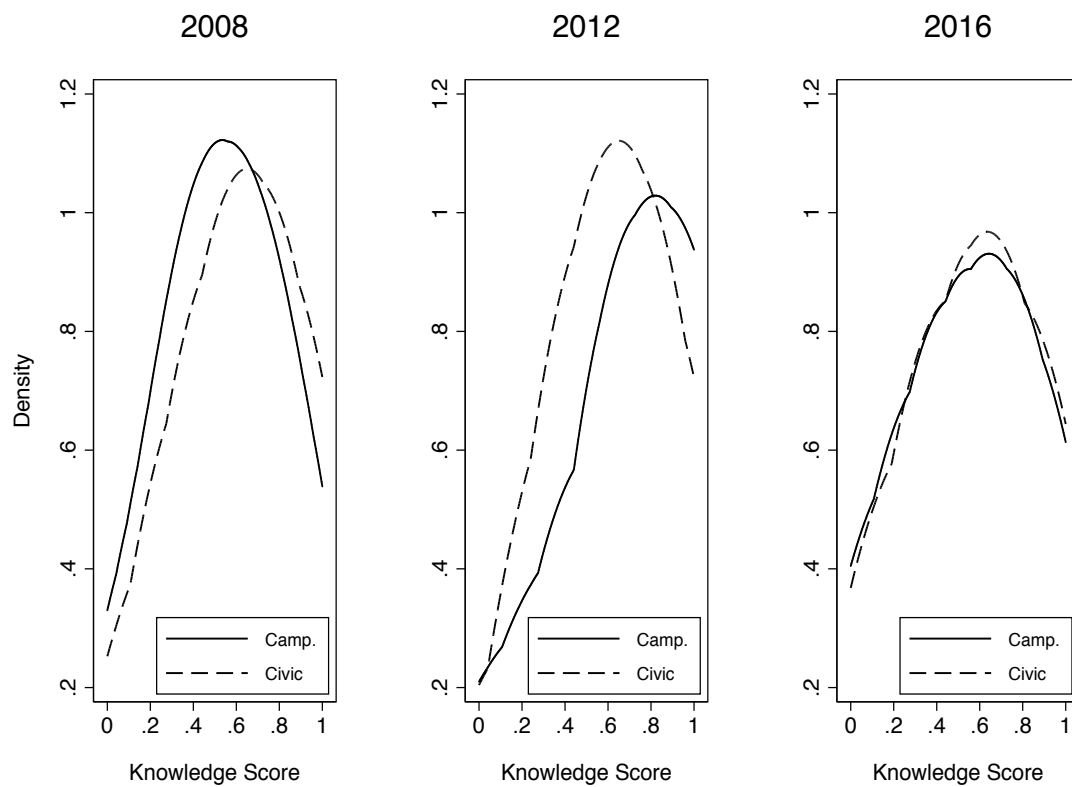
Note. Kernel density plots for each knowledge measure in the 2008 ANES (panel 1), 2012 ANES (panel 2) and 2016 CSPP study (panel 3).

Figure 3.2: The Correlates of Civic & Campaign Knowledge (2008 - 2016)

Civic Knowledge

Campaign Knowledge
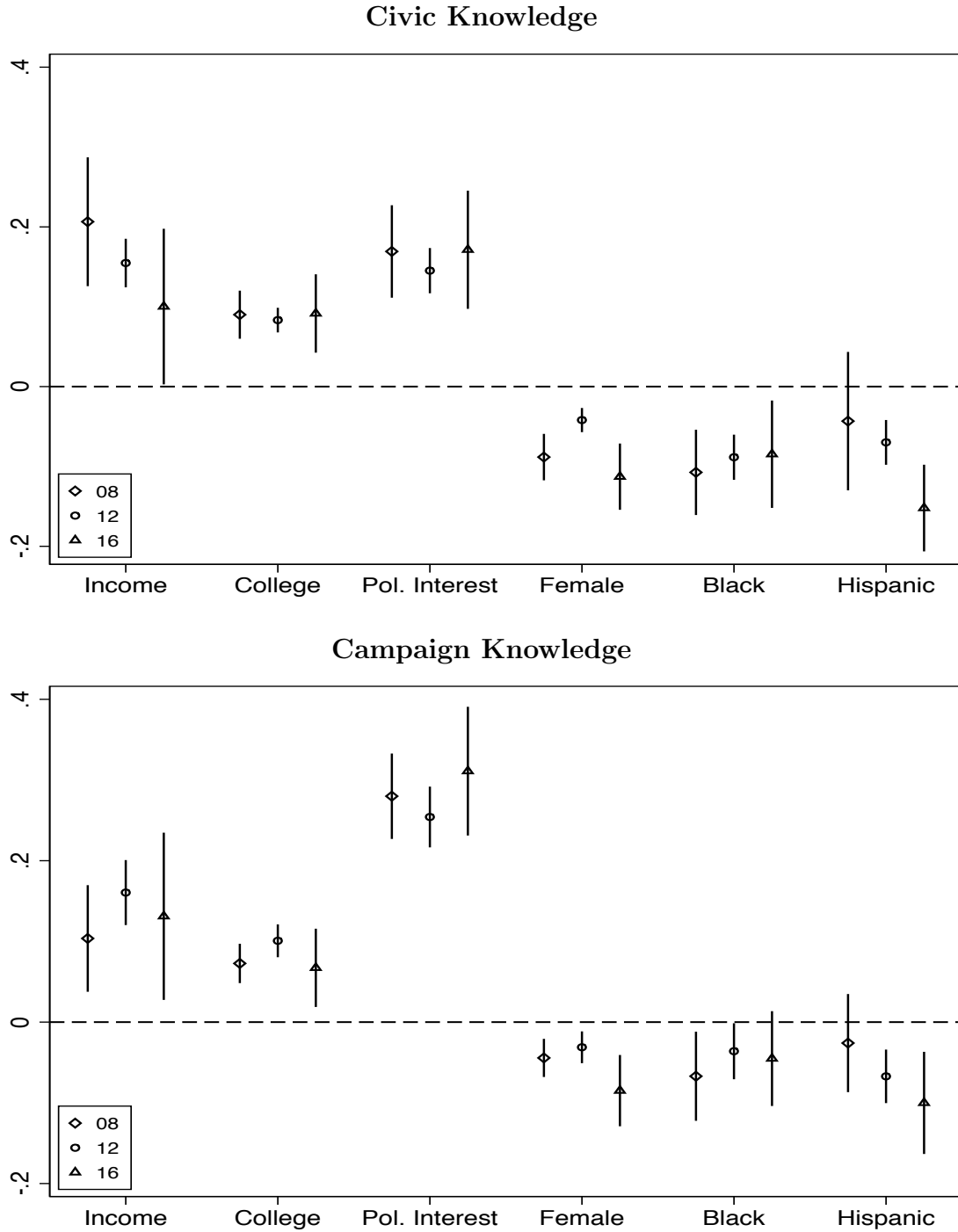
Note. OLS parameters presented as diamonds (2008 ANES), circles (2012 ANES), and triangles (2016 ANES), with 95% confidence intervals extending out from each one. Each model regresses each type of knowledge on the following factors: income, education, gender, employment status, marital status (2008 and 2012 only), race, political interest, partisan identification, and partisan identification strength. More information on how these variables were measured can be found in the Appendix.

effect sizes ranging from +7 to +10% (campaign), and +8 to +9% (civic). Also consistent with prior research, women scored significantly lower than men on both knowledge scales; ranging from -3 to -8% (campaign) and -4 to -11% (civic). Higher income individuals tended to be more knowledgeable on both counts, and there was mixed evidence of racial effects (such that Black and Hispanic respondents tended to score lower on both measures).

One difference between the two sets of models concerns the role of political interest. While political interest was associated with holding higher levels of both civic and campaign knowledge, the effects were significantly stronger with respect to campaign knowledge. Moving from the minimum to maximum values of political interest increased campaign knowledge by +25 to +31%, but increased civic knowledge by +15 to +17%. In each year, these scores are significantly different from one another at the $p < 0.05$ level. Conceivably, this difference may be due to the idea that, when politically interested people seek out political information or discuss it with their peers, they tend to focus more on the campaign, and less on basic civic facts.

Overall, these results suggest that campaign knowledge, like civic knowledge, is not distributed equally throughout the mass public. Wealthier and more-educated individuals tend to be more knowledgeable on both fronts. Both forms of knowledge are associated with gender and interest gaps as well.

3.4.3 Is Civic Knowledge a Suitable Proxy for Campaign Knowledge?

If civic and campaign knowledge are distributed similarly throughout the mass public, and are generally predicted by similar factors, some might argue that civic knowledge

is a suitable proxy for campaign knowledge. To assess whether or not this is true, I calculate the (weighted) correlations between civic and campaign knowledge in each dataset. If civic knowledge is a suitable stand-in for campaign knowledge, the two measures should be at least moderately correlated with one another.

The results cast considerable doubt on the possibility that civic knowledge is a suitable proxy for campaign knowledge. The correlation between civic and campaign knowledge is modest, at best – never exceeding 40% in either the 2008 ANES Panel (r = 0.33), 2012 ANES (r = 0.37), or 2016 CSPP Study (r = 0.40). Across the board, civic knowledge never explains more than 16% of the variance in what citizens' know about where politicians stand on the issues.[3]

What this implies is that scoring highly (or lowly) on one set of items does not necessarily correspond to performance on the other set. For example, in the 2016 CSPP study, only about a quarter (27%) of those who answered all civic knowledge items incorrectly also answered campaign knowledge items incorrectly. Likewise, about a quarter (26%) of those who answered all civic knowledge items correctly also answered all campaign knowledge items correctly.

Thus, while civic and campaign knowledge are distributed similarly throughout the mass public and share several individual-level predictors in common, it would be a mistake to characterize civic knowledge as a suitable proxy for campaign knowledge.

3.4.4 Dynamics (Campaign Knowledge)

Lastly, I consider whether or not campaign knowledge tends to increase over the course of the campaign. Showing that campaign knowledge is "movable" is important, since I

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[3] This is calculated by squaring each of the aforementioned correlation coefficients.

will later consider how exposure to policy advertising might boost what citizens know about where politicians stand on the issues. If campaign knowledge does not tend to grow over the course of the campaign, we may have some reason to be skeptical that policy advertising exposure has the potential to increase it over the course of the campaign. To assess whether or not this is the case, Figure 3.1 plots mean levels of campaign knowledge in each wave of the two longitudinal datasets (2008 ANES, 2016 CSPP).[4]

The results show that campaign knowledge does, in fact, tend to increase over the course of the campaign. In 2008, respondents answered (on average) less than half of questions correctly in June (43%) – increasing to just above 53% in September, and leveling out at around 55% by November. Similarly, in 2016, respondents answered 54% of questions correctly in June; a quantity that barely budged in September (55%). However, by November, respondents answered 66% of questions correctly, on average.

These results suggest that campaign knowledge is indeed *movable*. Figure 3, of course, does not provide a sense of why levels of knowledge might change (I take up this question extensively in Chapters 4-5). On a very general level, though, they suggest that the public becomes better informed about where politicians stand on the issues over time.

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[4] Why not produce a similar figure for civic knowledge? As noted earlier, civic knowledge batteries are were only administered once in each longitudinal study – further underscoring the idea that that civic knowledge is typically not expected to change over the course of presidential campaigns. Unlike information about where politicians stand on major policy issues, which I argue is likely to be a regular feature of policy advertising, basic civic facts simply aren't a major feature of contemporary presidential campaigns.

Figure 3.3: Average Levels of Campaign Knowledge, Over Time
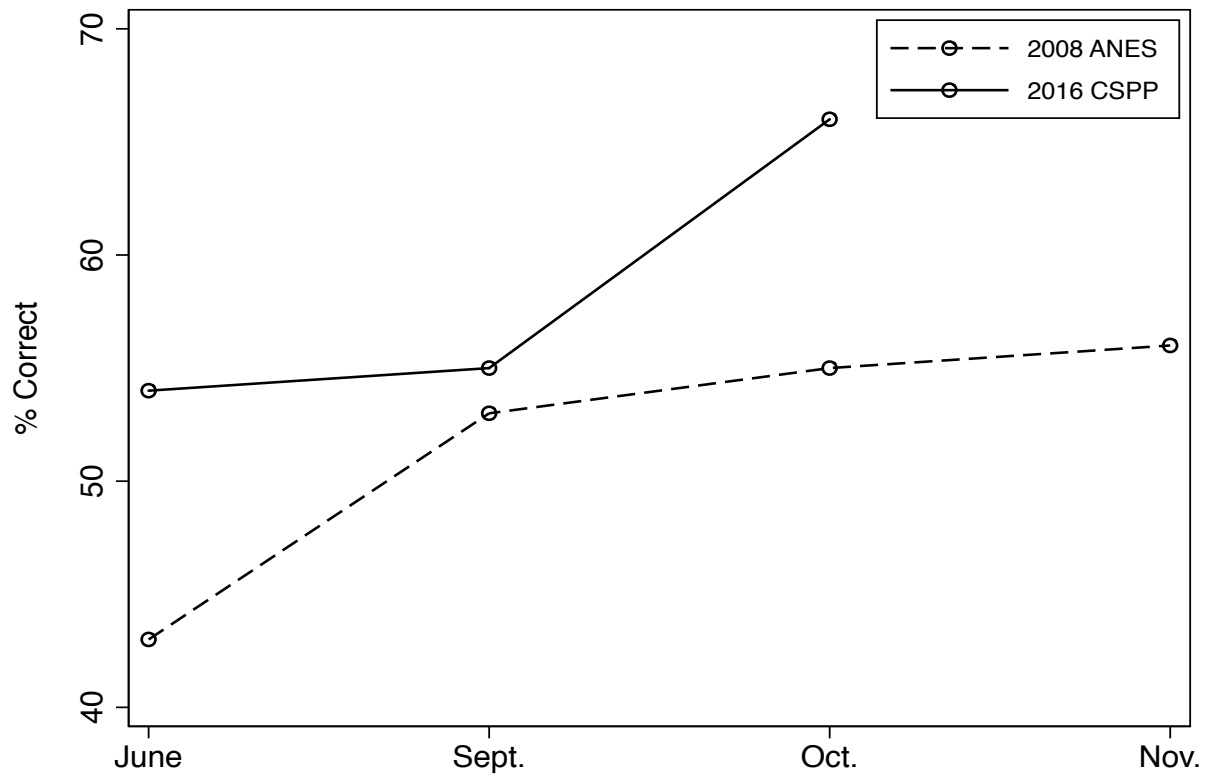
Note. Mean levels of campaign knowledge (hollow circles) in the 2008 ANES (dashed line) and 2016 CSPP study (solid line). The 2016 ANES did not include these questions in its November wave.

3.5 Conclusion

In this chapter, I have drawn conceptual and operational distinctions between civic and campaign knowledge. While civic knowledge is often used as an indicator of general political knowledge, its widespread use in this regard is not without some important critiques. Chief amongst them, for my purposes here, is that civic knowledge may not be relevant to certain political tasks that individuals perform in elections – such as the extent to which they vote for candidates whose policy views match their own.

Additionally, I have considered several basic descriptive properties of civic and campaign knowledge scales assembled in the three datasets I make use of in this project. Though the measures of campaign knowledge vary across datasets, their distributions, reliabilities, and correlates are generally quite be similar. Moreover, campaign knowledge is movable – i.e., it tends to grow over the course of the campaign – making it theoretically possible to observe effects of advertisement exposure on what citizens know about candidates' issue stances.

Critically, civic knowledge is not a suitable proxy for campaign knowledge. Civic knowledge explains at most about 16% of the variance in campaign knowledge, indicating that the two should not be used interchangeably.

In what follows, I assess how policy-focused campaign advertisements can boost citizens' levels of campaign knowledge, and take stock of how that knowledge influences subsequent vote choice decisions. Before doing this, it is necessary to carefully consider the measurement of another central concept in this project – citizens' exposure to campaign advertisements. In Chapter 4, I describe and validate measures of how many policy advertisements citizens likely saw on television during the 2008,

2012, and 2016 presidential campaigns.

Chapter 4

Measuring Policy Advertisement Exposure

In the previous chapter, I argued that two issues need to be addressed before studying the effects of policy-focused advertising on what people know about candidates' policy positions, and whether or not people use that information to vote in line with their policy preferences. First, I need to conceptualize and validate a measure of campaign knowledge – something I took to task in Chapter 3. Second, I need to do the same for citizens' exposure to policy-focused advertisements. I take up that task in this chapter.

Accurately measuring the amount of advertising citizens see on television is a major challenge in studying what citizens learn from campaign advertisements. This is especially true in observational research, which is the methodological approach I adopt in this project. Absent the ability to directly monitor citizens' television viewing habits on a daily basis throughout the campaign cycle, observational measures of ad exposure are always an approximation.

Monitoring citizens television screens (and attentiveness to them) is, a much less farfetched proposition *in the laboratory*. There, researchers can randomly assign

individuals to view advertisements, and, after doing so, can ask them basic questions about the ads to gauge recall (e.g., Ansolabehere & Iyengar 1995; Valentino & Williams 2004). Alternatively (or perhaps additionally) they might also film or observe subjects to assess their attentiveness to the screen when a political advertisement appears (e.g., Iyengar, Kinder, & Peters 1982; Brader 2006).

So, why leave the laboratory to study advertising effects observationally, as I do here? While experimental designs are incredibly useful in isolating the causal influence of advertisements on knowledge (Druckman et al., 2006), and can measure exposure with high levels of precision, they pose some important tradeoffs. Most notably, though researchers have made tremendous strides in rigorously simulating the "real world" in the lab (e.g., Iyengar, Kinder, & Peters 1982; Brader 2005, 2006; Iyengar & Hahn 2009), the experimental environment may over-estimate the effects of ad-viewing by exposing individuals to stimuli they might otherwise ignore in daily life (Mutz 2011). The experimental environment is also limited in its ability to capture the sheer volume of ads individuals are exposed to, at different points in the campaign.

I prefer to let the ads speak for themselves. Rather than attempt to *simulate* campaign dynamics and advertising exposure in the lab, I *estimate* citizens' actual exposure to advertisements aired on television over the course of the campaign. This method also has several methodological tradeoffs, which I detail throughout this chapter. Fortunately, though, political science and political communication scholars have laid a well-validated and empirically rigorous groundwork for estimating advertisement exposure in observational contexts (Freedman & Goldstein 1999; Freedman Franz & Goldstein 2004; Ridout et al., 2004; Franz et al., 2007; Ridout & Franz 2011).

In what follows, I first review a brief history of the observational study of campaign advertising effects. This review suggests that scholars have identified and improved upon key challenges in the estimation of advertisement exposure. I then outline several issues that continue to pose a challenge for measuring advertisement exposure, and introduce three updated measures of exposure (in the 2008, 2012, and 2016 presidential election campaigns) designed to overcome them. I then provide a brief empirical demonstration that these measures are valid indicators of what they purport to measure. I conclude by noting that, while these measures are imperfect, they offer substantive improvements over prior methodological innovations.

4.1 Observational Measures of Ad Exposure: An Historical Overview (1976 - 2007)

4.1.1 Television Logs & Self-Reporting Advertising Exposure

Any description of how observational researchers measure advertising exposure that does not begin with Patterson and McClure's (1976) seminal study of the 1972 Presidential Election is almost certainly incomplete. Patterson and McClure were amongst the first to measure citizens' exposure to campaign advertising, and offered an unprecedentedly rigorous look at how ads shape public opinion (Bartels 1999). To do this, Patterson and McClure asked survey respondents to log (i.e., in a diary) exposure to prime-time, national television programming. Individuals watching less than average levels of television were assumed to have low exposure to campaign advertisements, while those watching more than average levels were assumed to have seen

more ads.

This approach was not only empirically groundbreaking, but continues to conceptually motivate how researchers measure ad exposure today. Still, Patterson and McClure's measure suffers from two critical shortcomings (see: Ridout et al., 2004 for a review).

First and foremost, Patterson and McClure's approach to measuring ad exposure is indirect, and does not incorporate information about when and where ads were aired into its exposure measure. In other words, respondents' self-reported television-viewing habits are assumed to be a proxy for ad exposure. While the authors had a general sense of how many ads were aired in prime-time during the period in which they administered their surveys, they did not have the ability to approximate or "weight" the total number of ads aired on particular programs by self-reported viewership. Moreover, this measure focuses only on respondents' exposure to *nationally televised* programming. Because advertisements be bought both locally (i.e., within certain media markets), and nationally (e.g., on nationally broadcasted programs), any exposure respondents may have had to locally-aired presidential spots cannot be captured by this measure.

Later, several authors turned to self-reported advertisement exposure techniques (e.g., West 1994; Brians and Wattenberg 1996; Sides 2001). This method simply asks respondents to recall whether or not they saw a particular advertisement, or some number of them, during a particular time frame. However, this approach also raises several important methodological concerns.

First, as Ansolabehere and Iyengar (1995) caution, measures like this can be flawed if respondents "misremember" seeing a political advertisement. These authors

found that, even in the experimental environment where ad-viewing was essentially assigned randomly, about one half of treated subjects failed to recall being exposed to one; a fifth of those who saw no political advertisements mistakenly recalled having seen one. Second, respondents may also report recalling advertisements encountered not by-chance on television, but instead on a news program (Ridout & Smith 2008), which may provide additional commentary about the ad or candidates in it otherwise not viewed on television (and thereby confound potential self-reported exposure estimates).

Third, recall measures assume that individuals recall seeing all ads equally, irrespective of content. This, however, may be an unrealistic assumption. For example, recent research suggests that ads featuring negative content tend to be more memorable and attention grabbing than positive spots (Geer 2006; see also, Lau, Sigelman, and Rovner 2007 for a review). If some ads are indeed better at informing citizens about political campaigns than others, as theorized in Chapter 2, creating measures that can accurately assess exposure to different types of ads is critical.

Fourth, self-reported measures provide only limited insight into the *frequency* with which individuals view campaign advertisements. While citizens can surely give some estimate as to the number of advertisements they have seen on television, asking them to estimate an exact number in a public opinion survey poses a substantial cognitive burden (Tourangeau et al., 2000), which may lead people to misreport or simply approximate the number of ads they saw. In theory, this would not be problematic if all self-reports "missed the mark" equally, or randomly (with respect to unobserved true levels of exposure). This, unfortunately, is not the case. Individuals with low levels of cognitive ability are especially like to "satisfice" (Krosnick 1991),

and therefore round their responses to reduce the cognitive demands of recall questions by rounding (e.g., Merola & Hitt 2016).

One potential way around this issue is to collapse response options into categories response options. Indeed, as I discuss shortly, this approach may be sensible for television programs that only air a few times per week (or month). However, the purpose of measuring advertising exposure is to recover the approximate *count* of ads seen on television. For heavy television viewers and/or battleground state residents, this quantity may be quite large, and difficult to capture on Likert-style scales.

4.1.2   Estimating Exposure with Advertising Data: The Ad-Tracking Method

As an alternative to tv-logs and self-reports, several scholars have devised a technique that imports *ad-tracking data* (i.e., lists of when and where advertisements were aired) into public opinion surveys. This method was initially pioneered by Freedman and Goldstein (1999), but several other scholars have improved upon and validated the measure in recent the years (Goldstein & Freedman 2002; Freedman, Franz, & Goldstein 2004; Ridout et al., 2004; Johnston, Hagen, & Jamieson 2004; Franz et al., 2007; Huber & Arceneaux 2007; Ridout & Franz 2011). For simplicity, I refer to this as the "ad-tracking" approach to measuring exposure (Goldstein & Ridout 2004).

The general goal, with ad-tracking methods, is to estimate individuals' advertisement exposure as a function of four factors: (1) the number of ads aired in a particular geographic area, over (2) a particular period of time, and (3) aggregated across the television programs at which they were aired, given respondents' (4) self-reported television viewership habits. Practically, researchers accomplish this by determining

how many advertisements an individual could have possibly seen, based on the area in which a certain survey respondent lives, at a certain point in time (e.g., when they were administered a survey). Researchers can then weight that quantity by respondents' self-reported television viewing habits, to approximate the proportion of those ads they *likely* saw.

The key benefit of the ad-tracking procedure is that it approximates exposure using real advertising data. The total amount of advertisements in a particular geographic area in a particular timeframe is a *known quantity*, not something citizens must gauge themselves (which, for the reasons described earlier, is likely to be inaccurate or biased). The method then adjusts that quantity based on approximations of citizen television-viewing behavior measured in public opinion surveys. This method has the additional benefit of allowing researchers to estimate exposure to *different types* of advertisements, without asking respondents to recall that information themselves.

Of course, an important drawback to consider is that citizens may not be objective judges of what, and how much, television they watch. As Prior (2009, 2013) points out, citizen self-reports may suffer from imperfect recall of their recent viewing behavior, and tend to be considerably larger than estimates pulled from Nielsen data, which track the amount of time Americans actually spend watching particular programs on television. This may be the result of questions about viewing behavior being cognitively taxing, leading respondents to err in their estimation strategies. Moreover, ordinal response options on recall questions are imperfect indicators of interval measures of exposure, such as the amount of time spent watching particular television programs.

These critiques, however, are contestable. Replying directly to Prior's critique, Goldman, Mutz, and Dilliplane (2013) note that while no measure is perfect, *program-listing techniques* – e.g., selecting programs from a large list that individuals remember watching over the course of a month – are almost perfectly correlated with estimates of monthly viewership from television-tracking data (Wonneberger, Schoenbach, and van Meurs 2012). While conventional media exposure questions ask respondents to *recall* the frequency with which they watch particular programs may be cognitively demanding, the authors contend that the simple *recognition* of programs recently viewed tend to be less taxing.

This methodological debate is unlikely to be resolved anytime soon, and weighing in on it is outside the scope of this chapter. However, it is important to keep in mind that the assessment of television program exposure is not the end goal in measuring advertising exposure. Ridout and colleagues (2004) instead assess whether or not *resulting measures of ad exposure* have predictive and content validity. Indeed, they find that when they merge ad data into public opinion data to approximate ad exposure, exposure is correlated with several outcomes with which it ought to be associated with exposure – such as increased knowledge about the campaign (see also Franz et al., 2007). This is true even when controlling for the total amount of television individuals report viewing, and exposure to other forms of political media (e.g., the frequency with which individuals read newspapers).

Overall, measuring ad exposure by using self-reported television viewing habits to adjust known quantities of advertisement airings is, by no means, a perfect measure. I describe several other problems that continue to pose an issue for measuring exposure in this way, and how the measures I design aim to address these concerns. Still, the

measure has been employed and validated extensively, and offers critical benefits over the existing measures I reviewed above.

4.2   Improving on the Ad-Tracking Method

Though the ad-tracking method has many merits, it is not perfect. Below, I consider several contemporary issues with the measure of advertising exposure, and how they might be addressed in future research. Because I make use of the ad-tracking method in this research, many of these issues shape my own methodological choices when measuring ad exposure.

4.2.1   Timing

Estimating exposure using the ad-tracking approach requires making important decisions about aggregation. Over what period of time do we want to sum up the number of advertisements on the airwaves, in various geographic locations?

Determining when to *end* aggregation is usually straightforward. For interviews administered during the election, a sensible ending point is simply the day on which each respondent was administered the survey. Advertisements aired after that date cannot reasonably be expected to influence responses. For surveys conducted after election day, aggregation can stop once the final vote has been tallied (since advertisers, in most cases, will have no need to continue airing advertisements).

But determining when to *start* aggregating is a much more difficult question. Some scholars limit their focus to just advertisements aired during the general election. Freedman, Franz ,and Goldstein (2004), for example, begin aggregating at (roughly)

the end of the primary campaign (June 1, 2000). Others aggregate at the monthly level (e.g., Huber & Arceneaux 2007), or across multiple months (Franz & Ridout 2011).

Aggregation start times like these are potentially problematic, as scholars have recently raised important questions about the durability of advertising effects. Gerber and colleagues (2011), for example, partnered with a real gubernatorial campaign to manipulate citizens' exposure to a particular advertisements, and found that the impact of the ads on candidate attitudes lasted for only about one week. Similarly, Hill and colleagues (2013) find that advertising effects might persist for one or multiple weeks, but note that the strongest exposure effects typically occur on, or one day prior to, the date of survey administration.

Consequently, based on insights from these studies, I guard against the possibility of rapidly decaying advertising effects by aggregating advertisements at the weekly level. That is, I incorporate all advertisements aired on the day that individuals took each public opinion survey, and in the six days prior.

4.2.2 Television Viewership Habits: Programs, Dayparts, or Something Else?

Another aggregation issue scholars must consider when estimating ad exposure pertains to the programs on which advertisements are aired. Advertising totals could, for example, be calculated at the level of individual programs (e.g., Freedman, Franz, and Goldstein 2004). But, they might also be aggregated across the times of day – or "dayparts," in Nielsen's nomenclature – when citizens most frequently tune in (e.g., Freedman & Goldstein 1999). If making use of previously-collected public opinion

data sets, this question has an easy answer – to use whichever measure of television-viewing habits might be available. However, for those designing their own studies, this question deserves further investigation.

First and foremost, aggregation via the "program method" and "daypart method" have been shown to be equally well validated (Ridout et al., 2004). Particularly important for my purposes here is that both methods are positively and significantly associated with increased knowledge about major campaign issues – and to nearly identical substantive degrees – as Ridout and colleagues show.

However, the two are not without some important conceptual and methodological differences. One advantage that the program method holds over daypart method is precision. Because advertisements are purchased at the level of individual programs, program-aggregation can determine exactly how many ads a viewer of that program could have possibly seen (assuming accurate recall of what they watched on television) across many programs. Reporting that one watches television during a certain time of day, in contrast, does not (and cannot) imply that an individual saw all programs available during that time slot. Thus, the daypart-aggregation approach might overestimate the raw total number of advertisements one could possibly see.

Still, the program-aggregation approach also has important disadvantages, compared to the daypart method. Because most citizens today have tremendous choice in terms of what they watch on television (Prior 2005, 2007), measuring exposure to *every show* they might watch is a burdensome task. Survey administrators rarely have the resources necessary to ask respondents extensive batteries of questions about which programs they watch on television, and survey respondents would almost certainly be reluctant to answer them even if they did.

To resolve this issue, Ridout and colleagues (2004) make use of a "five program" measure, which asks respondents to report exposure to five different shows from different genres of television programming. While this approach is intuitive and has strong predictive validity, it still raises a more practical concern. Political science and communication researchers are likely to be primarily concerned with the *political programing* citizens watch on television. For example, Dilliplane and colleagues (2013) note that the reason why their measure of television viewing (included in the 2012 ANES and used to estimate exposure later on in this chapter) includes non-political entertainment programs is simply to keep respondents interested in the task at hand – reporting their exposure to televised news. Therefore, while the five-program measure is an attractive aggregation option for those interested in studying political advertising, fielding surveys that ask the requisite items might be less-attractive to scholars primarily interested in studying political programming.

Ultimately, the daypart and program aggregation methods are much more similar than they are different. However, I believe that the conceptual and methodological tradeoffs noted above are important, and suggest that no one measure is clearly superior to the other. For this reason, as well as the availability of television-viewing measures in my data, I take a pluralistic approach by by making use of both the daypart and program methods to measure advertising exposure.

4.2.3   Inattentiveness

A third issue facing the estimation of ad exposure is the problem of inattentiveness. Even if we can precisely estimate how many advertisements an individual might have seen on television, we cannot say with certainty whether or not they *actually watched*

it. If individuals take bathroom breaks, grab snacks, or mute the television to chat during the commercials, should we consider them to have been exposed to campaign advertising?

At first, this methodological issue might sound like a severe limitation of the ad-tracking method. Most readers, I assume, have probably used a commercial-break as an opportunity to engage in other activities. While this is an important issue, and certainly a potential limitation of the method, the cause for alarm is probably over-stated.

Typically, when scholars make use of ad-tracking method, they are careful to point out that estimates are likely an "upper bound" approximation of how many ads individuals saw (e.g., Freedman & Goldstein 1999; Ridout et al., 2004). If the measure over-estimates attentiveness to the ads, researchers should have a more difficult time detecting advertising effects (i.e., because those receiving higher levels of exposure might actually more-closely resemble those seeing comparatively fewer ads). Despite the risk of Type II error, researchers *still find* that the ad-tracking method predicts holding higher levels of knowledge about the campaign, turning out to vote, voting for the candidate about whom they saw the most ads, and holding higher levels of interest in the campaign (Freedman & Goldstein 1999; Goldstein & Freedman 2002; Freedman, Franz, & Goldstein 2004; Ridout et al., 2004; Franz et al., 2007; Ridout & Franz 2011).

Thus, the ad-tracking method might therefore be better thought about as a more conservative test of the effects of advertising. It is unlikely to lead us to false positive conclusions, but could potentially under-estimate the size of advertising effects.[1]

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[1] Still, some might object that the "upper bound" argument assumes that bathroom breaks, snacking, muting, and the like are distributed independently of true advertising exposure. So long as the decision to tune-out commercials does not vary amongst individuals with different levels

4.2.4 Content Refinement

The issues and potential solutions outlined so far have all been focused on the estimation of advertisement exposure in general. However, one more-specific concern – unique to the individual research questions scholars hope to use advertising exposure measures to answer – should be addressed.

In Chapter 2, I introduced the Revised Equalization Model, which expects that individuals should be more likely to learn about where candidates stand on the issues from policy-focused advertisements than other types of ads (e.g., those that focus on candidates personal lives). Theoretically, the *Relevancy Principle* principle outlined in Chapter 2 suggests (1) that policy advertising contains information that is directly related to drawing inferences about where candidates stand on the issues, and (2) that voters find this aspect of policy advertising to be useful in making political decisions. Because my key empirical focus here is in understanding how citizens acquire knowledge about where candidates stand on the issues, and how that knowledge might relate to policy voting, it is important that I focus on those advertisements that are most likely to provide voters with this type of knowledge.

I also noted in Chapter 2 that few observational studies have attempted to assess what citizens learn about the issues in relation to the amount of policy advertising (specifically) that they see on the airwaves. Most scholars assess what citizens learn

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of exposure to campaign advertising, the measure is contaminated by random measurement error only. However, it could be the case that individuals exposed to more advertisements (e.g., those living in battleground states) are disproportionately likely to tune-out political ads when they air. This, admittedly, is an open empirical question, and one scholars should investigate in the future. But, if those earning the highest exposure scores are disproportionately tuning-out, increases in the ad-tracking measure should have tremendous difficulty uncovering advertising effects (i.e., because those scoring most highly may truly have little to no exposure). The results just described in the above review of the literature suggest that, while Type II error is a reasonable concern, it has not encumbered researchers from detecting ad effects.

about the issues in relation to all advertisements on the air – *even those that may not focus on policy matters at all.*[2]

To address these conceptual points, it is important to make adjustments to the advertising exposure measure I outline here. Rather than estimate exposure to all ads on the airwaves, I focus solely on exposure to policy advertising.[3] To do this, I rely on codes provided by coders at the Wesleyan Media Project (WMP, more on this data shortly), who coded the policy content of each unique ad aired in the three presidential elections studied here. Coders reported whether or not each advertisement focused on (1) mostly policy issues, (2) mostly personal matters, (3) both personal and policy matters, or (4) neither. I treat policy advertisements as all those falling into the first and third category – meaning that the measure can best be thought about as exposure to ads with *any amount of policy content.*[4]

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[2] Ridout and colleagues' (2004) work validating several different observational measures of ad exposure is, in some ways, a notable exception to this point. The authors compared ads' abilities to inform voters on issues discussed in at least some advertisements aired during the 2000 campaign (e.g., Social Security privitization), relative to matters not discussed (e.g., the kiss Al Gore shared with Tipper Gore at the 2000 Democratic National Convention). While this exercise is useful for validation purposes – i.e., in showing that advertisements do not inform where they ought not be expected to – it does not limit analysis to only those ads containing relevant policy information. However, conceptually, the authors' aims are similar to my own – noting that certain facts are more likely to be discussed in advertising than others.

[3] For validation purposes in this chapter, and placebo tests in future chapters, I do from time to time make use of estimates of total exposure.

[4] It may be the case that advertisements falling into the first category of this measure contain more, or more-detailed, policy information than others. While this is difficult to ascertain with the extant data, one benefit of this approach is that it poses a conservative test of the hypothesis that policy advertising informs citizens about where candidates stand on the issues. Put differently, if it is true that "mostly policy" ads contain more (or more-detailed) policy information than others, then this methodological decision might weaken the effect of exposure on knowledge (i.e., by pooling more and less informative ads together).

4.3   Three Measures of Advertising Exposure (2008 - 2016)

Having reviewed how the ad-tracking method works, and what its potential benefits and limitations might be, I next describe the specifics behind how I operationalize advertisement exposure. To do this, I merge Wesleyan Media Project (WMP) ad-tracking data into the three public opinion surveys described in Chapter 1[5] – the 2008 American National Election Study (ANES) Panel Study, the 2012 ANES Time Series study, and the 2016 CSPP National Panel Election Study (NPES).

I chose these three datasets because they contain not only a measure of how much television individuals watch (programs, day-parts), but a geocoded variable (zip code) that can be fashioned into an indicator of the designated market area (DMA) in which each respondent lives (recall that locally-aired advertisements are purchased and tracked at the level of individual media-markets; not states, counties, Congressional Districts etc.). All three of these datasets contained zip code measures, which can be converted into DMA indicators via a process I outline in the Appendix for this chapter.

To get a general feel for how these measures are created, I first provide a non-technical overview of the process. After doing this, I briefly review some more-technical specifics about each measure.

4.3.1   Estimating Exposure: The Basics

Across all three datasets, I estimate exposure using the following five-step process:

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[5] All three WMP files include data from all 210 media markets.

1. Timeframe Definition (Public Opinion Data): First, I define a series of dates across which to import (or "merge") the ad-tracking data into each public opinion survey. All three surveys provide information about when each respondent was interviewed, which I use to create seven timeframe variables that are *unique to each respondent.* The first indicates the date on which they took the survey. Each successive indicator corresponds to the day of the week prior to it. This step ultimately allows me to measure exposure during the week prior to taking the survey for each respondent.

2. Collapsing Airings (Ad-Tracking Data): Second, I determine how many policy advertisements (in line with WMP coder's assessments, described above) were aired on particular dates, in particular geographic locations, over the course of the election. The ad-tracking data from WMP contains thousands of advertisements aired on more dates and programs than is actually reflected in the public opinion data. Each row, in this dataset, corresponds to a different *unique ad* aired in a particular place, on a particular program, and at a particular time. For each program or day-part on which I have corresponding public opinion data, I create a dummy variable assigning each ad a value 1 if it aired (0 otherwise). I then sum (or "collapse") this variable, across dates and media markets. The resulting variables will be counts of the total number of ads aired in each media market, on specific programs (in the 2008 and 2012 opinion data) or dayparts (in 2016).

3. Merging Ad-Tracking & Public Opinion Data: Third, I merge the ad-tracking data into the public opinion data. The main goal here is to determine how many advertisements each survey respondent *could have possibly seen* on television,

before then scaling that quantity to reflect a more realistic estimate of exposure in step #5. To do this, I take advantage of the fact that the public opinion data and ad-tracking data both contain the following variables: (1) the date on which the advertisement was aired (WMP) and the date individual respondents took each survey (opinion data), and (2) media market in which they were aired (WMP) and the media market in which each respondent resides (opinion data). For each of the seven date variables created in step #1, I match the total number of advertisements aired in a particular media market, on a particular day, to corresponding responses in the public opinion data.

Note: As I described earlier, some advertisements are purchased and aired at the national level. For these advertisements, I merge across only the date variables, as all individuals - irrespective of their DMA - will have had the opportunity to see these spots.

4. Program Management (Public Opinion Data): Fourth, because the public opinion data at this point have several variables denoting the total number of ads aired on each program or day-part, I then sum up the total number of ads aired across each one, for each respondent in the dataset. The resulting dataset contains seven-day totals of ads aired across each program (2008, 2012) or daypart (2016), for each respondent in the dataset.

5. Adjustment: Last, I adjust each of the seven-day totals to reflect respondents' television-viewing behavior. I outline the specifics of how this is done in in the pages that follow. Generally speaking, though, I do this by *weighting* each respondent's weekly ad-airing totals by the extent to which she/he reports having

watched a particular set of programs (or tuning in to television during a particular time of the day). Individuals who report watching shows more frequently, or who tune in more regularly to watch television during a particular time of the day, will be scored as having seen a greater proportion of all possible ads they could have seen on television (and vice versa). The items used to measure self-reported television viewing habits can be found in the Appendix.

The quantity resulting from step #5 is the estimate of ad exposure, unique to each respondent in each public opinion dataset. To reiterate, since I cannot observe whether or not individuals remain seated and/or attentive in front of the television set while political ads air, this estimate represents an "upper bound" estimate. Below, I describe in more detail how I carry out step #5 in each presidential election cycle.

4.3.2   Estimating Exposure: The Specifics

Once the total number of advertisements each respondent could have seen is merged into each public opinion dataset, it is then necessary to scale those quantities to reflect more reasonable estimates of what individuals might have seen on television. I do this slightly differently in each available dataset, based largely on the availability of measures of what, and how much, television individuals watch. Additional information about these measures can be found in the Appendix.

First I turn to the 2008 scaling algorithm, which represents the "bluntest" measure of exposure available in the three datasets. The 2008 ANES Panel included only a single measure of television viewing habits (the number of days per week individuals report watching local news), which I employ as a proxy for general television

viewing behavior. As Equation 1 outlines, for each individual i, I sum up the total number of policy ads aired across the seven day viewing window ($d = 1...d = 7$) aired on all television programs *aside* from local news (p_j), and weight that quantity by each respondent's general exposure proxy (w_i). I then do the same for all ads aired on local-news programs (p_k), but divide that quantity by 4 (as I do not have a specific measure of how frequently individuals watch the four major local news channels: CBS, Fox, NBC, and ABC). Because I make use of four waves of the 2008 ANES in this project, I repeat this procedure each time respondents were administered the ANES.

Equation 4.1. The 2008 Measure (ANES Panel Study)

$$\text{Exposure } 2008_i = \sum_{d_i=1}^{d_i=7} \left(p_j \cdot w_i \right) + \frac{p_k \cdot w_i}{4}$$

Next I describe the 2012 scaling procedure, which offers a much-more refined estimate of exposure relative to the 2008 measure. For each day of the week, this method identifies the number of ads aired on each program p_j, for all programs with a companion "program list" (Goldman, Mutz, & Dilliplane 2013) viewing measure in the 2012 ANES ($j = 1...j = N$), and weights them by an estimate of whether or not individuals report watching that program regularly (w_{i_j}). Like 2008, it then aggregates the total number of advertisements aired on local news programs (p_k) – for which there was no "program list" measure – and weights them by the same news viewing measure available in the 2008 ANES (w_{i_k}). As I did before, I also divide this

quantity by four (again representing the fact that I lack sufficient data on which local news channels individuals watch).

Equation 4.2. The 2012 Measure (ANES Time Series Study)

$$\text{Exposure } 2012_i = \sum_{d_i=1}^{d_i=7} \left(\sum_{j=1}^{j=N} \left(p_j \cdot w_{i_j} \right) + \frac{p_k \cdot w_{i_k}}{4} \right)$$

Finally, I outline the 2016 scaling procedure, which is perhaps the most straightforward of the three. Here, again over the course of seven days, I aggregate the total number of policy ads aired during different times of the day – or "dayparts" (p_l) – and weight them by the frequency with which respondents report viewing each one.[6] For this measure, it is not necessary to add an additional set of terms relating to local news exposure, since the "daypart" method bypasses the use of discrete programs. That is to say that local news airings would be aggregated up based on the time of day that they air, and weighted by respondents frequency of viewing television during that daypart.

Equation 4.3. The 2016 Measure (CSPP Panel Election Survey)

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[6] In the CSPP data, daypart exposure is measured on a six-point scales; 1 = Never, 2 = About once a month, 3 = Several times a month, 4 = About once a week, 5 = Several times a week, and 6 = Every day. While each response option is one unit apart from the preceding option, they are clearly do not differ proportionally (i.e., the difference between "once a month" and "several times a month" may be smaller than the difference between "several times a week" and "every day." Therefore, I recode the variable such that each response option roughly approximates the *proportion of a thirty day month* that individuals report watching television during a certain time of day (1 = 0%, 2 = 3%, 3 = 13%, 4 = 14%, 5 = 57%, 6 = 100%). These coding decisions are, by necessity, arbitrary. However, they are consistent (e.g., "several" always equals 4), and represent a more-realistic difference in the viewing frequency offered by each response option).

$$\text{Exposure } 2016_i = \sum_{d_i=1}^{d_i=7} \Big(\sum_{l=1}^{l=N} \big(p_l \cdot w_{i_l} \big) \Big)$$

After scaling the exposure measures in line with these three procedures, two additional steps are necessary. As others typically do (e.g., Freedman, Franz, & Goldstein 2004) I transform all exposure measures by taking the natural log of the scaled values (and preserving cases with no exposure as zeros, as the natural log of zero is undefined). This step is necessary because the untransformed measures have a strong skew toward extreme values, at which the marginal effect of ad exposure on learning (and other political outcomes) is thought to decrease (Ridout et al., 2004).

However, because self-reported measures cannot capture precisely how many hours individuals spend in front of the television, even taking the natural log of the resulting values from the scaling procedures is likely to score particularly heavy television viewers as having seen very high levels of advertising. Even though these measures can best be thought about as upper-bound measures of exposures, the presence of outliers is potentially problematic on two fronts. Borrowing Ridout and colleagues' (2004) reasoning, it could be the case that extreme outliers increase the possibility of Type II error – with high levels of exposure offering diminishing returns on learning. However, one could easily imagine that the reverse is true; outliers could inflate learning effects and increase the possibility of Type I error. Still others might argue that outliers pose no error threat at all (i.e., self-reported measures of television exposure doing a generally good job of approximating how much TV individuals actually watch).

Recognizing the validity of all three perspectives, I prefer to take a pluralistic approach in dealing with this issue. In all analyses presented in the main text, I trim

outliers at the top 5% of each exposure distribution (to guard against the potential for both types of error). However, I re-run all analyses presented in the main text using the full exposure distribution, and present the results in the Appendix. Neither approach is perfect. But, should both converge on a similar result, I can be reasonably confident that arbitrary measurement decisions are not influencing the outcome.

The policy ad exposure distributions resulting from these procedures are displayed below in Figure 1. Because the 2008 and 2016 data are longitudinal, I provide snapshots of the exposure distributions for each wave of the two studies.

Figure 4.1 suggests a four key points about the resulting exposure measures. First, in both years with pre-convention data (2008, 2016), levels of policy ad exposure are generally low - consistent with the idea that advertising spending tends to ramp up later in campaigns (Fowler & Ridout 2013). Second, levels of exposure are lower *across the board* in 2016, in line with recent findings that the 2016 presidential campaign featured the lowest amount of advertising of any campaign in recent electoral history (Fowler, Franz, & Ridout 2016). Third, while the modal respondent in each pane sees zero policy advertisements on television, the *majority* of individuals in all cycles, and at all time points, sees at least some amount of policy advertising. Fourth and finally, whereas the more precise program-viewing (2012) and daypart measures (2016) suggest more-uniform distributions of policy ad exposure (amongst those exposed), the blunter 2008 measure was indeed somewhat more variable. Together, these distributions suggest that most Americans are exposed to at least some amount of policy advertising on television, and – to the extent that the measures differ from one another – they tend to do so in reasonable and expected ways.

Figure 4.1: Estimated Policy Advertisement Exposure Distribution (2008 - 2016)
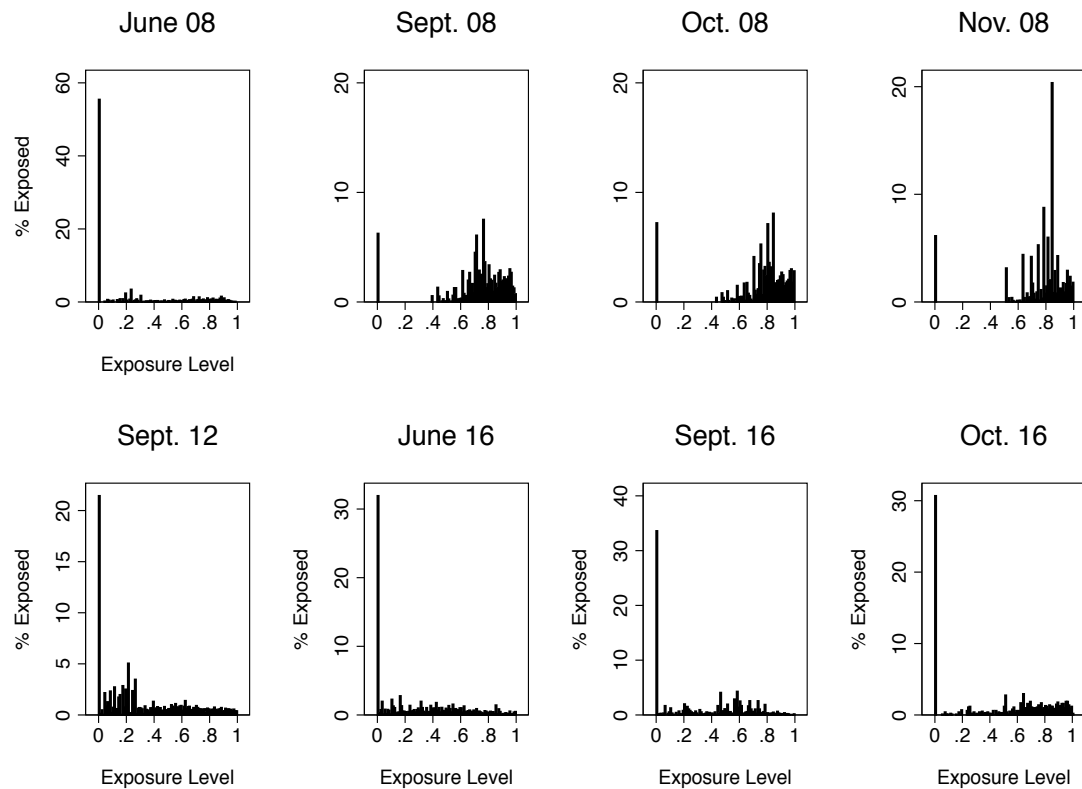
Note. Histograms denote the percentage of respondents in each survey receiving different levels of policy ad exposure, derived from Equations 1-3. Estimates reflect the natural log of the exposure distribution, as is recommended by Ridout et al., 2004. An un-trimmed version of this figure can be found in the Appendix.

4.3.3   Contrasting the Exposure Measures

As the above review suggests, each exposure measure has both strengths and weaknesses. The 2008 measure employs the most limited measure of how much television individuals watch (i.e., it pertains to news viewing only), but has the benefit of being measured longitudinally. The 2012 uses a much more refined program-measurement strategy – matching ads on specific programs to survey items about how frequently respondents view them – but the viewing weights only denote whether or not individuals are regular viewers of that program. The 2016 scaling method uses dayparts, which bypasses programs altogether, and avoids arbitrary coding decisions pertaining to local news viewing. The correspondence between airings and reported exposure is therefore much more straightforward in these data, which (like the 2008 ANES) has the benefit of being longitudinal. Of course, respondents likely to do not tune in to all programs available during a particular daypart, and so the untransformed results of the scaling procedure are even more likely than the other methods to over-estimate exposure.

Each measure of advertising exposure clearly has comparative strengths and weaknesses. For that reason, I show next that all three are associated with sensible correlates of ad exposure. To compare these results to previous ad-tracking validation efforts (e.g., Ridout et al., 2004), I look at both policy ads as well as all ads on the airwaves.[7]

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[7] The total ad exposure measure was constructed analogously to the policy exposure measure, with the exception that it included *all ads on the airwaves* in the aggregation procedure – not just those that were policy focused.

4.4   Concurrent & Convergent Validity Assessment

First, I consider the *concurrent validity* of each measure – whether or not exposure is correlated with demographic and geographic factors that should be associated with increased advertising exposure. Perhaps most obviously, individuals who live in battleground states should be exposed to more campaign advertisements than those who do not, all else equal. Battleground states tend to receive disproportionately high levels of campaign advertising compared to the rest of the country, especially in recent years, thereby increasing their residents' chances of being exposed to political advertising (Fowler & Ridout 2013).

Additionally, individuals who tend to spend more time at home than others may watch more television than others, and therefore experience a higher likelihood of being exposed to campaign advertising. Neilsen television-viewing tracking data from 2011-2016 reveal that, on average, older Americans (aged 65 and older) watch about 34 more hours of televised programming (i.e., not on web-streaming platforms) per week than adults aged 18-24 (Neilsen 2016). The opposite may be true for individuals who are in the labor force (e.g., those who are retired, on medical disability, or otherwise unable to find work) who presumably spend less time at home, and for college-educated individuals who tend to be more-likely to engage in cognitively-demanding media consumption activities (like reading books and newspapers; see Kwak 1999 for a review).

To test these relationships, I created three sets of identical OLS models predicting policy ad exposure in the 2008 & 2012 ANES, and the 2016 CSPP study (the bottom pane of Figure 2). For comparison to prior research, I re-aggregated all exposure measures to look at all advertisements on television (the top pane of Figure 2). All models

included the following factors, all scaled to range from 0-1 – dichotomous measures of whether or not individuals lived in battleground states, determined by the Politico's quadrennial "Battleground" coverage (a list of which states are considered battlegrounds in each election year and archived links to relevant coverage can be found in the appendix), whether or not individuals are in the labor force (dichotomous), and respondents' household income levels, age, race (Black, Hispanic indicators), educational attainment (whether or not individuals were college educated), and gender. All data were weighted, with clustered standard errors at the media market level (to guard against possibility of correlated errors between the predictors and the level of geographic variation at which airings are bought). Because all variables are scaled to range from 0-1, parameter estimates can be interpreted as percent change in logged advertising exposure.

Figure 2 summarizes the results of the model, plotting the parameter estimates (squares for 2008, circles for 2012, triangles for 2016) and 95% confidence intervals for each covariate. Because all variables are scaled to range from zero to one, parameter estimates can be interpreted as percent change in exposure levels, given movement from the minimum to maximum observed value of each variable.

Figure 2 shows that the relationship between each of the aforementioned variables and ad exposure tends to be highly similar across estimation strategies. As expected, age was associated with about a 25% increase in exposure in all three datasets with respect to total advertising exposure, and between a 20-30% increase in policy advertising exposure specifically. Battleground state residence was associated with increased exposure in all three datasets, and across both exposure measures. These effects were strongest in 2012 (an election which saw higher overall levels of

battleground state advertising than 2008 or 2016; Fowler & Ridout 2013). However, they fell short of attaining statistical significance in 2016, perhaps due to lower-than-average levels of spending in battleground states in 2016 (Motta 2016; Fowler, Ridout, & Franz 2016).

Earning a college degree was, as expected, associated with slight decreases in exposure across all three measures (although this effect fell short of attaining conventional levels of significance in 2016), although being in the labor force surprisingly had little substantive association with ad exposure. Other covariates, for which I do not have any clear expectations about their relationship with ad exposure, exhibited significant effects from time to time (e.g., income, identifying as Black). However, these effects were not constant across exposure measures.

Overall, then, Figure 2 shows that all three measures of advertising exposure are correlated with factors with which they ought to be correlated. To the extent that they vary (e.g., with respect to battleground state residence), they do so in predictable ways. Thus, the concurrent validity of these measures appears to be well-substantiated.

Next, I consider the *convergent validity* of each measure – whether or not exposure is correlated with measures of related constructs. Because the types of political ads studied here are aired on television, measures of television-viewing should correlate highly with ad exposure. This is somewhat difficult to test with the present data, although it is not impossible. Recall that all three measures of ad exposure are built using self-reported television-viewing habits. Correlating these two endogenous variables would, therefore, produce spuriously-high associations between ad exposure and television-viewing. Ideally, I would compare the ad-viewing measures described

Figure 4.2: Correlates of Ad Exposure in 2008, 2012, and 2016
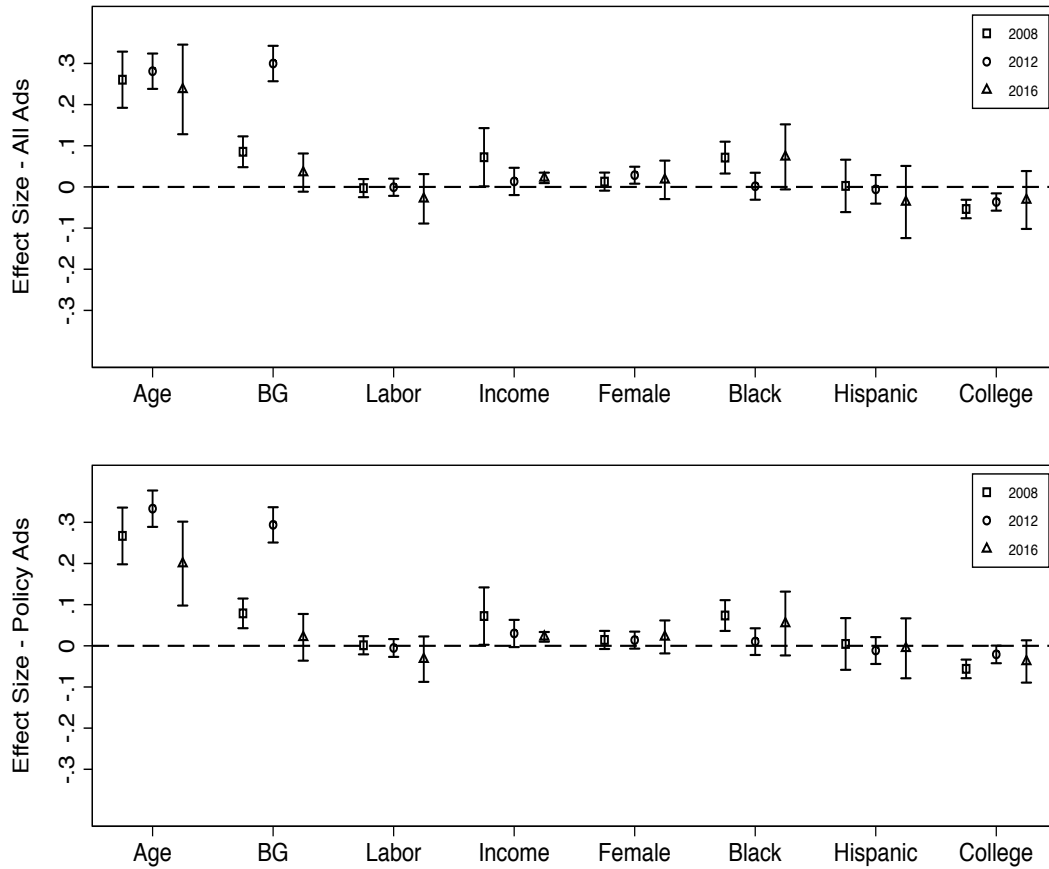
Note. OLS parameters with 95% confidence intervals presented. Models regress policy ad exposure estimates on respondents' age, gender, race, income, educational attainment, and whether or not they live in a battleground state. Additional information about how these variables were measured can be found in the appendix.

here to exogenous, observed viewing behavior (e.g., Nielsen viewing logs).

Fortunately, though, the 2016 CSPP data asked respondents to report their viewing habits of 16 different shows; including entertainment programs like *The Late Show with Stephen Colbert* and news programs like *All In with Chris Hayes.* The benefit of this approach is that these measures were not used in creating the ad exposure measure and were measured on the same scale as the daypart variables and are a reasonably good proxy for what individuals. However, the programs are limited in both number and substantive scope (mostly focusing on television and late-night entertainment shows. See the Appendix for a full list).

Nevertheless, when an index of the sixteen items ($\alpha = 0.88$) is added to the policy exposure models summarized in Figure 2, I find that moving from the minimum to maximum observed values of exposure increases estimated exposure by 73% ($\beta = 0.73$, p < 0.01). In fact, exposure to these sixteen shows *alone* explains nearly a tenth of the variance in advertising exposure ($R^2 = 0.09$). Full results can be found in the Appendix. This approach, while limited in some respects, provides strong support for the validity of the ad exposure measures.

4.5 Discriminant Validity Assessment

In addition to being correlated with sensible factors, and associated with measures of similar constructs, ad exposure should have *little to no* association with two key factors – civic knowledge, and political interest. As mentioned in Chapter 2, conceptualizing ad exposure as "free information" implies that exposure to political advertising is theoretically incidental (conditional upon watching television in the first place). If ad exposure is truly incidental, factors such as individuals' interest in politics and

knowledge about civics should not influence individuals' levels of overall advertising exposure.

To test whether or not this is the case, I add civic knowledge (see Chapter 3 for additional information) and political interest (a single-item measure of general interest in politics) to all of the models used to create Figure 1. Full results can be found in the appendix. Across the board, civic knowledge was not associated with policy ad exposure at conventional levels of statistical significance in either 2008 ($\beta = -0.03$, p > 0.10), 2012 ($\beta = -0.01$, p > 0.10), or 2016 ($\beta = 0.02$, p > 0.10). The same was true for overall levels of advertising in 2008 ($\beta = -0.04$, p > 0.10), 2012 ($\beta = -0.02$, p > 0.10), or 2016 ($\beta = 0.02$, p > 0.10).

Surprisingly, political interest was associated with increased policy ad exposure in 2008 ($\beta = 0.17$, p < 0.05), as well as in 2012 ($\beta = 0.20$, p < 0.05) and 2016 ($\beta = 0.19$, p < 0.05). The same was true for total ad exposure in 2008 ($\beta = 0.17$, p < 0.05), 2012 ($\beta = 0.20$, p < 0.05), and 2016 ($\beta = 0.15$, p < 0.05).

However, this effect is *quite likely artifactual.* Political interest may lead individuals to watch more television programming related to politics, thereby increasing their likelihood of exposure. Indeed, in the 2016 data – which, as mentioned previously, was the only dataset to include an independent measures of news-viewing not used to create the ad exposure measure – the Spearman rank correlation between news program-viewing and political interest was moderately strong ($r = 0.45$). When added to the policy exposure model in the 2016 data, news viewing reduces the size of the political interest effect by 21% ($\beta = 0.15$, p < 0.05), and explains it away when looking at all ads on the airwaves ($\beta = 0.07$ p < 0.10).

Overall, it seems fairly safe to conclude that ad exposure is distributed indepen-

dently of citizens' prior knowledge about politics. This is somewhat less clear with respect to political interest, as interest is associated with increased ad exposure. However, there is good reason to suspect that this association might be spurious. Thus, the discriminant validity of the measures appears to be on solid ground.

4.6   Discussion

In this chapter, I described the process by which I estimate Americans' exposure to policy advertising in three presidential election cycles. These measures are – by necessity – imperfect. All three measures can best be thought about as "upper bound" estimates of the number of advertisements citizens likely saw on television. Moreover, none of the three measures are estimated in exactly the same way, and all three have varied strengths and weaknesses.

Still, while these measures vary in construction and estimation, they share several key elements in common. First, all three measures appear to be generally well-correlated with factors that ought to predict increased exposure to advertising, and areuncorrelated with factors that should not. To the extent that they differ, they generally tend to do so in ways that are predictable, and consistent with the scholarly literature. Second, all three have good face validity. In the studies for which dynamic data are available, exposure tends to increase as the campaign wears on, as should be expected. Moreover, in the 2016 campaign, which boasted historically low levels of policy advertising compared to 2012 and 2008, the measures produced comparatively low levels of policy ad exposure (Motta 2016; Fowler, Ridout, & Franz 2016).

Third, and perhaps most importantly, all three measures respond to outstanding issues with the measurement of advertising exposure. Where the scholarly literature

can make fairly conclusive recommendations about how to best measure exposure (e.g., with respect to timing), the measures adopt a uniform solution (e.g., focusing on weekly ad-viewing windows). Where the literature does not provide a conclusive solution (e.g., the decision to aggregate and match advertising at the level of many programs versus dayparts), the measures are more pluralistic.

Taking a step back, it is important to reiterate that measures like the three described here can allow researchers to gain unique observational insight into the effects of campaign advertising on citizens' political attitudes and behavior. Imperfections aside, measuring policy ad exposure observationally gives me the opportunity to use nationally representative cross-sectional and panel data to draw inferences about how citizens learn from what they see on television. This is a critically important point.

With measures of exposure and campaign knowledge in hand, I can now test test whether or not policy advertising increases knowledge about where candidates stand on major policy issues, and closes gaps in what people know about politics. I address each of these points in the chapters that follow.

Chapter 5

Learning from Policy Advertising

The idea that campaign advertisements have at least some amount informative power is hardly a source of disagreement. As I reviewed in Chapter 2, previous research has linked ad exposure to knowledge gains about campaigns and current events (e.g., Freedman, Franz, & Goldstein 2004; Franz et al., 2007). Whether or not citizens learn from policy-focused ads specifically, and whether or not those ads are *better* predictors of campaign knowledge than ads focusing on other matters, is an open empirical question.

My central goal in this chapter is to test whether or not citizens learn from the policy-focused ad exposure measures developed in Chapter 4. At first, this might seem unnecessary. Scholars generally agree advertisements are informative, and these ads contain more of the information thought to be necessary to be knowledgeable about where politicians stand on the issues. Why bother putting this claim to the test?

This analysis is actually quite useful, for the following three reasons. First, it offers a predictive validity test for the exposure measures designed in Chapter 4. Are the measures designed in Chapter 4 actually measuring what they are designed to measure? Second, it is a serviceable "proof of concept" exercise that provides a

context for the gap closing analyses studied in Chapter 6. If policy ads do not inform, or do not do so more effectively than other types of ads, it would be reasonable to cast doubt on the usefulness of studying them in follow-up tests. Third, it is useful for identifying potential problems with the way campaign advertising is usually measured in the literature. If policy ads are indeed more informative than non-policy ads, methods that combine the two may under-estimate the effect of advertising on campaign knowledge. I elaborate on each of these three points below.

5.1   A Test of Predictive Validity

First, as alluded to in Chapter 4, it is important to test the predictive validity of my three advertising exposure measures. Asking whether or not these measures of exposure are associated with outcomes with which they, conceptually, ought to be is critical for their validation (Carmines and Zeller 1979). Moreover, as Ridout and colleagues (2004) note, it is particularly important to assess predictive validity when measuring campaign advertising, which (as discussed in Chapter 4) involves taking indirect and upper-bound measures of what citizens likely saw on television.

Specifically, assessing the predictive validity of my ad exposure measures stands to offer two tangible benefits for the results presented later on. First, because my measures of campaign advertising exposure differ from previous measure in terms of content (policy-focused), timing (a one-week exposure window), and television viewership (including the use of daypart-ing and program listing methods), these results can offer confidence that these methodological updates still produce a measure that taps something similar to previous exposure measures.

Second, my measures of ad exposure are quite varied. No two datasets contained

the same raw ingredients, and the resulting measures differ in important ways. However, if all three are associated with gains in what people know about politics – paired with the validation work already presented in Chapter 4 – we can be reasonably confident that all three are measuring the same underlying concept.

5.2   A Proof of Concept Analysis

These tests also represent the most basic hurdle – or a "proof of concept" – that I need to overcome in order to have confidence that the analyses presented in Chapter 6 rest on a solid empirical foundation.

If policy-focused ad exposure is not associated with increased voter knowledge *in general*, this would cast substantial doubt on the usefulness of testing for gap closing effects between *specific groups*. This is true for one of two reasons.

On the one hand, null results could be indicative of no true relationship between policy ad exposure and campaign knowledge in the population. This pessimistic account would suggest putting aside explorations of the gap-closing analysis I test in Chapter 6. If policy ad exposure plays no discernible role in informing most people, gap-closing effects are either unlikely to exist, or potentially the result of methodological artifact.

On the other hand, a less pessimistic take on null results might suggest that the effects of advertising exposure are simply *limited* to one particular group in society (e.g., citizens with high [or low] levels of civic knowledge, education, or political interest). If I find no main effect evidence of advertising effects, but do find some evidence of moderation when testing for gap-closing effects, policy ad exposure might only be informative for that group.

Clearly, both possibilities would seriously dampen potential optimism about the informative power of campaign advertising. Documenting a consistent and robust effect of advertising exposure on campaign knowledge would therefore be quite useful in putting these concerns to rest.

5.3 A Reconsideration of Conventional Measurement Approaches

Third, these analyses can help illuminate potential issues with the way scholars typically study the effect of ads on voter knowledge. Notably, conventional approaches pool personal and policy-focused advertising into a single measure of ad exposure. If, as theorized, policy-focused spots are truly better at providing the public with campaign knowledge than other types of ads, conventional approaches may *under-estimate* ads' informative power.

The possibility of under-estimation has important substantive implications for the study of campaign advertising. Under-estimation may be evidence of a conceptual mismatch between *what* we expect citizens to know, and *how* we expect them to learn that information. Whereas campaign knowledge is quite specific in the range of facts citizens might be expected to hold, for example, overall exposure to campaign advertising is quite general – including ads focused on both policy and other matters. If ads focusing on non-policy matters do not contain the information necessary to be considered informed on this criterion, they may pose an unfair test (see also: Lupia 2015).

5.4   Estimating Change in Campaign Knowledge

5.4.1   The Cross-Sectional Approach

Perhaps the simplest way to test whether or not policy ad exposure boosts campaign knowledge is to use a cross-sectional survey design. Under this framework, what citizens know about the campaign is regressed on policy ad exposure – measured at the same time as the knowledge items – plus a series of relevant control variables. This intuitive approach has been employed in several studies on ads' capacities to inform the public (e.g., Ridout et al., 2004; Freedman, Franz, & Goldstein 2004; Franz et al., 2007), and has the notable benefit of being suitable for implementation in any survey that contains both a measure of campaign knowledge (Chapter 3) and the items necessary to approximate ad exposure (Chapter 4).

However, this method has a notable drawback. Cross-sectional data offer only a correlational look at the effect of advertisements on what citizens know about politicians' stances on the issues. While they enable us to say that exposure and knowledge are associated with one another at a particular point in time, and that this effect is robust to the effect of alternate contemporaneous explanations, it is nevertheless difficult to rule out the possibility that unobserved factors might explain away these effects.

Overcoming this hurdle means modeling *change* in what citizens know about politics as a function of what they see on television at several points in time. If increases in policy advertising exposure is associated with individuals' propensities to learn – both within *and* across individuals – we can have much higher levels of confidence in their informative power. Doing this, however, requires longitudinal data and more-

complex modeling strategies. I describe these below.

5.4.2 The Linear Growth Approach

For the two longitudinal datasets (2008, 2016), I use a somewhat more complex procedure to calculate the effect of campaign advertising on campaign knowledge. Specifically, I rely on what is known as random coefficients linear growth modeling (LGM for short).

Before getting into specifics about how the method works, it is important to discuss why I chose to use it. The key benefit of LGM is that it allows me to exploit the longitudinal setup of the data to *isolate change* in individuals levels of knowledge. The ability to account for individual change provides added certainty that the observed results are influenced by changes in individuals levels of policy advertising exposure, and not potentially-spurious influences that might co-occur with the measurement of knowledge in any particular wave.

Keeping this in mind, LGM can generally be thought about as follows. First, it is a *linear model* – suitable for outcome variables that are measured at the interval or quasi-interval level. Second, it contains both fixed and random effects components. The fixed effects (e.g., the coefficients presented in Table 1) can be interpreted like the parameters obtained from methods like Ordinary Least Squares. That is, they represent the effect of some independent variable on change in knowledge over the course of the campaign cycle.

The random effects compute two quantities of interest. As mentioned before, I make use of a *random coefficients model* (Acock 2010). This means that the LGM accounts for varying levels of knowledge at the individual level (i.e., a "random inter-

cept), and allows growth to vary at the individual level (i.e., a "random slope). These values are reported as variances, and are permitted to correlate with one another (reported as the covariance between the intercept and slope).

At this point, it may not be immediately obvious why I have selected a modeling strategy with both fixed and random components. Why not run a simple fixed effects model, regress change in knowledge over the course of the campaign on levels of exposure to policy advertising, and derive a simple estimate of the effect of ad exposure on within-person change in knowledge? Indeed, I *do* employ this strategy in the pages that follow, as an alternative test of my expectations.

As a practical matter, though, there are some drawbacks to the fixed effects estimator. First, while the fixed effects estimator holds constant potential alternative (individual-level) factors that might explain the observed effects, we may nevertheless be interested in what those effects are. If those elements are constant, or measured only once in the data, they cannot be included in the fixed effects model (see also: Torres-Reyna 2007).

Second, and relatedly, this poses a potential estimation problem for the analyses I hope to run in later chapters. Assessing how exposure closes gaps in knowledge means interacting something dynamic (exposure) with something static or very slow to change (e.g., whether or not respondents have a college degree at the time of the survey). The fixed effects estimator is not ideal for this type of analysis, given the constraints noted above.

In order to ensure the results presented here match the modeling strategies employed in future chapters, I prefer to make use of the LGM approach. Still, I present the fixed effects results as well for comparison to simpler and more-parsimonious

modeling strategies.

5.5 Policy Advertising and Campaign Knowledge

Broadly, I suspect that policy advertisements inform the public about where politicians stand on major policy issues. As I reviewed in Chapter 2, campaign advertisements are informative (in general) because they are short, memorable, easy to comprehend, and rife with information about politics. I also noted that policy advertisements should be particularly good at boosting campaign knowledge, because they contain the type of information necessary to be considered informed by this criterion (i.e., they mention or compare where politicians stand on major issues). Thus, I propose Hypothesis 5.1:

> **Hypothesis 5.1:** Increased exposure to policy-focused advertisements will be associated with increased knowledge about where candidates stand on the issues.

Finding support for Hypothesis 5.1 would be instrumental in accomplishing the three goals outlined at the start of this Chapter. Still, to boost confidence that these results are not artifactual, I consider two sets of placebo tests. The first asks whether or not policy ad exposure – the hypothesized mechanism by which people acquire campaign knowledge – is associated with gains in the knowledge of basic civic facts (i.e., the information unlikely to be discussed in those ads).[1] If the two are *not associated* with one another, we can have added confidence that the campaign

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[1] Motta & Fowler (2016) find, for example, that political parties, mentions of politicians' partisan affiliations, and ideological preferences are rarely mentioned in political advertisements.

knowledge outcome variable is a good measure of what citizens might be expected to learn from policy ads. With this in mind, I propose Placebo Test 5.1:

Placebo Test 5.1: Exposure to policy-focused advertisements should yield no discernible effect on knowledge about basic civic facts.

The next set of placebo tests asks whether the outcome variable (campaign knowledge) is equally well predicted by ads that do not discuss policy matters. If my theoretical expectations are correct, ads that do not discuss policy issues should perform poorly in predicting campaign knowledge, as they lack the information necessary to be informed about where politicians stand on the issues. Finding that non-policy-focused ads *fail to increase* campaign knowledge would provide added confidence that it is the policy content of ads specifically that drives knowledge gains in the domain of campaign knowledge. With this in mind, I propose Placebo Test 5.2:

Placebo Test 5.2: Exposure to non-policy focused advertisements should yield no discernible effect on knowledge about where candidates stand on the issues.

Finally, if the results support Hypothesis 5.1 and pass both sets of placebo tests, they may raise concerns about the way campaign advertising is typically studied. As mentioned earlier, scholars often pool policy and non-policy focused ads together when studying campaign knowledge (and related forms of knowledge). If I find that policy-focused ads are generally strong predictors of campaign knowledge (Hypothesis 5.1), while non-policy focused ads are not (Placebo Test 5.2), conventional approaches that combine the two may *underestimate* the effects of advertising on campaign knowledge. Consequently, I propose Hypothesis 5.2:

Hypothesis 5.2: When policy and non-policy focused ads are combined into a single measure of total ad exposure, the effect of exposure on campaign knowledge gains will be smaller than that of measures making that focus exclusively on policy-focused ads.

5.5.1 Learning from Policy Advertising

First, I consider whether or not increased exposure to policy-focused advertising boosts knowledge about where candidates stand on the issues. The results can be found in the first five rows of Table 5.1 (designed by "H5.1" in column one).

The rows in Table 5.1 present the effect of each measure of policy ad exposure described in Chapter 4 on that election cycle's corresponding measures of campaign knowledge. As described in Chapter 3, these are measures of knowledge about where politicians stand on major issues of the day (additional information and full question wording can be found in the Appendix). This is denoted by $\beta_{Exposure}$. Because all variables are scored to range from 0-1, this can be interpreted as percent change in the outcome variables.

The models vary in estimation strategy (denoted in the "Estimator" column), pursuant with the above discussion of how to properly calculate learning effects in each of the different datasets. In the 2008 and 2016 panel studies, I model this relationship using the fixed-effects (FEE) and linear growth (LGM) techniques described above. In the cross-sectional data, I employ an ordinary least squares (OLS) approach.

When possible, I also control for a set of time-invariant political and demographics controls that is very similar to those employed by Freedman, Franz, and Goldstein (2004) in their classic work on ad-based learning effects (listed in the note accompa-

nying Table 5.1). Full results from these models can be found in Table A5.1 in the Appendix.

The results offer strong support for Hypothesis 5.1. Focusing first on the panel data, movement from the lowest to highest observed levels of policy ad exposure boosted citizens' knowledge about the campaign by as little as 8% (FEE) or as much as 12% (LGM). As the table reveals, both quantities were statistically significant at the $p < 0.05$ level (two-tailed). I find a nearly identical pattern in 2016, with policy ad exposure boosting campaign knowledge by as little as 8% (FEE) and as much as 13% (LGM). Again, both quantities were statistically significant at the $p < 0.05$ level.

The cross-sectional data reveal similar, albeit somewhat weaker, results. Moving from the minimum to maximum value of the policy exposure measure was associated with a 4% and statistically significant ($p < 0.05$) increase in campaign knowledge.

Data limitations, measurement differences, and modeling strategy, of course, could all potentially explain the more modest effects observed in 2012. Substantively, though, it is worth re-considering a point I alluded to earlier in Chapter 3. 2012 is the only cycle tested here that featured an incumbent candidate (President Obama). Given his incumbent status, respondents may have been more-familiar with Obama's issue positions in 2012, thereby boosting scores on the placement knowledge measure I employed in that year. with As I noted in Chapter 3, campaign knowledge was indeed somewhat higher overall in 2012 than in 2008 or 2016. This dynamic might create less room for gains in knowledge about the candidates, thereby leading to more modest effects.

Overall, these data offer strong support for Hypothesis 5.1 across a wide range of estimation strategies, measurement techniques, and election cycles. They hold

Table 5.1: Campaign Knowledge Gains & Policy Advertisement Exposure (2008 - 2016 ANES)

Test	Year	Estimator	Controls	Battleground	$\beta_{Exposure}$	SE	p	Supported?
H5.1	2008	FEE	N	-	0.12	0.02	*	Y
H5.1	2008	LGM	Y	Fixed	0.08	0.03	*	Y
H5.1	2012	OLS	Y	Fixed	0.04	0.02	*	Y
H5.1	2016	FEE	N	–	0.13	0.02	*	Y
H5.1	2016	LGM	Y	Fixed	0.08	0.02	*	Y
P5.1	2012	OLS	Y	Fixed	-0.01	0.01	n.s.	Y
P5.1	2016	OLS	Y	Fixed	-0.01	0.03	n.s.	Y
P5.2	2008	LGM	Y	Fixed	0.00	0.01	n.s.	Y
P5.2	2012	OLS	Y	Fixed	0.01	0.02	n.s.	Y
P5.2	2016	LGM	Y	Fixed	0.01	0.02	n.s.	Y

* p < 0.05

Note. Summary of results from several models assessing the effect of policy advertising on campaign knowledge. Full models can be found in the Appendix. The second column denotes the estimation strategy used in each model; FEE stands for fixed effects estimation, LGM stands for linear growth modeling, and OLS stands for ordinary least squares. $\beta_{Exposure}$ can be interpreted as the percent change in campaign knowledge, given movement from the minimum to maximum value of policy ad exposure estimates in each election cycle. If a result is consistent with my theoretical expectations, it is suffixed with a "Y" in the final column. LGM and OLS models control for the following factors: civic knowledge, strength of partisan identification, exposure to campaign related news (only available in 2012), gender, income, age, education, race, marital status (not available in 2016), employment status, whether or respondents experienced mobilization attempts from one of the presidential campaigns (only available in 2012), survey mode (online or face-to-face; only relevant in 2012), and whether or not respondents live in a battleground state.

irrespective of whether I assess the effects of policy ad exposure dynamically (with or without adjustment for time-invariant controls), or in a static and cross-sectional setup, the results all point to a similar conclusion. They also hold across for outcomes making use of both "placement" and "stance" approaches to measuring campaign knowledge, as well as across each of the three exposure measures. Policy-focused advertising does indeed provide the public with information about where candidates stand on key policy issues.

5.5.2 Placebo Tests

Although the above analyses strongly suggest that policy ad exposure facilitates the acquisition of campaign knowledge, we can have added confidence in these results if I can establish that it *does not* boost knowledge about unrelated topics. If the policy content of these ads is truly the mechanism boosting campaign knowledge, knowledge of subjects not discussed in the ads should be largely unaffected policy ad exposure. Placebo test 5.1 tests this possibility by regressing measures of civic knowledge on policy ad exposure. As described in Chapter 3, this is measured via short factual knowledge tests about the basics of American civics (full tests and correct answers to each question can be found in the Appendix).

The results are displayed in the sixth and seventh row of Table 5.1 (note: it was only possible to conduct this analysis in 2012 and 2016).[2] In both cases, policy ad

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[2] Civic knowledge items were not administered during the general election campaign in the 2008 ANES panel. Respondents had the opportunity to answer these questions at one of two time points, either before the general election (February wave) or just after (November wave). Since the goal of this placebo test is to see how exposure increases subsequent knowledge about civics, this analysis at best could only be performed with those who saw the items in the November. Because advertising stops on election day, but the administration of the November wave extends beyond it, this poses an overly-generous Placebo test – as exposure may be measured more than a week out from when the civic knowledge test is assessed. This would pose an overly generous placebo test - making it

exposure failed to yield a statistically significant effect on civics knowledge (p > 0.10 in both cases). Moreover, the coefficient is incorrectly signed in both cases, suggesting that increased policy ad exposure is associated with a small – but, again, statistically insignificant – *decrease* in civics knowledge. Thus, the results support Placebo Test 5.1.

Moreover, if exposure to ads' policy content is truly driving gains in what citizens know about where candidates stand on the issues, we should further expect that ads that do not feature policy information *fail to boost* campaign knowledge. Placebo test 5.2 puts this possibility to the test by regressing citizens' levels of campaign knowledge on their exposure to ads that make no mention of policy issues, focusing instead on personal and other factors.

The results show that non-policy ads yield almost zero impact on what citizens know about the campaign, with effects ranging from 0% (2008) to 1% (2012–2016). In all three cases, this effect failed to attain statistical significance (p > 0.10). Once again, the results are consistent with expectations, and offer added confidence that it is the policy content of ads that drives campaign knowledge gains.

5.5.3   The Problems with Pooling

In addition to boosting confidence that exposure to policy-focused ads truly does increase knowledge of where politicians stand on the issues, Placebo Test 5.2 has potentially-important implications for the way advertising effects are typically studied. As I reviewed in Chapter 4, observational studies of ad-based learning effects typically approximate ad exposure using estimates of all spots aired on the airwaves.

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much easier for me to fail to see an effect of ads on civics knowledge. Consequently, I prefer to avoid estimation in 2008.

As the results of this placebo test suggest, however, exposure to non-policy focused ads yields no discernible effect on campaign knowledge.

Consequently, we might be concerned that pooling policy and non-policy focused ads together might *dilute* the effects of ad exposure on campaign knowledge. To test this possibility, I re-created each of the exposure variables outlined in Chapter 4 to account for all advertisements on the airwaves during a particular week, and in a particular geographic area. I then re-ran each of the analyses presented in the first five rows of Table 5.1, designed to test Hypothesis 5.1. Full model results can be found in the Appendix.[3]

The results suggest that that conventional approaches to studying campaign advertising may be underestimating the effect of ad exposure on campaign knowledge. In 2008, the pooled measure reduced the effect of ad exposure on campaign knowledge by approximately 24%. Similarly, in 2016, the pooled measure reduced the effect size by 25%. Interestingly, I observed no dilution effect in 2012 – the cycle which also produced the most modest effects of ad exposure.

5.5.4   Robustness Checks

Before concluding, it is worthwhile to address one potential methodological critiques of the results presented so far. One potential criticism concerns the measures of exposure. In Chapter 4, I explained why I opt to trim the top 5% of the policy ad exposure distribution when approximating ad exposure. This approach has the benefit of tossing out responses that produce unrealistically high estimates of exposure, but

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[3] For 2008 and 2016, I present results from the models that produced the most-conservative estimates of the effect of exposure on campaign knowledge (i.e., the LGM models). Looking at the FEE models would provide more room for movement, and could potentially exaggerate potential dilution effects.

has the drawback excluding precisely the people who we would expect to be the most likely to acquire campaign knowledge – those who see many ads on the air.

This raises an important question – do the effects observed in Table 5.1 hold when considering the full exposure distribution? On the one hand, adding back in respondents who are truly highly-exposed to policy ads might suggest that the might increase the size of the effect of policy ad exposure on campaign knowledge. On the other hand, adding back in those who do not truly see many ads on the airwaves might cause the full distribution to under-estimate learning effects.

The results are presented in the appendix in Table A5.2, and suggest that the inclusion of the full exposure distribution does little to alter the results presented here. In the case of both 2008 and 2016, the size of the exposure effect grew in the FEE models (from 12% to 14% in 2008, and from 13% to 17% in 2016), and hardly budged in the LGM models (unchanged in both cases). In 2012, the results decreased, but only slightly (from 4% to 3%).

Overall, then, the inclusion of the full exposure distribution does not appear to alter the central conclusion from this chapter. The effect of policy ad exposure is indeed robust to alternate measurement strategies.

5.6   Conclusion

The results presented here suggest that policy ads exposure does indeed increase what citizens know about politicians' policy stances. Placebo tests provide added confidence that it is the policy content of these ads specifically that boosts campaign knowledge. Moreover, these results suggest that ad exposure estimation methods that pool policy and non-policy focused ads together might under-estimate the effect of

ad exposure on knowledge of where politicians stand on the issues.

This analysis has several important implications for the analyses that follow. First, they suggest that the measures of ad exposure developed in Chapter 4 are, in fact, valid indicators of what they purport to measure. In addition to the validity tests employed in Chapter 4, Table 5.1 acts as a test of predictive validity for the exposure measures. Because ads featuring policy content are associated with outcome variables with which they ought to be associated (gains in campaign knowledge) and not associated with outcomes with which they should not be (e.g., gains in civics knowledge), we can conclude that they are likely to be good measures of the amount of policy-focused advertising citizens see on television.

Second, this analysis offers a strong proof of concept. This analysis was the most basic empirical hurdle to overcome before moving on with more-complex analyses. Because policy ad exposure is strongly associated with gains in campaign knowledge, it is reasonable to move forward with tests of whether or not they also close gaps in what people know about politicians' policy stances.

Third, the results suggest an area in which the measures developed in Chapter 4 offer some improvement over previous work. Because pooled measures of ad exposure can under-estimate learning effects (with respect to campaign knowledge), scholars ought to reconsider how they estimate exposure in the future. More generally, this analysis underscores the importance of accounting for ad content when measuring exposure. Echoing the general thrust of Lupia's (2015) argument, exposure measures should always consider the relationship between content and the criterion being studied (in this case, awareness of presidential candidates' policy stances).

In what follows, I finally put to the test the question that has motivated much of

this research. Policy ads are clearly informative. But do they inform best those who *need them the most?* Chapter 6 offers a new empirical take on this question, and offers new evidence in favor of a (revised) take on how ads close knowledge gaps.

Chapter 6

Closing the Campaign Knowledge Gap

Policy advertising is informative. As the previous chapter demonstrated, policy ad exposure helps Americans learn about where presidential candidates stand on major policy issues. Because this information is critical for voting in line with one's policy preferences (a subject I take up in more detail in Chapter 7), these results have positive normative implications for American democracy.

Still, a key question remains unanswered. Do policy ads inform best those who need them the most? Put differently, does ad exposure *close gaps* in what people know about where presidential candidates stand on major issues?

Whether or not policy-focused ads can chip away at the "political caste system" introduced in Chapter 2 hinges on the answer to this question. On the one hand, ad exposure may close gaps in what people know about candidates' policy stances (the Equalization Thesis). This would provide under-represented groups with the information necessary to vote in line with their policy interests, and increase the likelihood that those interests are represented in government.

On the other hand, policy ad exposure could worsen knowledge inequalities (the

Exacerbation Thesis). This would imply that the gains in campaign knowledge un-covered in Chapter 5 might be masking a more troubling effect. Those already rich in political knowledge might become comparatively more informed about the campaign than those who need it most, perpetuating their representational privilege.

In this chapter, I test whether or not Americans' exposure to policy advertising closes gaps in what they know about candidates' stances on the issues. I begin by unpacking in more detail what exactly "knowledge gaps" are, and how they have been studied in previous research. This review notes that three potential causes of knowledge gaps have been studied in previous research – civic knowledge, political interest, and education. I investigate all three later on.

After doing this, I review my theoretical expectations and briefly outline the process by which I test for gap closing effects in the 2008, 2012, and 2016 presidential campaigns. Then, I turn to the results. I find that policy ad exposure closes campaign knowledge gaps in all three election cycles – across levels of civic knowledge, political interest, and education.

I conclude by relating these results back to the political caste system referenced in previous chapters. Because policy ads are especially good at informing those who need them the most, we may have reason to believe that they play a role in disrupting the representational inequalities that result from the unequal distribution of knowledge. Chapter 7 offers additional insight into whether or not this conclusion is justified.

6.1   Unpacking "Knowledge Gaps"

At this point, I have alluded to policy ads' abilities to close gaps in what people know about candidates' issue preferences. However, I have not offered much explanation

of what "knowledge gaps" are, and from where they might originate. Conceptually unpacking this term is necessary in order to proceed with the tests outlined above.

A knowledge gap simply refers to inequalities in some type of knowledge, observed across particular subgroups of people. Membership in these groups is determined by whether or not individuals can be thought about as advantaged (or disadvantaged) in some politically relevant domain. For example, in this research, I am interested in studying gaps in campaign knowledge, observed across high and low levels of (1) knowledge about civics, (2) political interest, and/or (3) education (more on all three in a moment).

Why study asymmetries in campaign knowledge across these three factors? Previous research has identified all three as potential sources of advantage in what citizens know about where politicians stand on the issues. Moreover, all three have been studied specifically in relation to political ads' abilities to close knowledge gaps.

First, people who are more knowledgeable about civics tend to be more attentive to politics and current events, and more informed about current events (Zaller 1992; Price & Zaller 1993; Delli Carpini & Keeter 1996). I presented evidence of favor of this point in Chapter 3, when I noted a moderately strong correlation between civic and campaign knowledge. Perhaps unsurprisingly, then, scholars have searched for asymmetric effects of advertising on knowledge about where politicians stand on the issues across levels of civic knowledge. The results, on this score, are mixed. Whereas Valentino and Williams (2004) find that exposure to campaign ads exacerbates knowledge inequality across low and high levels of civic knowledge, Freedman and colleagues (2004) find that they neither consistently improve nor worsen the knowledge gap (see also: Franz et al., 2007).

Second, people who are more interested in politics tend also tend to be more likely to follow (and learn from) political campaigns and news (Neuman, Just, & Crigler 1992; Prior 2005, 2007). They are also more likely to watch presidential debates, which give candidates the opportunity to expressly contrast their stances on the issues (Kenski & Stroud 2005). As I showed in Chapter 3, highly interested people tend to be more knowledgeable about where politicians stand on the issues. Patterson and McClure (1976) turned to political interest to study gaps in what people knew about candidates' issue stances in the 1972 campaign. These authors find that ad exposure closes gaps in campaign knowledge.

Third, previous research has found that people with higher levels of education tend to be more attentive to televised political debates (Kenski & Stroud 2005) and more informed about politics and current events (Nie, Junn, & Stehlik Barry 1996; Delli Carpini & Keeter 1996). I demonstrated this too in Chapter 3, finding that having a college degree was associated with increased levels of campaign knowledge. Ansolabehere and Iyengar (1995) studied how campaign ad exposure closes knowledge gaps in relation to education, and found that ad exposure tends to exacerbate inequalities between people with and without college degrees. However, the authors caveat that gap widening tends to occur only at high levels of exposure to advertising.

Consistent with these predictions from the literature, I demonstrated in Chapter 3 that being highly knowledgeable about civics, politically interested, and having a college degree were all associated with increased campaign knowledge in 2008-2016. To further demonstrate this point, Figure 6.1 plots mean levels of campaign knowledge across the measures of civic knowledge, political interest, and education described in Chapter 3 (additional information is available in the Appendix), assessed at the start

of the campaign (in June and July for the longitudinal 2008 ANES and 2016 CSPP data, respectively, and in September for the cross-sectional 2012 ANES).

Figure 6.1 plots campaign knowledge gaps across all three factors, at the start of all three election cycles. While neither civic knowledge, political interest, or education should be thought about as a proxy for campaign knowledge (for reasons described in Chapter 3), it is clear that moving from the minimum to maximum value of each one is associated with monotonic increases in campaign knowledge. Consequently, these expectations from the literature appear to be well justified.

With a more-nuanced understanding of what knowledge gaps are, in hand, I next consider how policy ad exposure might reduce knowledge inequality across levels of civic knowledge, political interest, and education. On average, people with high levels of civic knowledge, political interest, and a college degree held higher levels of civic

Figure 6.1: Campaign Knowledge Gaps Across Civic Knowledge, Political Interest, and Education
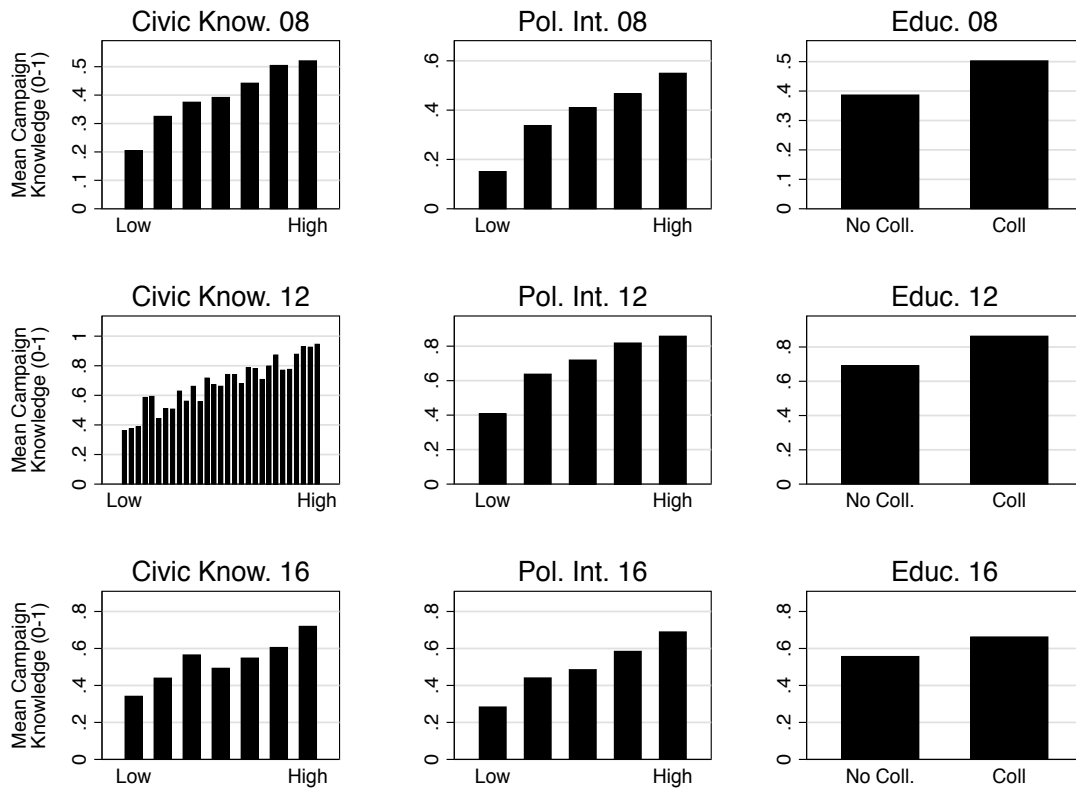
Note. Weighted mean levels of campaign knowledge presented (black bars) across levels of civic knowledge, political interest, and education. The two panel studies rely on data calculated at the beginning of the campaign (June for the 2008 ANES, July for the 2016 CSPP study)

6.2 Expectations & Modeling Strategy

As I reviewed in Chapter 2, policy advertising could impact campaign knowledge gaps in one of two ways. On the one hand, the Equalization Thesis – and my alternative Revised Equalization Thesis – argue that increased exposure to policy advertising should best inform those with the least prior political knowledge about civics, political interest, and education. In other words, policy advertising exposure should *close* campaign knowledge gaps. This is made possible by the idea that policy ads are easy to understand and rife with information about where candidates stand on the issues. People with substantial "ground to make up" have the opportunity to learn comparatively more. Those well-informed about the campaign should experience comparatively smaller gains (or none at all), given the potential for ceiling effects discussed in Chapter 2.

Figure 6.1 illustrates this theoretical expectation, using civic knowledge as an example source of campaign knowledge inequality. At low levels of advertising, the predicted levels of campaign knowledge differ greatly between the least and most knowledgeable about civics – such that the least informed about civics are also the least knowledgeable about the campaign. As levels of campaign advertising increase, however, this gap begins to shrink. People high in civic knowledge are already quite knowledgable about the campaign, and remain so independent of the amount of policy-focused ads they encounter on television. People low in civic knowledge, however, experience a steep monotonic increase in knowledge about where candidates stand on major policy issues.

Another possibility is that exposure to policy advertising worsens campaign knowledge gaps, as indicated by the Exacerbation Thesis. According to this model, people

Figure 6.2: Predictions from the Revised Equalization Thesis
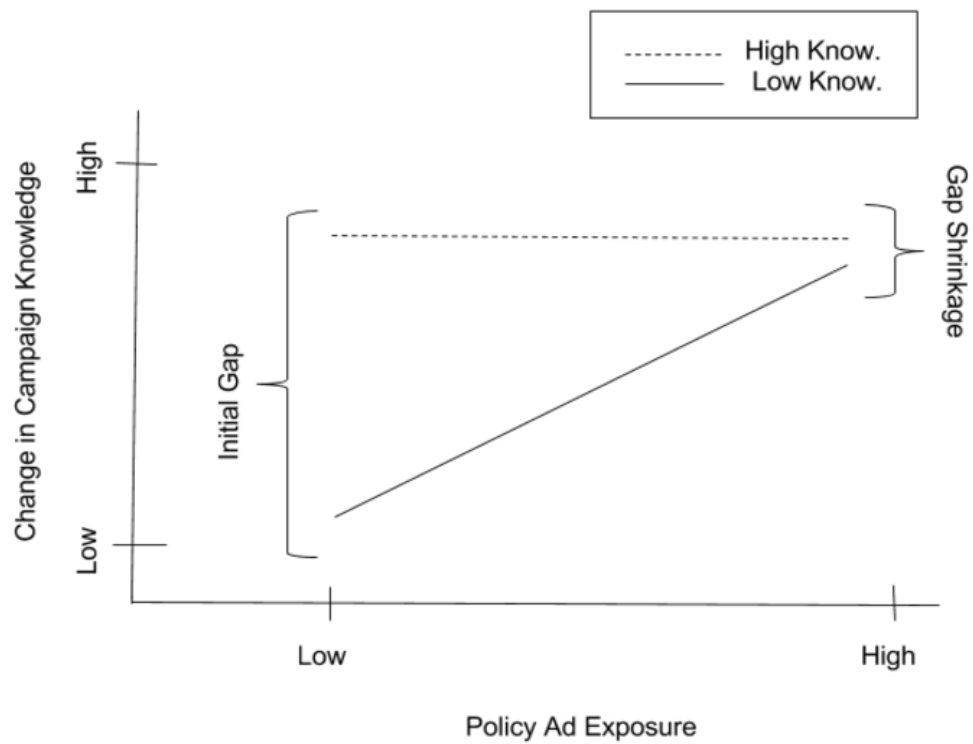
people with high levels of civic knowledge, political interest, and/or education are better equipped to learn from the policy ads they encounter on television, and therefore acquire comparatively more information that those with less knowledge. In other words, policy ads *increase* campaign knowledge gaps.

Figure 6.2 illustrates this possibility, again using civic knowledge as an example. At low levels of policy ad exposure, there is a large gap between what people low and high in civic knowledge know about the campaign. As policy ad exposure increases, people low in civic knowledge may acquire some additional information. However, those with high levels of prior civic knowledge acquire comparatively more, leading to a bigger gap in campaign knowledge than was present at the outset.

In order to put these two theoretical possibilities to the test, I undertake a procedure similar to the one employed in Chapter 5. There, I regressed individuals' levels of campaign knowledge in each election cycle (2008, 2012, and 2016) on their exposure to policy advertising and a host of relevant controls. For the two longitudinal studies (2008, 2016) I did this using linear growth modeling. For the one cross-sectional study, I did this using ordinary least squares (see Chapter 5 for a more detailed review of these models).

Here, I amend the models used in Chapter 5 by *interacting* policy ad exposure with each of the potential sources of the knowledge gap outlined earlier – individuals' levels of civic knowledge, political interest, and education. By interacting these terms, I can assess the conditional effect of policy advertising exposure on campaign knowledge, across different knowledge, interest, and education subgroups[1] If the Re-

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[1] As I did in Chapter 5, I rely here on a measure of policy ad exposure that trims the top 5% of the exposure estimate distribution. For robustness, I re-run all models used to derive the quantities presented in Figures 6.1-6.3 using the full exposure distribution. These models are included in the Appendix.

Figure 6.3: Predictions from the Exacerbation Thesis
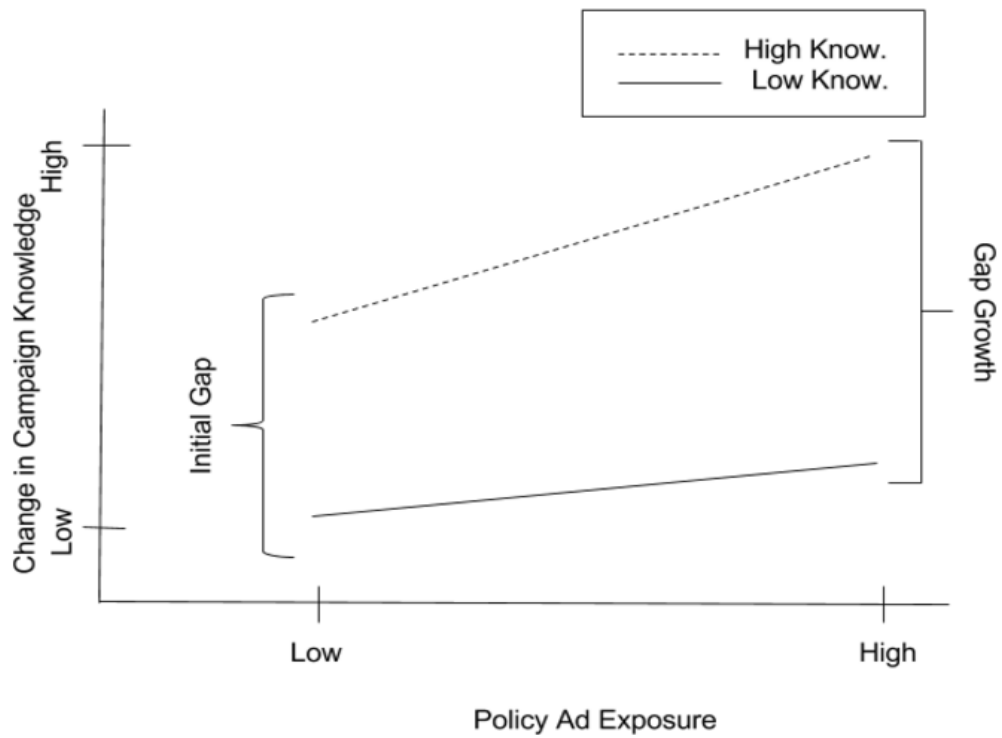
vised Equalization Thesis best describes empirical reality, the resulting interactive coefficient should be negative and statistically significant – indicating the existence of a campaign knowledge gap between those high and low in civic knowledge, interest, and education at low levels of policy ad exposure that *converges* at high levels of exposure. Conversely, if the Exacerbation Thesis is more realistic, the slope of the interactive coefficient should be positive and statistically significant, indicating divergence.[2]

Of course, investigating the slope and statistical significance of these interactive coefficients tells us little about the substantive magnitude of gap closing effects. To remedy this, I derive predicted campaign knowledge scores from each set of models, across levels of policy advertising exposure and each of the gap source variables. These figures are designed to resemble the examples in Figures 6.1 and 6.2. [3] As was done in those figures, the policy ad exposure measure is evaluated across the full range of its distribution (i.e., from 0-1), while civic knowledge and political interest are evaluated at their mean, and one standard deviation above/below it. Because education is measured as whether or not individuals have a college degree, I simply compare scores college-educated and non-college-educated individuals.

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[2] Because the 2008 and 2016 data are longitudinal, it is important to consider the possibility that learning effects may be non-constant over the course of the campaign (i.e., they may be more pronounced in some months than others). To test for this, I add a survey wave indicator to the two-way interaction described above. If this model produces any significant interactions, learning effects may be non-constant. As Tables A6.1-6.3 reveal, this was the case for all three sets of models in 2008, but not in 2016. Consequently, I control for the interaction between these three elements when calculating predicted levels of campaign knowledge in 2008.

[3] For ease of visual interpretation, I do not include confidence intervals in these plots. While some might prefer to see these quantities, I believe that their exclusion is justified for two reasons. First, because I expect to find confidence interval *convergence* at high levels of ad exposure, including these might make it difficult to interpret the most critical elements in the figure. Second, confidence intervals may obscure differences between the predicted value lines – either by altering the graph's y-axis, or by simply making it more difficult to discern differences between them. This could make the figures look (misleadingly) more consistent with theoretical expectations than they truly are. Thus, I opt not to include them in this figure.

6.3 Do Policy Ads Inform Those Who Need them Most?

With these considerations in mind, I next test whether or not exposure to policy advertising closes gaps in what people know about presidential candidates' stances on the issues. I begin by studying how exposure reduces gaps in what people with high and low levels of civic knowledge know about the campaign, and then move on to political interest and education.

6.3.1 Civic Knowledge

Following the modeling procedures outlined earlier, Figure 6.3 plots predicted levels of campaign knowledge across policy advertising exposure estimates, across levels of civic knowledge in the 2008, 2012, and 2016 elections. The dashed lines with circles and triangles correspond to people with above average (one standard deviation above the mean) and average (mean) levels of civic knowledge in each dataset, respectively. The dashed line with squares corresponds to the group we are most interested in – people with low levels of prior civic knowledge. The full results of these models can be found in the Appendix.

Figure 6.4 provides strong evidence in favor of the Revised Equalization hypothesis. First, in all three election cycles, the three groups are projected to have quite different levels of campaign knowledge at low levels of policy ad exposure – demonstrative of the existence of a knowledge gap. For example, in the most recent (2016) election cycle, people with high levels of civic knowledge were predicted to earn a score of 0.73 on the campaign knowledge scale, while those with low levels of civic knowledge were predicted to earn a score of 0.48. This indicates a knowledge gap of

25% at low levels of exposure.

Second, and most importantly, people one standard deviation below the mean on civic knowledge *tended to learn comparatively more* from increased policy ad exposure than those scoring one standard deviation above the mean. In all three elections, people highly knowledgeable about civics became somewhat more informed about candidates' positions on the issues over the course of the campaign (usually by a few percentage points). However, the slope of the line for low civic knowledge individuals is significantly steeper in 2008 than the slope of the line for high civic knowledge individuals (β = -0.35, p $\leq$ 0.05), 2012 ($\beta = -0.12$, p $\leq$ 0.10), and 2016 ($\beta = -0.24$, p $\leq$ 0.05).

Again using 2016 as a reference point, people with high levels of civic knowledge experience about a 1 percentage point gain in civic knowledge at high levels of policy ad exposure (0.74). Those scoring one standard deviation below the mean, on the other hand, experience a 13 percentage point increase (0.61), which shrinks the size of the knowledge gap from 25% to 13%. The knowledge gap between the most and least informed about civics also shrank in 2012 (from 22% to 16%) and 2008 (from 15% to 9%).

Policy ad exposure leads to substantively large closures in the campaign knowledge gap between those who are the most and least informed about civics. But what about those with average levels of civic knowledge? These individuals are a useful comparison point for assessing advertising effects, because, while policy ad exposure closes gaps between the most and least knowledgeable about civics, it does not fully erase the gap. Thus, we may wonder whether policy ad exposure might enable those less-knowledgeable about civics to more closely resemble those with average levels of

Figure 6.4: The Effect of Policy Advertising on Campaign Knowledge, by Civic Knowledge (2008-2016)
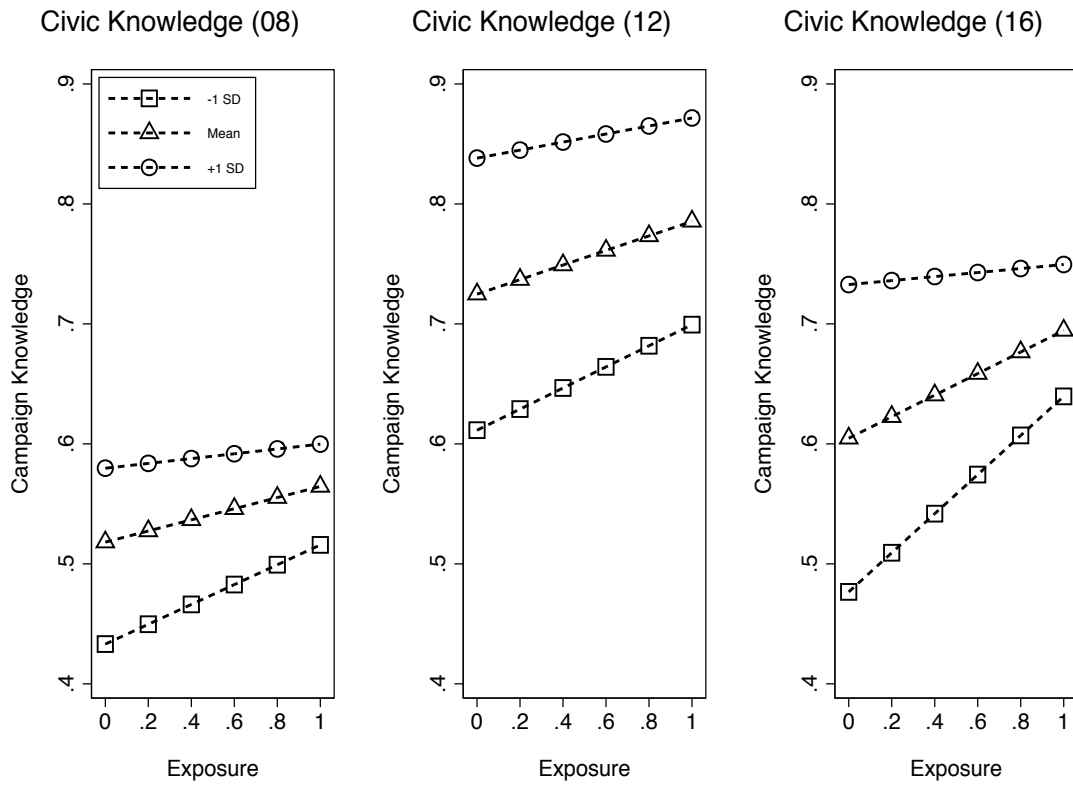
Note. Predicted levels of campaign knowledge derived from Tables S6.1 - S6.3. All other values are held constant (i.e., at their sample means).

civic knowledge.

Figure 6.3 demonstrates that policy ad exposure enables the least informed about civics to closely resemble those with average levels of knowledge. Moving from low to high levels of exposure shrinks the gap between those with low levels of civic knowledge and those with average levels from 8% to 5% in 2008, from 11% to 7% in 2012, and from 12% to 6% in 2016. In the 2016 model, follow-up confidence interval comparisons revealed that this closure was large enough to render the two groups statistically indistinguishable from one another. Summaries of these and subsequent comparisons can be found in Figure B.6.1 - B6.3 in the Appendix.

6.3.2 Political Interest

Policy ad exposure closes the campaign knowledge gap between people with low and high levels of civic knowledge. But does it do the same for other commonly-studied knowledge gap sources? Figure 6.5 repeats the same procedure undertaken in the previous section, comparing instead people with low, average, and high levels of political interest.

The figure again provides support for the Revised Equalization Thesis, although the results are somewhat weaker than the civic knowledge models. Policy advertising was associated with significant gap closing between the least and most interested in 2008 ($\beta = -0.35$, p ≤ 0.05) and 2012 ($\beta = -0.16$, p ≤ 0.05), although I did not find evidence of it in 2016 ($\beta = 0.00$, p > 0.10).

Again, in the two cases where policy advertising did close the campaign knowledge gap, it did so in a substantively strong way. The knowledge gap between most and least interested was 17% at low levels of exposure in 2008, and 16% in 2012. However,

at high levels of exposure, the gap between them shrank to just 8% in 2008 and 7% in 2012.

Further, policy ad exposure helps the least interested become virtually indistinguishable from those with average levels of interest, in terms of campaign knowledge. At low levels of exposure, the gap between average and low interest individuals was 7% in 2008, and 8% in 2012. However, at high levels of exposure, this gap shrunk to 2% in 2008, and 3% in 2012. In both cases, follow up confidence interval comparison tests revealed that the two were statistically indistinguishable from one another at high levels of policy ad exposure.

6.3.3   Education

Finally, I consider whether or not policy ad exposure closes knowledge gaps between people with and without a college degree. These results are presented in Figure 6.6. Unlike Figures 6.4-6.5 these figures have only two predicted value lines, denoting predicted campaign knowledge levels for those with and without a college degree.

The results again provide evidence of gap closing. The interactive coefficients are properly signed and significant in both 2008 ($\beta = -0.11$, p ≤ 0.10) and 2012 ($\beta = -0.12$, p ≤ 0.05); although they failed to attain conventional levels of significance in 2016 ($\beta = -0.03$, p > 0.10). In the 2012 model, for example I find strong support for the Revised Equalization Hypothesis. The gap between college and non-college educated individuals was 16% at low levels of exposure. At high levels, it shrunk to just 4%. Again, follow-up confidence interval comparison tests demonstrated that there was no statistical difference between these two groups at high levels of exposure.

The 2008 data exhibited a similar, but more modest, pattern of results. There,

Figure 6.5: The Effect of Policy Advertising on Campaign Knowledge, by Political Interest (2008-2016)
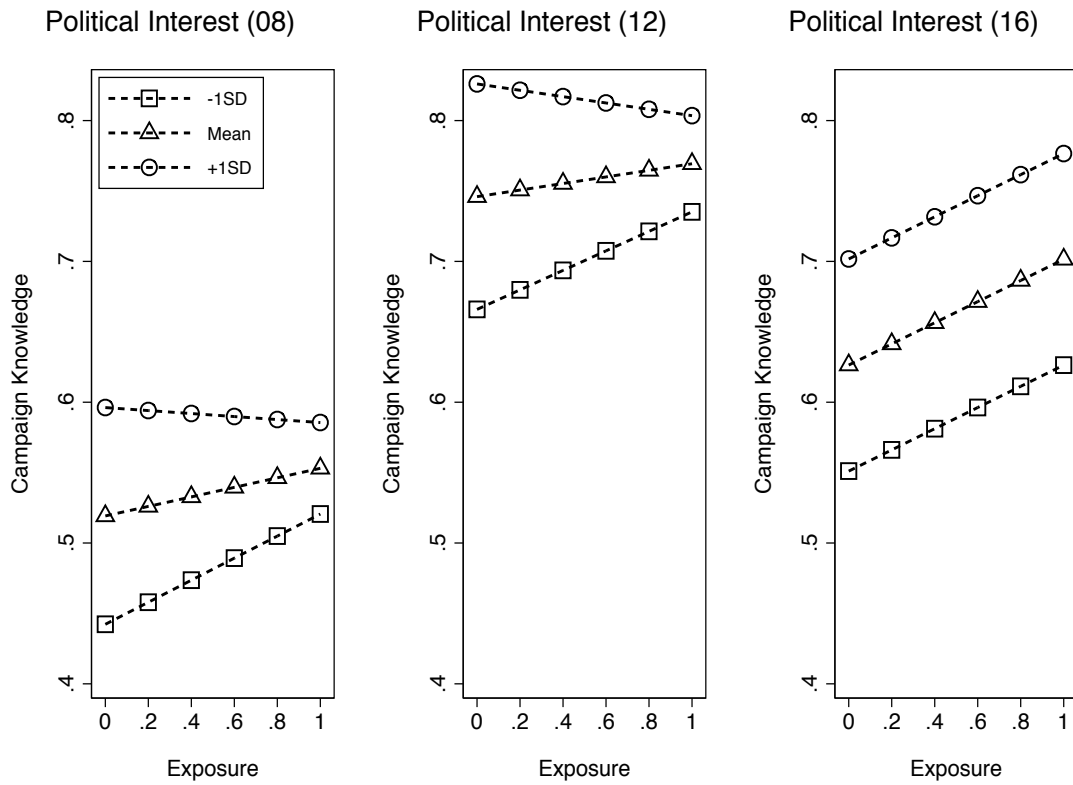
Note. Predicted levels of campaign knowledge derived from Tables S6.1 - S6.3. All other values are held constant (i.e., at their sample means).

the gap at low levels of exposure was 14%, and shrank to 10% at high levels of exposure. Statistically, non-college educated individuals failed to "catch up" to those with a college degree in these models; with follow-up confidence interval comparisons suggesting some separation between the two.

6.3.4   Summary

Overall, the results presented in this chapter offer converging support for the Revised Equalization Thesis. As Table 6.1 demonstrates, increased exposure to policy advertising was associated with closure in the campaign knowledge gap in eight out of nine models; significantly so in seven out of nine. As reviewed above, the substantive size of these gap closing effects were often substantively large.

Collectively, these analyses offer strong support for the Revised Equalization Hypothesis, which was supported *in eight out of nine models*. The Exacerbation Thesis received support in none of the nine models. The lone model that failed to support the Revised Equalization Thesis (political interest in 2016) produced a coefficient of zero, indicating that the gap between the most and least interested did not vary at all across levels of exposure to policy advertising. Overall, the results presented in this Chapter suggest that policy-focused ads are not only good at informing most people, but are especially informative for those who need them most.

The attentive reader may have noticed that the 2016 data were the only to produce two effects that were not both suggestive of gap closing and statistically significant. Why might this be the case? To foreshadow a discussion that I take up more deeply in Chapter 8, the answer may have something to do with the fact that there were fewer ads – and fewer policy-focused ads specifically – on the airwaves (Fowler, Ridout, &

Figure 6.6: The Effect of Policy Advertising on Campaign Knowledge, by Education (2008-2016)
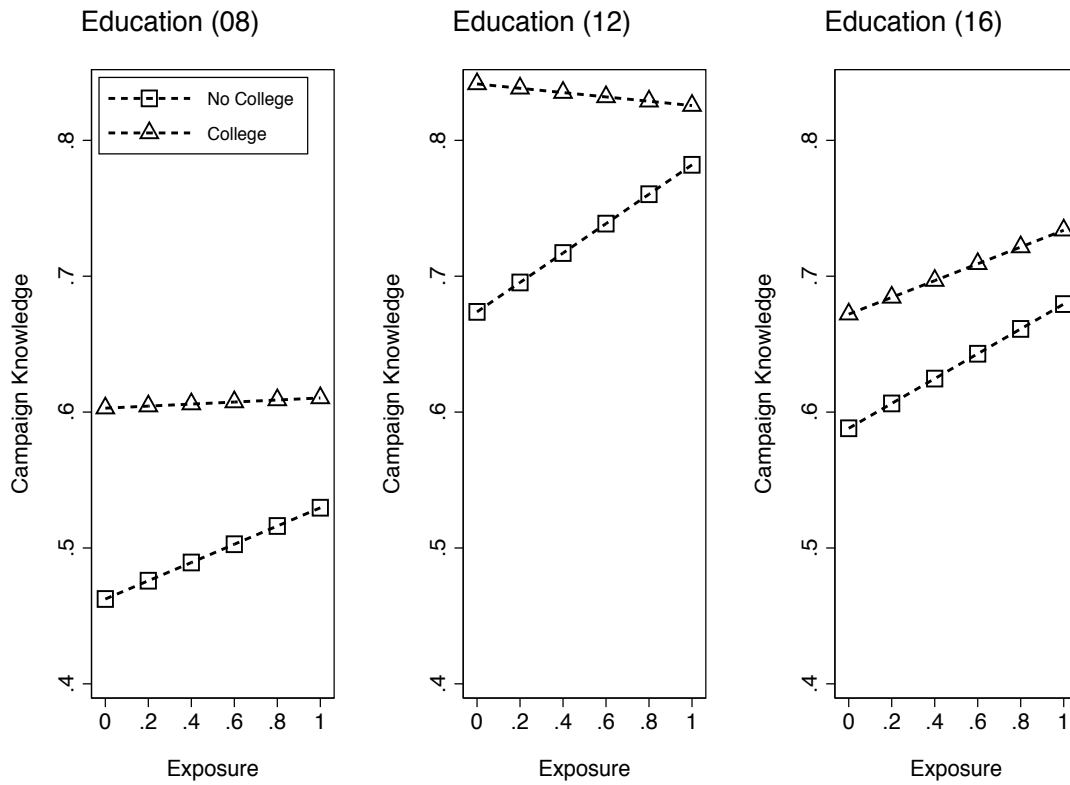
Note. Predicted levels of campaign knowledge derived from Tables S6.1 - S6.3. All other values are held constant (i.e., at their sample means).

Table 6.1: Summary of Gap Closing Analyses

	2008 ANES	2012 ANES	2016 CSPP
Civic Knowledge	CLOSE*	CLOSE$^+$	CLOSE *
Political Interest	CLOSE*	CLOSE*	NULL
Education	CLOSE$^+$	CLOSE*	CLOSE

* $p \leq 0.05$, + $p \leq 0.10$ (two-tailed)

Gap Closing: 8/9 (Correctly Signed & Significant: 7/9)
Gap Opening: 0/9

Note. Cells labeled "close" indicate that results from Tables S6.1-S6.3 are correctly (negatively) signed; suggestive of campaign knowledge gap closing. Those with an additional superscript (seven of nine) are statistically significant at the $p \leq 0.10$, two-tailed. Different superscripts correspond to varying levels of two-tailed significance (see legend below the table).

Franz 2016).

Fewer policy-focused ads on the air implies that fewer people lie at the upper bound of the exposure distribution described in Chapter 3. Since this is precisely the group for whom we expect gap-closing effects to be the greatest, it is perhaps unsurprising that the effects are more subdued in 2016. If this is true, policy ad exposure should still have the ability to push campaign knowledge levels toward gap-closing, but may lack the *statistical power* to do so in a statistically significant way.

6.4 Conclusion

In this Chapter, I argued that policy-focused campaign advertisements close gaps in what people know about presidential candidates' issue positions. I found that this was true across levels of civic knowledge, political interest, and education, in all three election cycles. The results provided evidence consistent with the Revised Equaliza-

tion Hypothesis (introduced in Chapter 2) in eight out of nine tests. Moreover, while the Exacerbation Thesis is a conceptually plausible model, I found evidence for it in *none* of these tests.

Taken together with the results presented in Chapter 5, these results suggest that policy-focused ads are not just informative, but tend to reach best precisely those who need them the most. This is, in many respects, a good thing for American democracy. Skeptics may note that campaign advertisements cannot possibly touch on *all* relevant issues in presidential races; that they do not discuss the issues in much detail; and that they may even deviate from truth from time-to-time.

These are all valid concerns. However, as was shown in Chapter 3, it is important to keep in mind that many Americans lack even a basic understanding of where presidential candidates stand on major policy issues. The results presented here show that this widely-viewed mode of campaign communication has the potential to at least provide Americans with "the basics" about candidates running for the nation's highest office, and their stances on important policy issues.

Of course, while informing the public is a noble goal, we care not just about what citizens learn from campaign advertising but whether or not they *use that information* to advance their interests in government. In what follows, I take up the question of whether or not the information that people acquire from policy-focused ad exposure helps them vote for presidential candidates whose policy preferences align with their own.

Chapter 7

The Missing Link: Campaign Knowledge & Policy Voting

Campaign knowledge has important implications for the health of American democracy. While civic knowledge is an important and well-studied predictor of whether or not individuals vote for candidates who share their views on the issues (Delli Carpini & Keeter 1996; Goren 1997; Galston 2001; Kinder 2006; Goren 2013), it is in short and unequal supply in the mass public. This creates a dynamic whereby the most knowledgeable (who tend to be privileged in other ways) can secure representation in government and perpetuate their political advantages.

In this chapter, I provide several empirical tests showing that campaign knowledge and policy advertising can disrupt this process; this so-called "political caste system" (Delli Carpini and Keeter 1996). As I argue in Chapter 2, knowing where candidates stand on key policy issues should enhance voters' abilities to select candidates who share their policy preferences. If I can demonstrate this point empirically, the political implications are potentially quite large. Because campaign advertisement exposure (particularly to policy ads) boosts the public's level of campaign knowledge (Chapter 5), especially for those who are most in need of that knowledge (Chapter 6),

this routine and highly-visible staple of campaigning may actually enhance citizens' abilities to vote for the candidate who will best represent their views in government.

In what follows, I describe the extent to which knowledge about politics has been linked to policy voting. Whereas much research considers the role of civic knowledge, far fewer studies investigate how campaign knowledge might do the same. Next, drawing on the theory outlined in Chapter 2, I outline several expectations about the relationship between civic knowledge, campaign knowledge and policy voting. Broadly, I suspect that campaign knowledge should out-perform civic knowledge as a predictor of whether or not individuals vote their policy preferences.

After doing that, I present a methodological strategy by which I determine whether or not survey respondents engage in policy voting, and put it to the empirical test in both cross-sectional and panel data. Cross-sectional analyses demonstrate that campaign knowledge does in fact boost policy voting – more so than civic knowledge. Longitudinal analyses reveal that these effects tend to be concentrated amongst individuals who learn more over the course of the campaign. This is especially true for those who are exposed to high levels of policy advertising. Finally, these analyses also suggest that the results are not better explained by a reverse-causal interpretation – what Lenz (2013) calls "following the leader." Overall, the results are consistent with the premise that what citizens know about campaigns plays a key role in encouraging policy voting.

7.1 Campaign Knowledge: The Missing Link

Many scholars have attempted to identify which factors enhance or inhibit voters' abilities to vote for candidates on the basis of their policy preferences. On this score,

civic knowledge has received a considerable amount of attention (see Galston 2001 and Kinder 2006 for reviews).

In general, individuals who are more knowledgeable about civics are more likely to vote for candidates who match their socio-tropic concerns about the performance of the economy, ideological leanings, and positions on domestic and international policy issues (Sniderman, Glaser, & Griffen 1990; Delli Carpini & Keeter 1996; Goren 1997, 2013 Luskin 2002). Moreover, while most citizens are capable of casting ballots that reflect their preferences on "easy" policy, civic knowledge has been shown to increase the extent to which individuals rely on more difficult issues to do the same (Carmines & Stimson 1980).

Of course, other factors have been considered as well. As Goren (1997) reviews, scholars have also studied policy voting in relation to educational attainment, interviewer ratings of survey respondents' knowledge about politics, and levels of "ideological conceptualization" (Converse's 1964 terminology). However, these results often yield complicated, and at times contradictory, relationships with whether or not individuals vote their policy preferences. For example, whereas interviewer ratings of knowledge have been shown to positively correlated with policy voting (e.g., Moon 1990) levels of ideological conceptualization have been shown to be virtually uncorrelated with policy voting (e.g., Knight 1985).

What has not yet been considered, as far as I am aware, is the role that campaign knowledge might play in shaping policy voting. This omission is important. As Campbell and colleagues argue in *The American Voter*, knowing where politicians stand on key issues of the day is *theoretically necessary* to engage in policy voting (Campbell et al., 1960; see also Goren 2013). Without this knowledge, they argue,

voters will not be able to determine the candidate who is most similar to themselves on the issues.

The critical point to take away from this review of the literature is that most of what scholars know about policy voting (excludes a theoretically necessary determinant of it (i.e., campaign knowledge), while focusing on a less-obviously relevant criterion (i.e., civic knowledge; see Lupia 2015). Of course, this would be problematic if civic knowledge were a sufficiently good proxy for campaign knowledge. However, as was demonstrated in Chapter 3, civic knowledge appears to be a generally poor proxy for campaign knowledge. Consequently, we know quite little about whether or not the type of information many citizens encounter over the course of presidential campaigns (e.g., via campaign advertising) improves their propensities to policy vote.

I take on that possibility here. The *Knowledge Relevancy Hypothesis* posits that – if campaign knowledge is truly relevant for policy voting – those holding higher levels of it should be more likely to vote for candidates whose policy stances match their own (Hypothesis 1A). Moreover, if campaign knowledge is *more relevant* to policy voting than the knowledge of basic civic facts, its association with policy voting should be substantively and statistically stronger than that of civic knowledge (Hypothesis 1B). Evidence consistent with Hypothesis 1B would not only imply that models excluding campaign knowledge measures are missing a factor that is a potentially strong predictor of policy voting, but that they tend to over-estimate the effect of civic knowledge on this outcome.

> Knowledge Relevancy Hypothesis (H1): (A) Individuals who are highly
> knowledgeable about where politicians stand on the issues should be more
> likely to vote their policy preferences than individuals who are less knowl-

edgeable. (B) The positive effect of campaign knowledge on policy voting
should be substantively and statistically larger than that of civic knowl-
edge.

If Hypotheses 1A-1B hold empirical muster, it is then important to consider what
role campaigns might play in increasing policy voting. I suspect that the effects of
campaign knowledge should be strongest amongst those who *learn over the course of
the campaign.* As individuals acquire more campaign knowledge – irrespective of how
much they have at the outset or conclusion of the election cycle – their likelihood
of engaging in policy voting should increase (Hypothesis 2A). Given the importance
of advertising in boosting campaign knowledge (as shown in Chapters 5-6), these
effects may be further enhanced by the amount of advertising individuals saw on
television. If this view is correct, individuals who see comparatively high levels of
political advertising on television, and who experience the largest gains in campaign
knowledge, should see the largest increase in the likelihood of voting on the basis of
their policy preferences (Hypothesis 2B).

Learning Hypothesis (H2): (A) The effects of campaign knowledge on
policy voting should be concentrated amongst individuals whose levels
of campaign knowledge *increases* over the course of the campaign. (B)
This effect will be further moderated by campaign advertising, such that
those whose levels of knowledge increases over the course of the campaign
and who view the most policy ads on television will be the most likely to
engage in policy voting.

Of course, in order to put these expectations to the test, it is first necessary to
devise some standard by which I can detect whether or not citizens vote for candi-

dates who match their policy preferences. In what follows, I briefly describe how I operationalize policy voting noting several areas in which I depart from prior research.

7.2 Approximating Policy Voting

Usually, scholars study policy voting by assessing the extent to which survey respondents' policy positions match those of the candidate for whom they vote. This is an intuitive approach, and has typically been carried out in two main ways. Some scholars average the policy preferences and electoral choices across different subgroups in the electorate, and assess the correspondence between the two across individuals with varying levels of knowledge or ideological conceptualization (e.g., Campbell et al., 1960; Delli Carpini & Keeter 1996). Others assess the magnitude (and statistical significance) of the effect of survey respondents' policy positions on vote choice, across varying levels of political knowledge or ideological conceptualization (e.g., Carmines & Stimson 1980; Knight 1985; Moon 1990; Goren 1997, 2013). What these two approaches generally provide is an estimate of the effect of policy issues on vote choice in a particular sub-population.

Interestingly, though, this approach does not provide a direct estimate of policy voting at the individual level. Approaches like those just mentioned might provide a sense of whether or not issues play a role in shaping vote choice for groups of individuals with varying levels of knowledge, but they do not provide an estimate of *by how much* knowledge increases the likelihood of voting for a candidate whose policy preference match one's own, for each individual surveyed.

One notable exception to this is Lau and Redlawsk's (1997, 2006) meausre of "correct voting." This measure, while not exclusively focused on policy issues, calcu-

lates the extent to which individuals select candidates whose preferences match their own on a wide range of domains. This approach is suitable for use in observational survey data, and generally shows that most voters select candidates who match their preferences *writ large*. However, isolating the extent to which policy issues factor into this mix is challenging.[1]

I offer an alternate strategy by which policy voting can be assessed at the level of individual citizens in observational survey data. The basic intuition behind it is first to determine for whom citizens would be *expected* to vote, given their stances on the issues, and then assess whether or not they actually did vote for that candidate. To demonstrate the robustness of this approach, I also offer more-conventional tests (Goren 1997) of my hypotheses later on.

To create this measure, I must first assess the link between policy positions and vote choice in the population. I begin by constructing probit regression models that regress a binary indicator of who survey respondents voted for in a given election (e.g., Obama = 1, Romney = 0 in the 2012 contest), on their positions on a wide range of policy issues. This step produces parameter estimates (β_1 ... β_N) that report the direction and relative importance of holding certain issue positions (X_1 ... X_N) on voting a particular way. This step is summarized in Equation 7.1.[2]

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[1] The way that Lau and Redlawsk factor policy voting into the "correct voting" procedure is as follows. First, citizens take a public opinion survey and place themselves on issue scales. Then, a companion survey of experts places politicians on those same scales. Next, one calculates each respondents' the distance from the mean expert ratings of both candidates, and determines whether or not the individual voted for the candidate at the smallest distance from their preferences. While this approach is intuitive, there are several drawbacks. In addition to requiring follow-up surveys of experts (whose own ratings of the candidates in unidimensional policy space may be difficult to validate), the approach varies from election to election. It also does not account for the possibility that some issues may factor more than others' into Americans' decisions about for whom they should cast their vote (e.g., failing to vote for a candidate who matches one's preferences on a highly-salient issue is treated the same as failing to vote for a candidate who matches one's preferences on a less-salient issue).

[2] Note that this step of the procedure does not include demographic and political controls. My goal

Equation 7.1. Obtaining Issue Weights

$$\text{Obama V.C.} = Pr(Y = 1|X) = \Phi(\beta_0 + X_1\beta_1...X_N\beta_N)$$

Second, using what we know about the link between issues and vote choice *in the population*, I multiply each respondents' set of issue positions (a vector called $\mathbf{x_j}$) by the vector of parameter estimates obtained from Equation 1 ($\mathbf{b}$). This step is summarized in Equation 7.2, and produces a single estimate of how likely *individuals* should be to vote for, in this case, Barack Obama over Mitt Romney – given their positions on the issues.

Equation 7.2. Predicting Vote Choice (Given Issue Preferences)

$$\text{Hypothetical Vote} = \zeta_{Obama} = \Phi\mathbf{x}_j\mathbf{b}$$

Third, I compare each respondent's hypothetical vote choice (ζ_{Obama}) to their actual vote choice (υ_{Obama}). If, the probabilities produced in Step 2 indicate that an individual has a greater than 50% chance of voting for Barack Obama over Mitt Romney, and that individual does in fact vote for Obama, I consider them to have

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here is not to fully specify a model of vote choice, but to determine how citizens' policy preferences *on their own* impact vote choice. While factors like partisan identification and ideology ought to be included in models seeking to fully understand vote choice, including them at this estimation stage muddies what I hope to ultimately measure – potentially coding individuals as policy voters who actually make their decision on the basis of some other criterion.

cast a ballot consistent with their issue preferences. Individuals with a less than 50%
chance of voting for Obama over Romney who ultimately choose Mitt Romney are
also coded as "issue voters." Conversely, those whose predicted vote choice does not
match their actual choice are not considered to be issue voters. This step is summa-
rized in Equation 7.3.

Equation 7.3. Determining who Cast an Issue-Consistent Vote

$$\text{Policy Vote }_{Obama} = \text{TRUE, if } \zeta_{Obama} > 0.50 \text{ and } \upsilon_{Obama} = 1$$

$$\text{Policy Vote }_{Obama} = \text{FALSE, if } \zeta_{Obama} < 0.50 \text{ and } \upsilon_{Obama} = 1$$

$$\text{Policy Vote }_{Romney} = \text{TRUE, if } \zeta_{Obama} < 0.50 \text{ and } \upsilon_{Obama} = 0$$

$$\text{Policy Vote }_{Romney} = \text{FALSE, if } \zeta_{Obama} > 0.50 \text{ and } \upsilon_{Obama} = 0$$

This measure ultimately produces an indicator of whether or not individuals ac-
tually voted for the candidate they would be otherwise expected to vote for, given
their issue preferences.This approach has the notable benefit of classifying individu-
als in the dataset as issue voters (or not), making it possible to assess the effect of
campaign knowledge on the probability of casting an issue-based vote. Of course, this
approach is limited by the number of policy preference questions asked in a particular
survey. Inferences drawn from using this procedure, like those presented here, should
be careful to caveat that this represents a measure of issue voting with respect to a
particular set of issues.

Luckily, the surveys I make use of in this chapter asked respondents several diverse
questions about their policy positions. I describe the data and measures used to test
my hypotheses in the pages that follow.

7.3 Data and Measures

7.3.1 The Data

Once again, I rely on the 2008 ANES Panel Study and 2012 ANES Time Series Study to test the hypotheses put forward in this chapter. More detailed information about these studies can be found in Chapter 3.

For my purposes in this chapter, it is critical to point out that these datasets not only asked respondents to answer questions about where candidates stand on major campaign issues, but to provide own opinions about *those very same issues.* This design is a major advantage of the 2008 and 2012 ANES for two reasons.[3]

First, theoretically, this setup poses a fair test of Hypotheses 1-2. Because having a sense of where candidates stand on issues is theoretically required in order to determine who best represents one's own issue stances (Goren 2013), and because this measure of campaign knowledge excludes extraneous policy information that might be less relevant to issue voting, we can be reasonably confident that the items used to assess campaign knowledge in this setup are – to borrow Lupia's (2006, 2015) language – necessary (and perhaps sufficient) to assess citizen competence with respect to policy voting.

Second, empirically, this setup creates a direct test of the expectation that campaign knowledge boosts policy voting. Any observed effect of campaign knowledge on policy voting can be attributed to knowledge gains along the exact same issue dimensions by which individuals might cast their vote. A mismatch between campaign knowledge and policy voting on this score would, potentially, complicate these

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[3] Unfortunately, this design feature was not present in the 2016 CSPP study, and so I opt not to make use of those data in this chapter.

inferential claims. For example, if the policy voting measure was based on issues not asked about in the campaign knowledge battery, it would be impossible to know if increased knowledge about that topic might increase policy voting. Conversely, if the campaign knowledge measure included extraneous information about policy issues not used to assess policy voting, low levels of knowledge on an unrelated topic might depress the link between campaign knowledge and policy voting.[4]

Keeping this aspect of the studies' empirical setups in mind, I briefly described the measures used to test Hypotheses 1-2.

7.3.2 Measures

Policy Voting. The key outcome variable in these analyses are the previously-described indicators of whether or not individuals voted their policy preferences. In 2008, 79% of the sample (weighted) were scored as policy voters. In 2012, the same was true for 52% of the sample.[5]

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[4] We might also worry about the possibility that the knowledge tests administered in these studies ask respondents questions that require information not talked about in most policy advertisements. While this mismatch would certainly be problematic for the theoretical argument advanced here, there are at least two reasons to suspect that this is not the case. First, as reviewed in Chapter 3 (and detailed in full in the Appendix), many of the campaign knowledge questions ask questions about highly salient issues, and are therefore likely to be featured in political ads. Candidates' positions on taxation, health care, and regulatory policy – all of which are featured in at least one of the campaign knowledge measures used here – are amongst the most-commonly featured issues in policy-focused advertising (Fowler & Ridout 2013). Second, if it were the case that policy ads and the campaign knowledge batteries I use are mismatched in terms of issue content, I would not expect ad exposure to play much of a role in increasing campaign knowledge over the course of the campaign. As I demonstrated in Chapter 5 in several proof of concept analyses, policy-focused ads *do* in fact tend to increase campaign knowledge on these salient issues.

[5] Why do we observe less policy voting in 2012, compared to 2008? One answer, of course, could simply be that policy voting was less prevalent when President Obama was the incumbent candidate, with more citizens relying on other factors (e.g., perceptions about his performance in office) to cast their ballots. However, perhaps more likely is the possibility that these differences are primarily methodological. In 2008, respondents were asked to report first whether or not they supported or opposed a stance, and to then report the intensity of their position. The 2012 ANES relied on bipolar scales, asking respondents to make decisions about both the strength and intensity of their

The 2008 policy voting measure was calculated using the following issues (see this chapter's entry in the Appendix for more information): support for (1) gay marriage, (2) raising taxes on the wealthy, (3) the suspension of *habeas corpus* for suspected terrorists, (4) requiring a court order for the government to engage in wiretapping, (5) guest worker programs, and (6) paths to citizenship for illegal immigrants who have not committed crimes. In 2012, the measure was calculated using placement on the following standard seven-point issue scales: positions on (1) protecting the environment, (2) government aid to Blacks, (3) guaranteed government jobs, (4) government-run health insurance, (5) defense spending, and (6) spending on domestic social services.[6]

Campaign Knowledge. Knowledge about where candidates stand on the issues was measured using the now-familiar procedures outlined in Chapter 3. As a reminder, the 2008 measures are "position knowledge" items (i.e., listing which candidate supports a particular stance) while the 2012 measures are "placement knowledge" items (i.e., placing candidates to the left or right of one another in unidimensional ideological space). Both sets of questions matched the items used to measure policy voting in each respective year.

Civic Knowledge. Knowledge about basic civic facts was assessed using the same measures reported in Chapter 3. As I have done in previous chapters, for the purpose

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positions simultaneously – a process known to introduce random measurement error (Krosnick & Berent 1993). Another possibility is simply that the 2012 items were more general in focus - part of a standard delivery of issue position scales that is regularly administered in the ANES. Because the 2008 items reflected specific policy debates unfolding over the course of the election, they may be somewhat more accessible in voters' mind than than the 2012 items.

[6] Individuals failing to provide a substantive response to these questions are automatically not coded as policy voters. Holding an opinion with at least a minimal amount of intensity is theoretically required for individuals to deliberately vote their policy preferences (Campbell et al., 1960; Goren 2013). Individuals who do not themselves have preferences on an issue – even if they know where the candidates stand – lack an attitude-item to map onto candidate preferences, thereby rending policy voting impossible.

of boosting the valid sample size, scores from the 2008 ANES reflect civic knowledge tests administered to some prior to the election (February), for some, and afterward (November) for others.

Demographic & Political Controls. All models control for the following factors (recoded to range from 0-1): attentiveness to political media (2012) and news viewership (2008), partisan identity and strength, political interest, and several standard demographics (whether or not individuals graduated from college, gender, age, and race). Due to the possibility of mode effects 2012 analyses also control for survey administration mode. As always, more information about these variables can be found in the Appendix.

7.4   Results

7.4.1   Campaign Knowledge, Civic Knowledge, & Policy Voting

First, I assess the relationship between civic knowledge, campaign knowledge, and whether or not individuals vote for candidates whose policy stances match their own. In order to test Hypotheses 1, I construct two sets of models per election cycle. The first is a probit model that regresses policy voting on civic knowledge, and a host of demographic and political controls. This establishes a baseline effect of what individuals know about civics on policy voting. The second does the same, but adds in the campaign knowledge measure.

If Hypothesis 1A is correct, campaign knowledge should be associated with an increased likelihood of casting a policy vote, even when controlling for civic knowledge

(i.e., in the second model). Moreover, if Hypothesis 1B is correct, when campaign knowledge is added to the models the effect of civic knowledge should decrease across the board – weakening substantively and perhaps failing to attain conventional levels of statistical significance.

Table 7.1 displays the full results, which offer strong support for both Hypothesis 1A and 1B. Turning first to the second and fourth columns of the table, the effect of campaign knowledge is positively associated with increased policy voting, at conventional levels of statistical significance, in both 2008 ($\beta = 1.62$, $p < 0.05$) and 2012 ($\beta = 1.38$, $p < 0.05$). This was true even when accounting for the influence of other factors which were also, in some models, associated with increased policy voting – including civic knowledge, political interest, verbal intelligence, and the strength of individuals' partisan identities. This finding is supportive of Hypothesis 1A.

The Table also displays support for Hypothesis 1B. First, looking at columns 2 and 4, the effect of campaign knowledge is both substantively and statistically larger than the effect of civic knowledge in both 2008 ($\beta_{Civic} = 0.72$, $\chi^2_{(1)} = 3.09$, $p < 0.10$) and 2012 ($\beta_{Civic} = 0.22$, $\chi^2_{(1)} = 26.08$, $p < 0.05$). Further, formal comparisons of the civic knowledge coefficients across models 1-2 and 3-4 reveal that the inclusion of campaign knowledge into the model *significantly weakened* the effect of civic knowledge on policy voting in 2008 ($\chi^2_{(1)} = 8.68$, $p < 0.05$) and 2012 ($\chi^2_{(1)} = 46.85$, $p < 0.05$). Interestingly, and again consistent with Hypothesis 1B, the effect of civic knowledge fell below attaining conventional levels of significance in the 2012 model when campaign knowledge was added to the equation.

Of course, the analyses presented so far only provide a sense of the significance and the directional effect of civic and campaign knowledge on policy voting. To better

Table 7.1: The Effect of Civic and Campaign Knowledge on Policy Voting

	2008		2012	
Campaign Know	-	1.62*	-	1.38*
		(0.34)		(0.13)
Civic Knowledge	0.96*	0.72*	0.60*	0.22
	(0.28)	(0.29)	(0.16)	(0.17)
Pol. Interest	0.42	-0.03	0.74*	0.57*
	(0.30)	(0.30)	(0.12)	(0.12)
Pol. Media Use	-	-	1.17*	1.05*
			(0.16)	(0.17)
News View	0.02	0.02	-	-
	(0.22)	(0.22)		
Verbal Intelligence	-	-	0.72*	0.43*
			(0.14)	(0.15)
PID Strength	0.48*	0.39*	0.31*	0.22*
	(0.19)	(0.19)	(0.08)	(0.08)
College	0.12	-0.01	0.12+	0.06
	(0.13)	(0.13)	(0.06)	(0.07)
Female	-0.22+	-0.27+	-0.19*	-0.18*
	(0.13)	(0.14)	(0.05)	(0.06)
Income	0.08	-0.06	0.34*	0.25*
	(0.33)	(0.34)	(0.10)	(0.10)
Age	-0.40	-0.39	0.35*	0.44*
	(0.37)	(0.36)	(0.13)	(0.13)
White	0.11	0.06	0.07	0.03
	(0.17)	(0.18)	(0.06)	(0.06)
Survey Mode	-	-	0.23*	0.31*
			(0.07)	(0.07)
Constant	-0.19	-0.33	-2.23*	-2.67*
	(0.34)	(0.36)	(0.13)	(0.15)
N	1023	1021	4675	4645

* $p < 0.05$, + $p < 0.10$ (two-tailed)

Note. Probit coefficients presented, with standard errors in parentheses.

assess the substantive significance of these findings, I plot changes in the predicted probability that individuals will vote their policy preferences – moving from minimum to maximum levels of civic and campaign knowledge. These results can be found in Figure 7.1. The first bar in each pane is derived from Models 1 and 3, while the latter two bars are derived from Models 2 and 4.

Figure 7.1 reveals several notable findings. Consistent with Hypothesis 1A, the effect of campaign knowledge (black bars) on change in the likelihood of casting a vote consistent with one's policy concerns is substantively large in both 2008 (43%) and 2012 (33%) – exceeding the effect of civic knowledge in both years. Moreover, and consistent with Hypothesis 1B, the results show a clear decrease in the effect of civic knowledge on change in the likelihood of policy voting when campaign knowledge is added into the model.

Interestingly, the effects of both forms of knowledge are - across the board - weaker in 2012. This could result from several factors. As noted earlier, levels of policy voting were generally lower in 2012, perhaps due to methodological issues, or perhaps due to the nature of the 2012 campaign. Additionally, the 2012 models featured a somewhat richer set of control variables than the 2008 models. Including a more refined measure of campaign media attentiveness, for example, might explain away some of the variance in that both forms of knowledge might otherwise account for. In fact, no other covariate in either set of models associated as strongly with policy voting than is campaign knowledge.

Overall, Table 7.1 and Figure 7.1 offer strong support for both parts of Hypothesis 1. Campaign knowledge is a strong predictor of policy voting (Hypothesis 1A), and tends to diminish the effect of civic knowledge in doing the same (Hypothesis 1B).

Figure 7.1: Figure 7.1 The Effect of Civic and Campaign Knowledge on Change in the Likelihood of Policy Voting
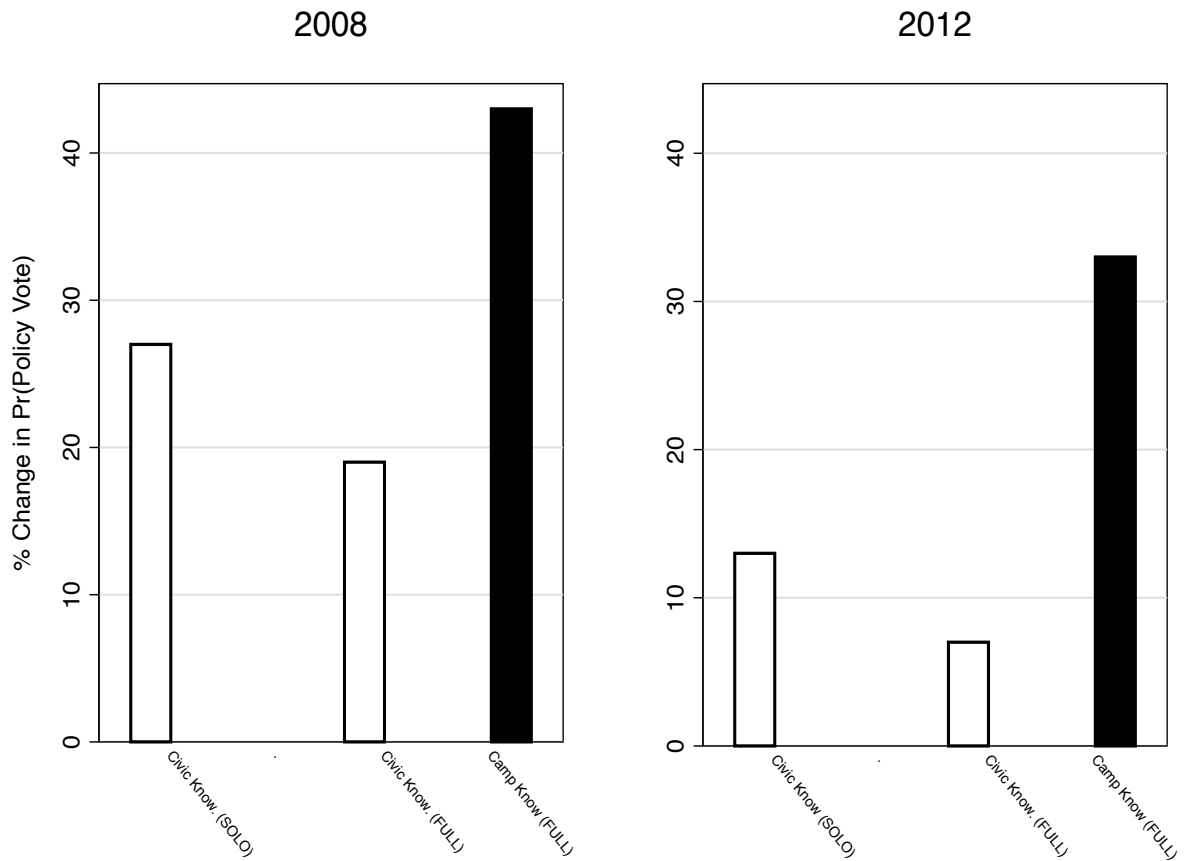
Note. Bars present change in the predicted probability of voting in line with one's policy preferences, moving from the minimum to maximum value of each variable on the X axis. Predicted probabilities are derived from Table 7.1, holding all other variables constant (i.e., at their sample mean). The first bar in each panel presents predictions derived from the first (reduced) model in each cycle, while the second pair of bars represents the second (full) model in each year.

However, before addressing Hypotheses 2A and 2B, it is important to consider potential methodological and conceptual objections to these findings. In what follows, I present supplementary analyses designed to assess the robustness of these findings.

7.4.2 Policy Voting, or Following the Leader?

One potential objection that some might raise with the analyses presented so far concerns the measurement of the policy voting outcome variable employed in Table 7.1. Recall that vote choice was measured following the election (November-December), and policy stances were measured at the conclusion of the campaign (September-October). While individuals may be making use of their late-campaign issue positions to guide their electoral preferences, it could alternatively be that individuals update their prior issue positions as the campaign goes on to match those of their preferred candidate.

If the latter is true, the outcome may be better less reflective of voting one's policy concerns ("leading"), but instead simply adopting the policy stances of a candidate for whom they will vote, for some other reason ("following"). Indeed, Lenz (2013) finds that as individuals become more familiar with where candidates stand on the issues (see also: Lenz 2009), they become more likely to follow leaders' stances on the issues than they are to allow issues to lead their electoral preferences. A more generalized version of this critique would suggest that individuals' policy preferences are not truly exogenous to their candidate preferences, even though the strategy by which I estimate the policy voting outcome variable treats them as such.

This objection does not pose an inferential problem for the results presented so far *per se*, since a potential lack of exogeniety primarily affects the outcome variable

and not necessarily the variables associated with it. However, it could certainly undermine the supposed benefits of campaign knowledge. If learning where candidates stand on the issues encourages individuals to adopt the policy preferences of their already-favorite candidates, policy voting ceases to be an accountability mechanism whereby citizens reward (punish) politicians who represent (fail to represent) their issue preferences.

Given the normative stakes of this concern, it is important to design an empirical test like Table 7.1 where assumptions of exogeneity are more likely to be met. Luckily, the 2008 ANES Panel asked some respondents to report their issue preferences in January. While these preferences may not be perfectly exogenous to feelings about Barack Obama and John McCain, they were at least measured well before the start of the general election – before either party had decided on a nominee, and prior to intense campaigning differentiating the Republican and Democratic nominees on the issues.

To pose the most rigorous test of Hypotheses 1A-1B possible, I therefore re-create the policy voting measure using January issue preferences (Equation 7.1), and re-estimate the results obtained in Table 7.1. [7] If voters are simply "following the leader," we should not expect to observe a link between policy voting – on the basis of January issue positions – and campaign knowledge.

The results are displayed in Table 7.2. However, before describing the results,

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[7] Given the advantage of having January issue positions recorded in the 2008 study, some might wonder why I do not employ this strategy in calculating the results in Table 7.1, and later on in this chapter. In addition to opting for consistency across the 2008 and 2012 models, a more important concern is *statistical power*. While a substantial number of individuals were interviewed in both January and October, making the re-analysis of Table 7.1 simple, there was not a sufficiently large number of people interviewed in January, October, and June (which I introduce later on to create a dynamic learning measure), due to the study's opt-in panel design with additional respondents added at the start of the general election. Relying on January issue positions to calculate policy voting leads to a 53% decrease in sample size, for the models in Table 7.1.

Table 7.2: Re-Estimation of Table 7.1 using January Issue Preferences (2008 ANES Only)

Variable	Model	β	S.E.	p	% Change in Pr(P.V.)
Civic Knowledge	Reduced	0.48	0.29	+	15%
Civic Knowledge	Full	0.32	0.30	n.s.	10%
Campaign Knowledge	Full	0.81	0.32	*	26%

Note. N = 1,040 in both models. The outcome variable in each model is nearly the same as the policy voting indicators derived from Equations 7.1-7.3. This time, however, the issue preference terms are measured prior to the start of the 2008 presidential primaries. The models are otherwise analogous to the other models from the 2008 ANES in Table 7.1.

one important caveat is in order. Due to the ordering and construction of waves in the 2008 ANES panel, there was not a sufficient amount of overlap between the October and January waves to provide a statistically powerful test of my hypotheses (a 47% reduction in sample size, relative to Table 7.1). To resolve this issue, I rely on November, rather than October, levels of campaign knowledge. This move is necessary, but not ideal. November estimates of campaign knowledge may have been obtained two weeks (or more) after the conclusion of the 2008 election, raising the possibility some individuals "forgot" where politicians stand on some issues. If this is the case, the estimates in Table 7.2 will *underestimate* the effect of campaign knowledge on policy voting.

The results again offer strong support for Hypothesis 1A. Campaign knowledge (row 3 of Table 7.2) is positively and significantly associated with policy voting ($\beta = 0.81$, p < 0.05). Moving from the minimum to maximum values of campaign knowledge yielded a 26% increase in the likelihood of voting one's policy preferences. As suspected, the effects of campaign knowledge were somewhat weaker in Table 7.2, perhaps due to the methodological issues described above. Moreover, the effect of

civic knowledge had a similar effect when considered without campaign knowledge ($\beta = 0.81$, p < 0.10). However, and consistent with Hypothesis 1B, the effect of civic knowledge fell short of conventional levels of significance when campaign knowledge was added to the model ($\beta = 0.32$, p < 0.10).

Overall, the results presented in Table 7.2 suggest that the link between campaign knowledge and policy voting can best be thought about as one in which individuals first decide where they stand on key issues, and then select a candidate who represents those views. While "following the leader" is an important alternative to the explanations offered so far, it does not appear to be a more suitable explanation than the more traditional conceptualization of policy voting offered here.

7.4.3   A More Conventional Test

As noted earlier, the measure of policy voting used in Table 7.1 is new. This raises an important question. Do the results presented in Table 7.1 here hold under alternate, more-conventional, specifications? Whereas conventional tests like this do not allow me to create individual-level estimates of policy voting (as described above), they can be extremely useful in assessing the convergent validity of my dependent variable.

To test this possibility, I replicate Goren's well-known procedure to test for evidence of policy voting across levels of political sophistication (Goren 1997) in both the 2008 and 2012 ANES. To do this, regress vote choice (coded such that 1 indicates voting for Barack Obama, and 0 indicates voting for his Republican challengers in each year) on the interaction between respondents' stances on the issues with their levels of civic and campaign knowledge (separately). To avoid including several potentially collinear terms in the model, I average citizens' responses into a single policy

preference index ($\alpha_{2008} = 0.69$, $\alpha_{2012} = 0.80$), coded such that increases reflect more liberal policy stances.

If the results in Table 7.1 are robust to this estimation strategy, I would expect to observe the following. First, the interaction between campaign knowledge and policy preferences should be positive and statistically significant, indicating that the link between policy preferences and vote choice is stronger for individuals with higher levels of campaign knowledge. Second, if campaign knowledge is truly a better indicator of who votes their policy preferences than civic knowledge, the interaction between civic knowledge and policy preferences should either be more modest, or perhaps not significant at all. The full results can be found in the Appendix, and I describe them in detail below.

The results observed in Table 7.1 appear to hold (quite strongly) under more-conventional estimation procedures. The interaction between campaign knowledge and policy preferences was positively and significantly associated with an increased likelihood of voting for Obama in both 2008 ($\beta = 7.31$, p < 0.05) and 2012 ($\beta = 7.69$, p< 0.05). However, the interaction between civic knowledge was much more modest, and failed to reach conventional levels of significance in both models (2008: $\beta = 3.01$, p > 0.10. 2012: ($\beta = 2.74$, p > 0.10). Thus, I can conclude with confidence that the process by which I study policy voting in this chapter converges with the results we would otherwise expect from conventional approaches.

7.4.4 Dynamic Learning Analyses

So far, the analyses presented suggest that campaign knowledge is an important determinant of policy voting. However, I have not yet taken up the question of what

role campaigns might play in shaping the link between campaign knowledge and policy voting. To what extent can the effects of campaign knowledge be attributed to what individuals learn over the course of the campaign – especially from campaign advertising?

First, I investigate how increasing levels of campaign knowledge over the course of the campaign affect policy voting (Hypothesis 2A). Again leveraging the longitudinal design of the 2008 ANES Panel Study, I sort respondents into three different groups – those whose levels of campaign knowledge increased ("Learners"), decreased ("Forgetters"), or stayed the same ("Stayers") between June and October. I then re-run the model presented in column 2 of Table 7.1, swapping the static campaign knowledge measure for this quasi-ordinal dynamic measure.[8] In these models, Forgetters are treated as the reference category.

The results are displayed in Table A7.1 in the Appendix. Consistent with Hypothesis 2A, Table A7.1 reveals that increasing levels of campaign knowledge are positively and significantly associated with increased policy voting ($\beta = 0.65$, p < 0.05). Formal coefficient tests also reveal that Learners are significantly more likely than Stayers to vote for candidates whose policy preferences match their own ($\chi^2 = 5.34$, p < 0.05). Interestingly, individuals whose levels of campaign knowledge do not change are *statistically indistinguishable* from Forgetters in terms of their propensities to engage in policy voting ($\beta = 0.16$, p > 0.10).

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[8] These categories were defined as follows. Individuals who experienced changes in knowledge above +10% were scored as Learners (N = 327), and individuals experiencing changes in knowledge below -10% were scored as Forgetters (N = 105). Individuals scoring somewhere in-between were categorized as Stayers (N = 220). About half of the sample who both took the October and June waves of the 2008 ANES, and who reported making a presidential vote choice in November, were thereby characterized as Learners. This approach allows for individuals to experience slight gains (or losses) in knowledge without being categorized as Learners or Forgetters, and also boosts the number of respondents categorized as Stayers (thereby increasing statistical power).

Figure 7.2: Dynamic Effects of Campaign Knowledge on Policy Voting
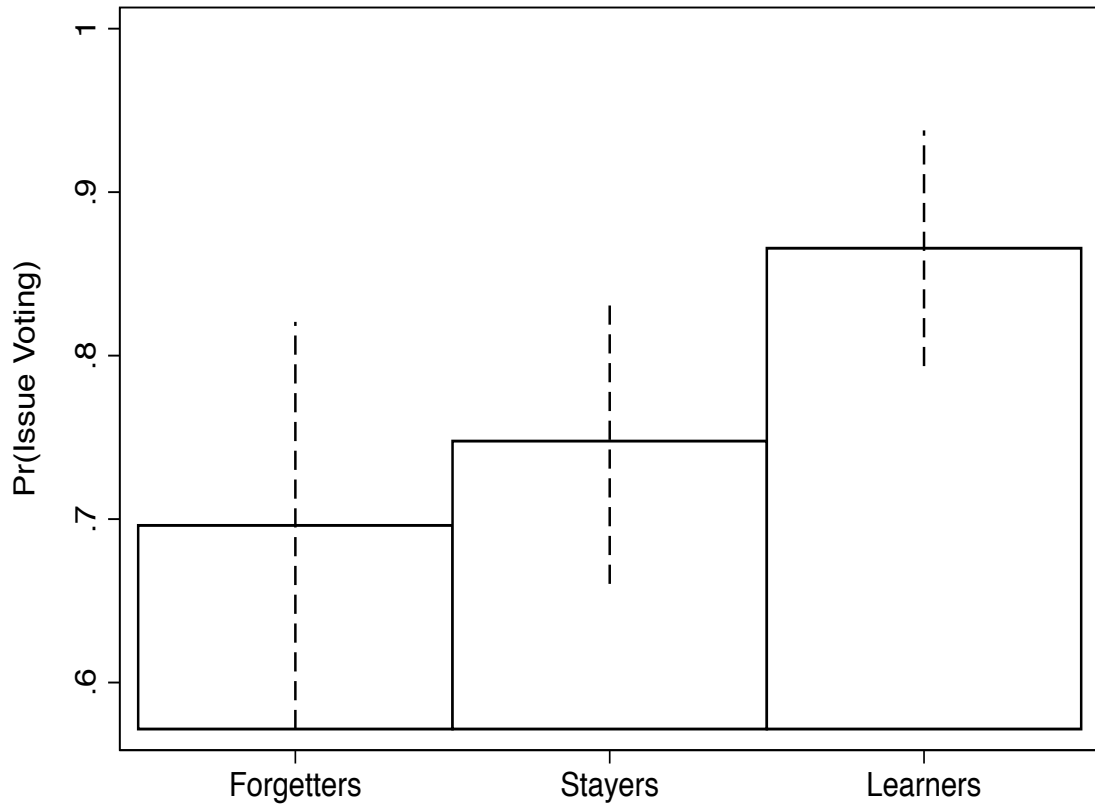
Note. Bars are predicted probabilities of policy voting for people whose campaign knowledge either grew, shrank, or stayed about the same over the course of the election. Predictions are derived from a model that interacts the dynamic learning indicator with campaign knowledge, and is otherwise analogous to the second model in Table 7.1. All other covariates are held constant (i.e., at their sample means). Full estimation results can be found in Table A7.1.

Figure 7.2 derives predicted probabilities of voting for candidates whose policy preferences match one's own, drawing on the results presented in Table A7.1. The results show that even Forgetters have a relatively high likelihood of engaging in policy voting (70%). Stayers are even more likely to do the same (75%). However, as the figure reveals, policy voting is predicted to be the most likely for Learners, who are projected to cast policy-consistent votes approximately 87% of the time. This again is strong evidence in favor of Hypothesis 2A, suggesting that the benefits of campaign knowledge are primarily concentrated amongst those who acquire more of it over the course of the campaign.

Next, I consider the possibility that Learners' exposure to policy advertisements further moderates the effect of campaign knowledge on policy voting (Hypothesis 2B). To do this, I run the exact same model displayed in Table A7.1, but this time interact the indicator of how much individuals learned over the course of the campaign with their October levels of advertising exposure (measured exactly as specified in Chapter 4).

Once again, the results are displayed in full in the appendix (Table A7.2), and summarized graphically below in Figure 7.3. The model shows that the interaction between learning and October policy advertisement exposure is positive and statistically significant ($\beta = 1.75$, p < 0.05) for Learners, but not for Stayers ($\beta = 0.33$, p > 0.10), relative to Forgetters. This is consistent with Hypothesis 2B.

The effects, plotted for Learners only in Figure 7.3, further suggest that that the moderating effects of advertising are substantial. The connected line corresponds to predicted levels of policy voting, and the caps extending from each one are 95% confidence intervals.

Figure 7.3: Dynamic Effects of Campaign Knowledge on Policy Voting, by Oct. Advertising Exposure
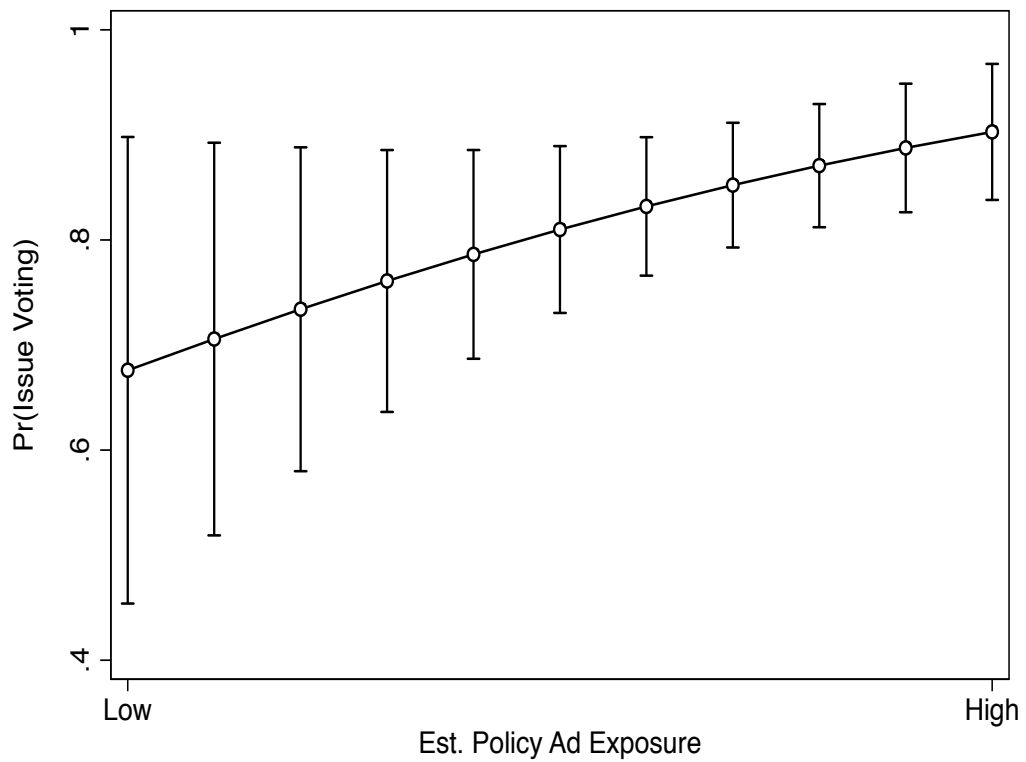
Note. Hollow circles are predicted probabilities of voting in line with one's policy preferences, across levels of ad exposure for those whose levels of campaign knowledge increased over the course of the campaign. The model interacts policy ad exposure with campaign knowledge and the dynamic learning indicators, but is otherwise identical to the second model presented in Table 7.1. Predicted probabilities are calculated holding all other covariates constant (i.e., at their sample means).

Learners who are exposed to little-to-no advertising are predicted to vote in line with their policy preferences less than 75% of the time. As October advertising levels increase, however, so too does the likelihood of casting an issue-consistent vote. At the highest levels of policy ad exposure, Learners' predicted probability of voting for the candidate who best matches their issue preferences exceeds 90%.

These results are, again, strongly consistent with the theoretical claims laid out in this chapter. While learning where candidates stand on the issues is, in general, an important determinant of who votes their policy preferences (Hypothesis 2A), learning from campaign advertising *specifically* (Hypothesis 2B) further moderates this beneficial effect.

7.5 Conclusion

In this chapter, I have shown that campaign knowledge is the single best predictor of whether or not individuals cast votes for presidential candidates who share their stances on the issues – more so than knowledge of basic civic facts (as is often studied in the literature). The results also show that, as individuals learn more about the candidates over the course of the campaign, they become even more likely to engage in policy voting. This is especially true for individuals who see more political advertisements on television.

The findings presented in this chapter, in conjunction with those presented in Chapters 5-6, point to policy advertising as a potential mechanism by which the "political caste system" resulting from asymmetric levels of civic knowledge can be disrupted. Policy advertisements provide citizens with the type of information necessary to engage in policy voting (Chapter 5), especially those who "need it the most"

(Chapter 6). What this implies is that a highly visible form of contemporary political campaigning can help citizens improve their representation in government (especially those who tend to experience the most difficulty doing so).

Of course, while exposure to policy advertising is a low cost process by which citizens can acquire political information (as I argue Chapter 2), it is not the only way citizens' representation in government can be enhanced. Nor it is without limitations. Dealing first with the former, it is well known that citizens' educational attainment (Luskin 1990; Delli Carpini & Keeter 1996; Nie, Junn, & Stehlik-Barry 1996)[9] as well as formal training in civics (Neundorf, Niemi, & Smets 2016; Campbell & Niemi 2016) can boost knowledge about basic civic facts. Though campaign knowledge may be a more proximal predictor of whether or not individuals vote their policy preferences, the analyses presented here document at least some residual effects of civic knowledge on policy voting. Thus, education may play a role in boosting policy voting, via the acquisition of civic knowledge.

Moreover, the role that policy advertising plays in enhancing policy voting has some important drawbacks. For one, advertisements are not aired equally across the United States. Opportunities to learn about where candidates stand on the issues may be more common in battleground ("purple") states. Moreover, and as I deal with in more detail in the next (and final) chapter, exposure to televised political advertising was quite common from 2008 - 2016. However, the number of individuals are exposed to policy ads by these conventional means has declined somewhat in recent years, and may decline further in the future. Whether or not policy ads will continue to reach those who "need them most" is an open question, and one we will

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[9] Although see Highton 2009 who cautions that the effect of educational attainment on knowledge may better reflect differences in factors that lead individuals to go to college and hold advanced degrees (e.g., socio-economic status) rather than degree attainment itself.

begin to understand better in the years to come.

For now, it is important to recognize that policy advertising has important benefits for democracy. It provides citizens with basic facts about where candidates stand on the issues, which ultimately help those exposed to them to advance their policy views in government.

Chapter 8

The Informative Power of Campaign Advertising

In their classic (1996) book, Delli Carpini and Keeter refer to knowledge about politics as the "currency of democratic citizenship" (p. 8). In this spirit, I want to conclude by thinking about policy voting as a type of democratic "transaction." So long as Americans have enough "purchasing power" (campaign knowledge), they will be able to identify and vote for candidates whose policy sympathies match their own. The unequal distribution of knowledge-based "wealth" in the mass public presents an important power imbalance in our democracy – a political caste system wherein some citizens – typically those who are *already* politically privileged – are better able to select representatives in government who will fight for their policy interests.

In *The Informative Power of Campaign Advertising*, I demonstrate that the short political commercials Americans regularly encounter over the course of presidential campaigns can help remedy the unequal distribution of knowledge, and provide voters with the information they need to vote in line with their policy interests. By asking what Americans *actually need to know* in order to policy vote, and by considering which ads feature information helpful for attaining that knowledge, I advance the

theoretical argument that exposure to policy-focused advertising informs most people about where politicians stand on key issues of the day – especially those who are the least knowledgable and interested in politics. I also argue that information about where candidates' stand on the issues should be better than previously studied criteria (i.e., what Americans know about civics) in enabling citizens to vote in line with their policy preferences.

The data support both theoretical expectations. In the 2008, 2012, and 2016 presidential elections, I find that exposure to policy-focused advertising not only informs most Americans about where candidates stand on major policy issues, but tends to *close gaps* in campaign knowledge between people with high and low levels of civic knowledge, education, and political interest. Along the way, I note that these effects are unlikely to be artifactual, and suggest that conventional measures of ad exposure might under-estimate their informative power. I then show that the very same information Americans learn from policy-focused ads goes on to boost the likelihood that they vote in line with their policy preferences – more so than knowledge about civics. I found that these effects were robust to several different estimation strategies, and suggest that they cannot be explained away by Americans' tendency to formulate policy opinions after selecting a preferred candidate (known as "following the leader," Lenz 2013).

In addition to offering an optimistic take on the state of Americans' knowledge about politics, this research presents several novel contributions to public opinion research and the study of media effects. Of course, my work is not without limitations – many of which suggest important areas for future research. I discuss the contributions, limitations, and extensions of my work in the pages that follow.

8.1   Nice to Know, or *Need* to Know?

This research has brought new evidence to bear on a classic debate in the study of campaign effects – whether or not ad exposure closes gaps in citizen knowledge. It has also suggested several methodological improvements for measuring citizens' exposure to campaign advertising, and has attempted to introduce campaign knowledge into the study of policy voting. I have described these points at length throughout my dissertation.

Underlying each of these advancements, however, is a much larger theoretical contribution worth some additional consideration. Like many other scholars, I am interested the dynamics and implications of what Americans know about politics. Here, however, I first asked what Americans *need to know* about politics in order to vote in line with their policy preferences, and then considered *where that information can be found* in contemporary American political campaigns. While this is an intuitive move, it is one that researchers often neglect to take into account when designing studies that assess citizen competence – as Lupia notes in his recent (2015) book.

My dissertation is an attempt to integrate Lupia's important theoretical insights into the study of campaign effects. As I argued in Chapter 2, by first considering what Americans need to know in order to policy vote, I am able to offer new and testable predictions about how they acquire information about politicians' stances on major policy issues. This way of thinking also enables me to design new empirical studies considering which types of information are best able to encourage policy voting.

I think about Lupia's book and the insights it offers as a blueprint for how scholars ought to study citizen competence. My goal in this project is to use this blueprint to build a new research agenda on campaign advertising effects and citizen competence.

I hope that this research demonstrates the potential fruitfulness of applying Lupia's insights to the study of political campaigning, and further hope that it can serve as a guide for those hoping to pursue similar projects in the future.

8.2 Limitations: Generalizability, Snack Breaks, & The "Hulu Effect"

Of course, my research is not without some limitations. Perhaps most obviously, I study only three cycles elections here (2008 - 2016), and at only the presidential level. My decision to limit analysis to only the most recent presidential election cycles is – in part – one of convenience. Data limitations, especially the lack of refined television-viewing variables, make it difficult to replicate the procedures by which I estimate policy advertising here. Moreover, while I think scholars absolutely should explore whether or not the results described here hold in more-localized election contexts, few extant studies contain the data necessary to ascertain the public's awareness of the issue positions of their Members of Congress.

Still, some might worry about whether or not the results presented here generalize to past and future election cycles. Although the timespan is limited, it is important to note that the elections studied here do provide a fair amount amount of temporal variation. These elections cover a sixteen year period predating (and including) the widespread viewership of television streamed online (both Hulu and Netflix rolled out streaming services for the first time in late 2007). This 16 year span also covers elections taking place before, immediately after, and several years after *Citizens United* – a Supreme Court decision which gave interest groups the ability to spend unprecedented amounts of money advertising on behalf of candidates (Fowler & Ridout 2013;

Motta & Fowler 2016). Because I, throughout this dissertation, tend to find similar results across election cycles, I think it is reasonable to suggest that the informative power of campaign advertising should generalize to most contemporary campaigns.

Another noteworthy limitation concerns the measurement of policy ad exposure. Like many others (Ridout et al., 2004; Franz et al., 2007; Ridout & Franz 2011), I consider the exposure measures designed here to be *upper-bound estimates*. Although the measures I present in Chapter 4 make use of more fine-grained television viewing data than previous studies, observational methods of assessing ad exposure are always like to engage in over-estimation. My measures cannot capture, for example, whether or not people actually pay attention to the ads they see during televised commercial breaks – they may get up to use the restroom, get a snack, or simply mute their television.

However, to the extent that over-estimation is occurring, it is critical to note that it creates a *more conservative* empirical test of my theoretical expectations. Finding that policy ads are informative in spite of these challenges, in my view, underscores their informative power. Event though I cannot guarantee that those individuals coded as "high exposure" truly saw and paid attention to every show they are estimated to have seen, I nevertheless find strong effects of exposure on public knowledge.

Finally, these analyses are limited by a phenomenon likely to impact all research on televised media effects in coming years – something I call the "Hulu Effect." As more individuals stream television content online, tracking exposure may become much more difficult. Advertisements aired on television are purchased at the program level in various media markets. For example, imagine that a political campaign buys

a spot in Madison, Wisconsin (a battleground market) during *The Late Show*. So long as someone lives in Madison and reports tuning in to Stephen Colbert's program when it was purchased, we can be certain that this person has a non-zero probability of having been exposed to the ad.

Web streaming services pose a unique and novel problem for estimating exposure. Currently, Hulu offers ad time to political interests on only a case-by-case basis, and do not make political ad buy data publicly available.[1] For the sake of argument, let's assume that researchers can ultimately figure when and on what program political advertisers purchased spots. Even in this ideal case, we cannot say *with certainty* that an individual who self-reports watching a particular program on a particular day has a non-zero chance of seeing that ad. Hulu determines ad viewership algorithmically based on characteristics of the viewer.[2] Individuals can even modify this algorithm themselves via tools like Hulu's "Ad Selector" – a service that allows users to have some say in the ad content they see.

The Hulu Effect also poses an important conceptual problem for incidental exposure. As discussed in Chapter 2, the idea that Americans encounter televised political advertising by chance is a critical component of my theoretical expectations; it is the primary mechanism by which those who might conventionally fail to encounter information about political campaigns have the opportunity to be exposed to some amount of information about them. The ability to choose one's own ad experience, and the micro-targeting of ads more generally, may cause those who are the least interested and knowledgable about politics to miss out on being exposed.

As I noted in Chapter 4, the Hulu Effect is not likely to impact the results ob-

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[1] See Hulu's official policy here: http://www.hulu.com/docs/distribution/adrestrictions.html

[2] For example, see: https://ignitevisibility.com/advertising-on-hulu/

served here. Even in the most recent presidential election cycle, most Americans still watch live-streaming television via conventional methods (antenna, cable, etc.). Consequently, the Hulu Effect is probably of less concern for the present research than it is for future research. How scholars adapt to the popularity of web streaming television services is a critical challenge for the continuation of scholarship in this area.

8.3 Optimism: How Much is Too Much?

In addition to the methodological limitations suggested above, some might wonder whether the conclusions drawn in my dissertation are "too good to be true." I think it is important to keep in mind that policy-focused ad exposure is *not* a panacea. As noted in previous chapters, thirty second political commercials are too short to offer much detail about the policy issues they cover. There's also no guarantee of their veracity – especially in ads that might attack or contrast candidates' policy stances.

However, I want to reiterate that the measures of campaign knowledge that I study here are fairly elementary. They provide a general sense of whether or not Americans know the positioning of candidates on high-profile policy issues. As demonstrated in Chapter 3, many Americans lack even this basic knowledge. Moreover, as demonstrated in Chapter 7, the basics are quite useful in helping Americans decide for whom they ought to cast their ballot. Consequently, I am less interested in whether or not policy ads provide Americans with a deep understanding of contemporary policy debates, and more interested in whether or not Americans get a general sense of where politicians stand on major issues.

It is also important to recognize that informing the public is not most campaign

advertisers' primary goal. Above all, campaigns want to win elections. As Erika Fowler and I have reviewed elsewhere (Motta & Fowler 2016), informing the public is better thought about as a *byproduct* of advertising. Consequently, it would be highly optimistic to assume that making campaigns aware of ads' informative power would somehow change their advertising practices (e.g., by convincing them to air more informative, policy-focused messages).

Instead, I think that my research offers a more nuanced and tempered reason for optimism. I argue that contemporary campaign dynamics *already* play a role in closing knowledge gaps, and give citizens the tools they need to vote in line with their policy preferences. Interest in presidential campaigns comes and goes. Americans were more attentive to the 2016 presidential contest between Donald Trump and Hillary Clinton than the 2008 contest between Barack Obama and John McCain, for example (Pew Research Center 2015). However, even in cycles that attract less interest, a majority of Americans are exposed to at least *some amount* of policy advertising (about 60-70%, as noted in Chapter 4).

Of course, the fact that knowledge remains unequally distributed, and that levels of policy voting are suboptimal, underscores the idea that ads are not a cure-all. As I discuss in more detail below, a race with an especially high volume of policy-focused advertising may offer an opportunity to further chip away at knowledge inequality in the U.S., and facilitate policy voting. At the same time, however, a race with atypically low levels of policy advertising may be less beneficial.

8.4 Policy Advertising in the Age of Trump

Finally, I want to conclude by talking about the future of policy advertising – in the aftermath of the 2016 presidential election. When talking about political advertising trends at the presidential level, the 2016 presidential campaign can be thought about as – to use Fowler and colleagues' terminology 2016 – an "outlier election". As I mentioned in Chapter 2 (see Figure 2.1), policy-focused advertising volume was considerably lower in 2016 than in 2012 or 2008, giving way to a stronger focus on candidates' character and other personal traits than previous election cycles. This was especially true in negative ads aired against Donald Trump (Fowler, Ridout, & Franz 2016. Overall levels of advertising were also lower in 2016 than the record-setting 2012 election, and reached their lowest levels observed since the 2000 contest between George Bush and Al Gore (Motta 2016; Fowler, Ridout, & Franz 2016).

Changing advertising dynamics in 2016 were likely the result of an intensely personal campaign. Will the same be true in 2020? Right now, personal questions about President Trump, the presumed 2020 Republican nominee for the presidency, loom large – including his marital fidelity, honesty, campaign finance ethics, the entanglement of his personal business with his governing style, social media habits, and potential involvement in the obstruction of justice in a federal investigation. Although it is difficult to say whether or not his primary or general election opponents will invest in a higher-than-average level of level of advertising focused on Trump as a person, it seems possible (if not likely) that the 2020 election will resemble 2016.

This poses a potential challenge to the informative power of campaign advertising. As I described in Chapter 4, fewer people were exposed to policy-focused advertising in 2016 than in previous cycles. Even though policy advertising was effective at

informing most people in the 2016 election (Chapter 5), its ability to close knowledge gaps in 2016 was more modest than in previous cycles (Chapter 6).

This pattern of results underscores an important point. In order for people to reap the informative benefits of policy-focused advertising, they have to *actually be exposed to it.* This is an obvious cause for normative concern. Should policy-focused advertising fall by the wayside in 2020, we might worry that fewer Americans acquire campaign knowledge via the ads they see on television – especially those with low levels of interest and knowledge in politics who are arguably the most in need of that information. However, if policy-focused ad volume bounces back to 2008 or 2012 levels, we may see even stronger gains in campaign knowledge.

As researchers, the idea that learning effects are, at least in part, affected by campaign dynamics, could be seen as an obstacle or limitation. In addition to the normative stakes outlined above, an "outlier" cycle could hinder our ability to detect and study how citizens acquire information about politics. Instead, I prefer to see this as an opportunity for innovation. For example, a dearth of policy advertising in one race (perhaps the 2020 presidential contest) does not *preclude* a focus on the issues in others (e.g., Senate and House races). A contest lacking in issue focus at the presidential level could provide an excellent opportunity to study how Americans learn about more localized candidates' policy positions.

I cannot say with certainty what the American political landscape will look like in 2020. What I can say is that the coming years will provide researchers with opportunities to study the informative power of campaign advertising in novel and exciting ways.

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Appendix A

Question Wording, Measurement Details, and Summary Statistics

Campaign Knowledge

In the 2008 ANES Panel

Campaign knowledge is measured as an additive index of correct answers on the following items in the June, September, October, and November waves of the ANES. Respondents were asked a series of identical questions about both President Obama and John McCain, concerning where each one stood on a set of policy issues. Because the goal in constructing this scale is to see if respondents note policy differences between the two major party candidates, follow-up information about the perceived strength of candidates' opinions on these issues was not used to construct the knowledge scale.[1] See p. 171 of the ANES Panel User Guide for more information.

Overall, the reliabilities of the scales (for each candidate, and in each wave) in each wave were as follows. All items produced positive signs when scaled, lending some assurance that the answers coded as correct for each question were, in fact, accurate.[2]

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[1] Note that while a core set of questions was asked in each wave, some waves introduced additional items, which I included in the final measure. This move should theoretically boost the internal consistency of the measure in each wave (Ansolabehere, Rodden, and Snyder 2008), although it also implies that re-scaled (from 0-1) scores on the test will take on a greater number of interval values in some years.

[2] Correct answers were determined by browsing the New York Times' 2008 General Election Guide to where candidates stood on dozens of salient policy issues: for example, http://elections.nytimes.com/2008/president/issues.html

Table A1. Campaign Knowledge Reliabilities Across Waves of the 2008 ANES Panel

	June	September	October	November
Obama Knowledge	0.85	0.72	0.67	0.69
McCain Knowledge	0.67	0.62	0.59	0.64
Combined Index (Used in Paper)	0.82	0.78	0.74	0.79

Items used to construct the scales:

1. Does Barack Obama [John McCain] favor, oppose, or neither favor nor oppose an amendment to the US Constitution banning marriage between two people who are the same sex?

   Waves: June, September, October, November
   Obama: Oppose
   McCain: Oppose

2. Does Barack Obama [John McCain] favor, oppose, or neither favor nor oppose raising federal income taxes for people who make more than $200,000 per year?

   Waves: June, September, November
   Obama: Favor
   McCain Oppose

3. Does Barack Obama [John McCain] favor, oppose, or neither favor nor oppose the U.S. government paying for all of the cost of prescription drugs for senior citizens who are living on very little income?

   Waves: June, September, October, November
   Obama: Oppose
   McCain: Oppose

4. Does Barack Obama [John McCain] favor, oppose, or neither favor nor oppose the U.S. government paying for all necessary medical care for all Americans?

   Waves: June, September, October, November
   Obama: Favor
   McCain: Oppose

5. Imagine that the U.S. government suspects a person in the United States of being a terrorist.Does Barack Obama [John McCain] favor, oppose, or neither favor nor oppose the government being able to put this person in prison for months without ever bringing the person to court and charging him or her with a crime?

   Waves: June, September, October, November
   Obama: Oppose
   McCain: Favor

6. Does Barack Obama favor, oppose, or neither favor nor oppose the U.S. government being required to get a court order before it can listen in on phone calls made by American citizens who are suspected of being terrorists?

   Waves: June, September, October, November
   Obama: Favor
   McCain: Oppose

7. Citizens of other countries who have come to live in the United States without the permission of the U.S. government are called "illegal immigrants."Does Barack Obama [John McCain] favor, oppose, or neither favor nor oppose allowing illegal immigrants to work in the United States for up to three years, after which they would have to go back to their home country?

   Waves: June, September, October, November
   Obama: Favor
   McCain: Favor

8. Does Barack Obama [John McCain] favor, oppose, or neither favor nor oppose the U.S. government making it possible for illegal immigrants to become U.S.

citizens?

Waves: June, September, October, November
Obama: Favor
McCain: Oppose

9. Next, wed like to ask whether Barack Obama [John McCain] favors, opposes,
   or neither favors nor opposes a series of ways that the federal government might
   try to reduce future global warming. Power plants put gases into the air that
   could cause global warming.Does Barack Obama [John McCain] favor, oppose,
   or neither favor nor oppose the federal government lowering the amount of these
   gases that power plants are allowed to put into the air?

   Waves: September, October, November
   Obama: Favor
   McCain: Favor

10. Does Barack Obama [John McCain] favor, oppose, or neither favor nor oppose
    the federal government requiring automakers to build cars that use less gasoline?

    Waves: September, October, November
    Obama: Favor
    McCain: Oppose

11. Does Barack Obama [John McCain] favor, oppose, or neither favor nor oppose
    increasing taxes on gasoline so people either drive less or buy cars that use less
    gas?

    Waves: September, October, November
    Obama: Favor
    McCain: Oppose

In the 2012 ANES

Campaign knowledge in the 2012 ANES was measured using candidate placements
on several policy issues along seven-point bipolar scales. Individuals were coded
as having answered a question correctly if they placed the Democratic presidential
candidate closer - in two-dimensional space - than the Republican candidate to the
more "liberal" policy stance (and vice versa). Answers were combined into an additive
index ($\alpha = 0.75$), and recoded to range from 0-1.

Individuals were first asked where they would place themselves on several bipolar
scales, where each anchor represented a different (opposing) policy view. Afterward,
they were asked to place Barack Obama and Mitt Romney on the same scales. The
following bipolar scales were used to make the candidate knowledge measure:

1. Title Government Services/Government Spending
   Left label: GOVERNMENT SHOULD PROVIDE MANY FEWER SERVICES:
   REDUCE SPENDING A LOT
   Right label: GOVERNMENT SHOULD PROVIDE MANY MORE SERVICES:
   INCREASE SPENDING A LOT

2. Title: Defense Spending
   Left: GREATLY DECREASE DEFENSE SPENDING
   Right: GREATLY INCREASE DEFENSE SPENDING

3. Title: Health Insurance
   Left: GOVERNMENT INSURANCE PLAN
   Right: PRIVATE INSURANCE PLAN

4. Title: Jobs and Good Standard of Living
   Left: GOVERNMENT SHOULD SEE TO A JOB AND GOOD STANDARD
   OF LIVING
   Right: GOVERNMENT SHOULD LET EACH PERSON GET AHEAD ON
   OWN

5. Title: Government Help to Blacks
   Left: GOVERNMENT SHOULD HELP BLACKS
   Right: BLACKS SHOULD HELP THEMSELVES

6. Title: Environmental Regulation/Jobs
   Left: Regulate business to protect the environment and create jobs
   Right: No regulation because it will not work and will cost jobs

In the 2016 CSPP Panel

Campaign knowledge in the 2016 CSPP study was measured by asking respondents
where the major party presidential nominees stood on several different issues (Support, Oppose, or "Unsure" [Don't Know]). Correct answers were determined based
on the policy platforms provided on the candidates' web pages, and "don't know"
responses were coded as incorrect. The same set of six items was administered in the
study's July, September, and October waves.

  The resulting scales produced strong levels of internal consistency in all three
waves (July $\alpha = 0.73$, September $\alpha = 0.76$, and October $\alpha = 0.72$). The questions
were administered as follows:[3]

1. Does Hillary Clinton support or oppose a ban on most assault weapons?

2. Does Hillary Clinton support or oppose an increase in the federal minimum
   wage to at least $12?

3. Does Hillary Clinton support or oppose an immigration system that supports a
   path to full citizenship?

4. Does Donald Trump support or oppose repealing the Affordable Care Act (ACA,
   also known as Obamacare) and replacing it?

5. Does Donald Trump support or oppose lowering the corporate tax rate?

6. Does Donald Trump support or oppose the introduction of a high tariff (tax)
   on goods imported from China?

   - Support
   - Oppose
   - Unsure ("Don't Know")

---

[3] The correct answer of the items we selected for inclusion in the survey happened to be "support"
in every case. This may raise concerns about a variant of acquiescence bias; one who assumes that
candidates support each position listed would be more likely to score highly on the test. It is difficult
to discern with this data whether or not bias like this may have impacted the measures. Still, it is
important to point out that average scores on the scale were not excessively high ($\bar{M} < 0.63$ in July
and September, $\bar{M} < 0.71$ in October), especially when compared to scores on the other campaign
knowledge measures assessed in 2012 and 2008 (see Chapter 4 for more details). Moreover, to the
extent that this bias does impact the measure, it should make it *more difficult* for me to detect
learning effects; scoring people with low levels of knowledge as being more knowledgeable than they
truly are, and potentially imposing a "ceiling effect" on those respondents' propensities to acquire
information.

Civic Knowledge

In the 2008 ANES Panel

Civic knowledge was measured in Waves 2 and 11 to two different subsets of those
initially recruited to take part in the 2008 ANES Panel Study. In order to preserve a
large N when working with models that control for levels of civic knowledge, responses
are pooled across waves.[4] Respondents were asked the following questions, which
were indexed into a moderately reliable scale in both Wave 2 ($\alpha = 0.60$) and Wave
11 ($\alpha = 0.61$) prior to being pooled.

1. Do you happen to know how many times an individual can be elected President
   of the United States under current laws? Type the number.

2. For how many years is a United States Senator elected that is, how many years
   are there in one full term of office for a U.S. Senator? Type the number.

3. How many U.S. Senators are there from each state? Type the number.

4. For how many years is a member of the United States House of Representatives
   elected that is, how many years are there in one full term of office for a U.S.
   House member? Type the number.

5. According to federal law, if the President of the United States dies, is no longer
   willing or able to serve, or is removed from office by Congress, the Vice President
   would become the President. If the Vice President were unable or unwilling to
   serve, who would be eligible to become president next?(The Chief Justice of
   the Supreme Court, the Secretary of State, or the Speaker of the House of
   Representatives / The Speaker of the House of Representatives, the Secretary
   of States, or the Chief Justice of the Supreme Court)?

6. What percentage vote of the House and the Senate is needed to override a
   Presidential veto?(A bare majority, two?thirds, three?fourths, or ninety percent
   / Ninety percent, three?fourths, two?thirds, or a bare majority)?

[4] Some might object that pooling responses to knowledge batteries across different periods in the
campaign might introduce non-random error to the variable's measurement (i.e., if some respondents
learn basic civic facts over the course of the campaign). However, civic knowledge is thought to be
highly temporally stable (Delli Carpini & Keeter 1996), and strongly associated with factors that
are unlikely to change over the course of an election cycle (e.g., education, and the social/economic
advantages associated with it - Highton 2009). Moreover, Table 2 in the main text suggests that
civic knowledge in the 2012 study (which was measured at a single point in time, at the start of the
campaign) appears uninfluenced by advertising dynamics.

In the 2012 ANES

The 2012 ANES featured two short civic knowledge tests. One was the standard
ANES five-item knowledge measure (similar to that of Delli Carpini & Keeter, 1993),
and the second was a CSES insert (four items). To increase internal consistency, the
nine items were averaged together into a combined knowledge scale. The following
nine items were used:

1. CSES 1: Which of these persons was the Secretary of the Treasury before the
   recent election? [Hillary Clinton, Eric Holder, Leon Panetta, or Timothy Gei-
   thner]?

   Correct = Timothy Geithner

2. CSES 2: What was the current unemployment rate in the United States as of
   [DATE] – [RATE - 2.0], [RATE], [RATE + 2.0], or [RATE + 4.0]?

   Correct = RATE

3. CSES 3: Which PARTY came in second in seats in the United States House
   of Representatives? [The Democratic party, the Republican party, the Green
   party, or the Libertarian party]?

   Correct = Democratic Party

4. CSES 4: Who is the current Secretary-General of the United Nations - [Kofi
   Annan, Kurt Waldheim, Ban Ki-moon, or Boutros Boutros-Ghali]?

   Correct = Ban Ki-moon

5. ANES 1: Do you happen to know how many times an individual can be elected
   President of the United States under current laws? [OPEN-ENDED NUMERIC
   ENTRY]

   Correct = Two

6. ANES 2: Is the U.S. federal budget deficit the amount by which the govern-
   ments spending exceeds the amount of money it collects now bigger, about the
   same, or smaller than it was during most of the 1990s?

Correct = Bigger

7. ANES 3: For how many years is a United States Senator elected that is, how many years are there in one full term of office for a U.S. Senator? [OPEN-ENDED NUMERIC ENTRY]

Correct = Six

8. ANES 4: What is Medicare? [A program run by the U.S. Federal government to pay for old people's health care; A program run by state governments to provide health care to poor people; A private health insurance plan sold to individuals in all 50 states; A private, non-profit organization that runs free health clinics]

Correct = A program run by the US Federal government to pay for old people's health care

9. ANES 5: On which of the following does the U.S. federal government currently spend the least? [Foreign aid, Medicare, National defense, Social security]

Correct = Foreign Aid

In the 2016 CSPP Panel

Civic knowledge in the 2016 CSPP Panel study was measured by indexing together respondents' scores on the following four questions. These were administered only once (in July), and were somewhat less internally consistent than the other civic knowledge measures ($\alpha - 0.58$); potentially because the measure included only four items.

1. What job or political office does Paul Ryan currently hold? [Speaker of the House, Secretary of the Treasury, White House Chief of Staff, Attorney General]

Correct = Speaker of the House

2. Which political party currently has the most members in the House of Representatives in Washington? [Democrats, Republicans, Both parties have the same number of members in the House]

Correct = Republicans

3. How long is the term of office for a U.S. Senator? [2 years, 4 years, 5 years, 6 years, 8 years]

Correct = 6 years

4. Whose responsibility is it to nominate judges to the Federal Courts? [The President, Congress, The Supreme Court]

Correct = The President

Policy Preferences

In the 2008 ANES Panel

Respondents' policy preferences were measured using a subset of the questions listed in the "campaign knowledge" section. While respondents offered opinions on issues not reflected in this battery as well, using these items as measures makes it possible to directly compare how knowledge about where candidates stand on the issues influences the linkage between their own stances on those *same* issues and vote choice.

These questions were only asked in the October wave. For consistency with the way in which the knowledge questions were coded, I again exclude additional information about attitudinal strength. Respondents were asked the following subset of questions:

1. Do you favor, oppose, or neither favor nor oppose an amendment to the US Constitution banning marriage between two people who are the same sex?

2. Do you favor, oppose, or neither favor nor oppose raising federal income taxes for people who make more than $200,000 per year?

3. Do you favor, oppose, or neither favor nor oppose the U.S. government paying for all of the cost of prescription drugs for senior citizens who are living on very little income?

4. Do you favor, oppose, or neither favor nor oppose the U.S. government paying for all necessary medical care for all Americans?

5. Imagine that the U.S. government suspects a person in the United States of being a terrorist.Do you favor, oppose, or neither favor nor oppose the government being able to put this person in prison for months without ever bringing the person to court and charging him or her with a crime?

6. Do you favor, oppose, or neither favor nor oppose the U.S. government being required to get a court order before it can listen in on phone calls made by American citizens who are suspected of being terrorists?

7. Citizens of other countries who have come to live in the United States without the permission of the U.S. government are called "illegal immigrants."Do you favor, oppose, or neither favor nor oppose allowing illegal immigrants to work in the United States for up to three years, after which they would have to go back to their home country?

8. Do you favor, oppose, or neither favor nor oppose the U.S. government making it possible for illegal immigrants to become U.S. citizens?

In the 2012 ANES

Policy positions were measured using individuals self-placement on all of the bipolar issues scales used to construct the campaign knowledge question. Please refer to that section of the supplemental materials for a full list of how each scale was constructed.

In the 2016 CSPP Study

The CSPP study asked several questions about respondents' policy preferences. However, they did not directly match the campaign knowledge battery, and therefore were unideal for testing in the policy voting analyses presented in the main text. Please contact the author if you have any additional questions about the study's design, in this respect.

Battleground State Indicators

The following states were defined as Battleground States in 2008, 2012, and (or) 2016. Every four years, the political news website Politico offers special coverage

of the states it deems to be battlegrounds. Although determining "battleground"
status is a somewhat subjective process (i.e., there is no single predicted vote mar-
gin threshold at which a state becomes a battleground), I opted to use Politico's
coverage as a general proxy for how battleground status is covered in political news.
Archived versions of the states Politico classified as swing states can be accessed here:

- 2008: https://www.politico.com/convention/swingstate.html

- 2012: https://www.politico.com/2012-election/swing-state/

- 2016: https://www.politico.com/blogs/swing-states-2016-election/2016/
  06/what-are-the-swing-states-in-2016-list-224327

Table 5. Battleground State List

State	2008	2012	2016
Colorado	Yes	Yes	Yes
Florida	Yes	Yes	Yes
Georgia	Yes	No	No
Indiana	Yes	No	No
Michigan	No	No	Yes
Missouri	Yes	No	No
Nevada	Yes	Yes	Yes
New Hampshire	Yes	Yes	Yes
New Mexico	Yes	No	No
North Carolina	Yes	Yes	Yes
Ohio	Yes	Yes	Yes
Pennsylvania	Yes	No	Yes
Virginia	No	Yes	Yes
Wisconsin	No	Yes	Yes
West Virginia	Yes	No	No

Self-Reported Television Viewing Measures

In the 2008 ANES Panel (Program Method)

The 2008 data estimates exposure to campaign advertising using a measure of how
frequently respondents watch the news on television. That question was measured as
follows:

"How many days in the PAST WEEK did you watch the news on TV?"

0 - None; 1 - One day; 2 - Two days; 3 - Three days; 4 - Four days; 5 - Five days; 6 - Six days; 7 - Every day; 8 - DK; 9 - Refused

In the 2012 ANES (Program Method)

The 2012 data estimates exposure to campaign advertising using a more comprehensive set (compared to 2008) programs. Respondents were asked to check a box if they watched that program "regularly." The forty programs used in this research can be accessed here (p. 779. English speaking programs only. All relevant variables are prefixed by medsrc_).
http://electionstudies.org/studypages/anes_timeseries_2012/anes_timeseries_2012_userguidecodebook.pdf

In the 2016 CSPP Panel (Daypart Method)

The 2016 CSPP study estimated ad exposure by asking respondents to self-report how frequently they watch television during different times of the day. These time units were constructed to be consistent with Nielsen's (1) Early Morning, (2) Daytime, (3) Early Fringe, and (4) Prime Time daypart definitions. These items can be found below:

STEM: Which of the following platforms do you use to watch full-length television programs? Please select all that apply:

ITEMS:

- Early morning network programs (e.g., news, breakfast TV)

- Daytime network programs (e.g., talk shows, soap operas)

- Evening network programs (e.g., evening magazine, reruns)

- Prime-time network programs (e.g., sitcoms, dramas)

    1. Never

    2. About once a month

    3. Several times a month

    4. About once a week

    5. Several times a week

    6. Every day

Other Independent Variables

In the 2008 ANES Panel

All other political and demographic controls (with the exception of labor force status and political interest) in the 2008 ANES Panel make use of derived codes, standardized by the data providers. A list of the derived variable names and how they were used in the present study can be found in the table below. All variables were recoded to range from 0-1, with deviations away from the standardized codes noted in the final column.

Table 6. Demographic and Political Controls

Variable	Derived Name	Note
Age	der02	Recoded (0 = min observed value, 1 = max.)
College	der05	Recoded (0 = less than college, 1 = college deg. +)
Income	der06	-
Race	der04	Recoded (0 = non-White, 1 = White)
Gender	der01	-
Married	der24	Recoded (0 = non-Married, 1 = Married)
Labor Force Status	w11zg1	(0 = not in the labor force, 1 = in the labor force)[5]
Partisan Strength	der08w10	Folded partisanship extremity (1 = strong partisan)
Political Interest	w9/w10/w11h1	Allowed to vary over waves because it was asked three times. Held to W9 values in W6 (not asked)

In the 2012 ANES

All other demographic and political controls in the 2012 ANES were measured as
follows:

1. Intelligence (Cognitive Ability): A ten item index summarizing the number
   of correct answers provided on ten vocabulary questions ($\alpha = 0.75$). Correct
   answers are recorded in the variables prefixed with "wordsum" in the 2012
   ANES.

2. Campaign Media Use Index: A five-item index ($\alpha = 0.64$) made up of five
   media use questions (all prefixed with "mediapo" in the 2012 ANES) about
   the 2012 Presidential Campaign. Media use activities included the following:
   (1) watching campaign programs on television, (2) radio speeches/discussions,
   (3) reading about the campaign in newspapers, (4) viewing information about
   the campaign online, and (5) visiting a candidate's website. Respondents were
   assigned a score of 0 if they did not engage in each activity. If they reported
   engaging in the activity "just one or two times," they were assigned a score of
   one. They were assigned a score of two if they engaged in the activity "several"
   times over the course of the campaign, and a score of three if they engaged in
   the activity "a good many" times. The index was recoded to range from zero
   to one.

3. Political Interest: Political interest is a single-item ("interest_attention") asking
   respondents how often they pay attention to politics and elections. It is five-
   point scale with the following options (recoded to range from 0-1, where 1
   indicates high levels of interest): never, some of the time, about half the time,
   most of the time, and always.

4. Partisan Strength: Again using the "pid_x" summary variable, I folded the
   seven-point scale to reflect response extremity. Pure independents were assigned
   a score of zero; leaners, one; not very strong partisans, two; and strong partisans,
   three. The resulting scale was recoded to range from zero to one.

5. Internal Efficacy: A two item index of the variables effic_complicstd (effic_complicrev)
   and effic_undstd (effic_undrev). The ANES featured a split ballot on these items
   - which were pooled together prior to indexing. These differences are summa-
   rized as follows:

   - effic_complicstd: "Sometimes, politics and government seem so compli-
     cated that a person like me can't really understand what's going on" (Agree

strongly, agree somewhat, neither agree nor disagree, disagree somewhat,
disagree strongly)

- effic_complicrev: "How often do politics and government seem so compli-
cated that you can't really understand what's going on?" (Always, most
of the time, about half the time, some of the time, never.)

- effic_undstd: "I feel that I have a pretty good understanding of the impor-
tant political issues facing our country." (Agree strongly, agree somewhat,
neither agree nor disagree, disagree somewhat, disagree strongly)

- effic_undrev: "How well do you understand the important political issues
facing our country?" (Extremely well, very well, moderately well, slightly
well, not well at all)

6. Mobilization: a recode of the **mobilpo_party** variable, such that a score of
1 indicates that the respondent reported being reached out to by a political
campaign at some point during the election, and 0 indicates that they did not.

7. Race: a recode of the **dem_raceeth_x** variable, such that a score of 1 indicates
that the respondent is White, and 0 indicates that they are non-white.

8. Survey Mode: a recode of the **mode** variable such that a score of 1 reflects
having taken the ANES online, and 0 indicates that the respondent took it
face-to-face.

9. Gender: a recode of the **gender_respondent_x** variable, such that a score of
1 indicates that the respondent is female, and 0 indicates that the respondent
is male.

10. Age: a recode of the **dem_age_r_x** variable, such that a score of 1 reflects the
highest observed age in the dataset and 0 indicates the minimum observed age.

11. Education: a recode of the **dem_edugroup_x** variable, such that a score of 1
indicates that the respondent completed college, and 0 indicates that they did
not.

12. Income: the **incgroup_prepost_x** variable, recoded to range from 0-1.

13. Marital Status: a recode of the **dem_marital** variable such that a score of 1
indicates that the individual is married or widowed, and 0 indicates that they
are not.

14. Labor Force Status: A recode of the **dem_empstatus_1digitfin_x** variable
such that a score of 1 indicates that the individual is working now, or tem-
porarily laid off; and 0 indicates that they are not.

In the 2016 CSPP Study

All other demographic and political controls in the 2016 CSPP study were measured as follows:

1. Partisan Strength: Respondents were asked to report their party ID using the same procedure and measures employed by the ANES. I folded the seven-point scale to reflect response extremity. Pure independents were assigned a score of zero; leaners, one; not very strong partisans, two; and strong partisans, three. The resulting scale was recoded to range from zero to one.

2. Education: A dichotomous indicator of whether or not respondents completed college.

3. Gender: A dichotomous indicator of whether or not respondents were female.

4. Income: A 10-point scale recoded to range from 0-1, such that a score of 1 indicates a household income of $200,000 or more in a calendar year. [Less than $10,000; 10-14,999; 15-24,999; 25-34,999; 35-49,999; 50-74,999; 75-99,999; 100-149,999; 150-199,999; 200,000 or more]

5. Race: A dichotomous indicator of whether or not respondents are White.

6. Labor Force Status: A dichotomous indicator of whether or not respondents are working now or temporarily laid off (receiving a score of 0 otherwise).

Summary Statistics

In the 2008 ANES Panel

Table 7. Summary Statistics - 2008 ANES Panel

Variable	Mean	S.D.	Min.	Max.	N
	Wave 6				
Est. Policy Ad Exposure	0.24	0.33	0	0.99	2740
Est. Personal Ad Exposure	0.23	0.31	0	1	2733
Level of Campaign Knowledge	0.44	0.25	0	0.94	1420
Interest in Politics	0.67	0.25	0	1	2739
	Wave 9				

Est. Policy Ad Exposure	0.73	0.23	0	1	2546
Est. Personal Ad Exposure	0.69	0.23	0	0.99	2616
Level of Campaign Knowledge	0.54	0.22	0	1	2820
Interest in Politics	0.67	0.25	0	1	2739
Wave 10					
Est. Policy Ad Exposure	0.62	0.34	0	1	2344
Est. Personal Ad Exposure	0.52	0.33	0	1	2667
Level of Campaign Knowledge	0.55	0.22	0	1	1349
Interest in Politics	0.68	0.25	0	1	2693
Wave 11					
Est. Policy Ad Exposure	0.66	0.2	0	0.98	2691
Est. Policy Ad Exposure	0.84	0.24	0	1	2309
Level of Campaign Knowledge	0.57	0.19	0	0.96	2665
Interest in Politics	0.69	0.25	0	1	2665
Wave Invariant					
R Voted for Obama?	0.53	0.5	0	1	2371
R Opposes Gay Marr. Const. Ban?	0.53	0.21	0	1	1349
R Supports Raising Taxes on $200k+?	0.59	0.23	0	1	1351
R Supports Medicare Part D?	0.63	0.21	0	1	1349
R Supports Single Payer HC?	0.5	0.23	0	1	1348
R Opposes Susp HabCorp for Susp. Terrorists?	0.6	0.22	0	1	1348
R Supports Susp Court Order to Wiretap?	0.57	0.23	0	1	1348
R Supports Guest Worker Programs?	0.45	0.23	0	1	1348
R Supports Illegal Imm. Becoming Citizens?	0.54	0.25	0	1	1349
Civic Knowledge	0.64	0.25	0	1	2626
R's Interest in Politics	0.68	0.25	0	1	2693
How Many Days R Watches TV News	0.69	0.32	0	1	2691
R's PID Strength	0.65	0.34	0	1	2691
R's Age	0.46	0.22	0	1	4240
R's Household Income	0.62	0.23	0	1	3187
R's Sex = Female	0.58	0.49	0	1	4240
R is White?	0.78	0.42	0	1	4240
R Has College Degree?	0.42	0.49	0	1	3222
R Lives in BG State?	0.3	0.46	0	1	3838

In the 2012 ANES

Table 8. Summary Statistics - 2012 ANES

Variable	Mean	S.D.	Min.	Max.	N
Est. Policy Ad Exposure	0.30	0.27	0	1	5899
Est. Personal Ad Exposure	0.18	0.28	0	1	5623
Correct Placement of Cands. On Issues	0.75	0.29	0	1	5867
9-item Know. Scale	0.61	0.22	0	1	5906
R's WORDSUM Score	0.68	0.24	0	1	5902
R's Interest in Politics	0.59	0.28	0	1	5911
Total Attention to Camp. Across Media	0.3	0.22	0	1	5510
R is Hispanic?	0.17	0.38	0	1	5885
R is Black?	0.17	0.38	0	1	5885
R's Age	0.44	0.23	0	1	5854
R is Female?	0.52	0.5	0	1	5914
Household Income	0.46	0.3	0	1	5715
R has College Degree?	0.32	0.47	0	1	5914
Strength of PID	0.63	0.36	0	1	5890
R Took ANES Online?	0.65	0.48	0	1	5914
R Voted for Obama?	0.58	0.49	0	1	4306
R's Positon on Envijobs	0.64	0.3	0	1	5005
R's Positon on Aid to Blacks	0.37	0.3	0	1	5188
R's Positon on Guaranteed Jobs	0.47	0.31	0	1	5476
R's Positon on Health Ins.	0.5	0.33	0	1	5471
R's Positon on Def. Spending	0.48	0.26	0	1	5187
R's Positon on Soc. Serv. Spending	0.48	0.27	0	1	5241

In the 2016 CSPP Panel

Variable	Mean	S.D.	Min.	Max.	N
			Wave 1		
Est. Policy Ad Exposure	0.30	0.29	0	1	3362
Est. Personal Ad Exposure	0.18	0.20	0	1	3469
Campaign Knowledge	0.64	0.29	0	1	3534
			Wave 2		
Est. Policy Ad Exposure	0.32	0.30	0	1	1914

Est. Personal Ad Exposure	0.42	0.37	0	1	1797
Campaign Knowledge	0.67	0.30	0	1	1976
	Wave 3				
Est. Policy Ad Exposure	0.48	0.37	0	1	1017
Est. Personal Ad Exposure	0.39	0.39	0	1	1050
Campaign Knowledge	0.71	0.27	0	1	1220
	Time Invariant				
PID Strength	0.69	0.33	0	1	10530
College	0.46	0.5	0	1	10617
Female	0.62	0.49	0	1	10614
Income	0.5	0.24	0	1	10539
Age	0.44	0.21	0	1	10503
White	0.64	0.48	0	1	10644
Labor Force	0.51	0.5	0	1	10644
Battleground State	0.35	0.48	0	1	10656

Appendix B

Supplemental Analyses

The pages that follow contain several supplemental tables and figures referenced in the main text. If modifying analyses originally presented in the main text, the title will reference that figure or table. Contextualizing information about those analyses can be found in the main text. Analyses not originally presented in the main text (but referenced somewhere within it) have a unique title, and a corresponding "note."

Chapter 3

Table B3.1. Model Estimates for Figure 3.2

	DV = Campaign Knowledge			DV = Civic Knowledge		
Income	0.10*	0.16*	0.13*	0.21*	0.15*	0.10*
	(0.03)	(0.02)	(0.05)	(0.04)	(0.02)	(0.05)
College	0.07*	0.10*	0.07*	0.09*	0.08*	0.09*
	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.03)
Female	-0.04*	-0.03*	-0.08*	-0.09*	-0.04*	-0.11*
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)
Labor Force	0.01	-0.02+	-0.04	-0.04*	-0.02*	-0.09*
	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)
Marital Status	-0.01	-0.02	-	-0.01	0.02+	-
	(0.01)	(0.01)		(0.02)	(0.01)	
Black	-0.07*	-0.04*	-0.05	-0.11*	-0.09*	-0.08*
	(0.03)	(0.02)	(0.03)	(0.03)	(0.01)	(0.03)
Hispanic	-0.03	-0.07*	-0.10*	-0.04	-0.07*	-0.15*
	(0.03)	(0.02)	(0.03)	(0.04)	(0.01)	(0.03)
Pol. Interest	0.28*	0.25*	0.31*	0.17*	0.15*	0.17*
	(0.03)	(0.02)	(0.04)	(0.03)	(0.01)	(0.04)
Democrat	0.10*	0.14*	0.08	0.03	0.03	0.08+
	(0.03)	(0.02)	(0.06)	(0.03)	(0.02)	(0.05)
Republican	0.08*	0.15*	0.14*	0.05+	0.03+	0.08
	(0.03)	(0.02)	(0.06)	(0.03)	(0.02)	(0.05)
Strength	0.03	-0.00	0.04	0.01	-0.00	-0.05
	(0.02)	(0.02)	(0.05)	(0.02)	(0.01)	(0.05)
β_0	0.21*	0.41*	0.24*	0.43*	0.48*	0.51*
	(0.03)	(0.02)	(0.05)	(0.04)	(0.02)	(0.04)
N	1258	5633	1902	1159	5664	1944
R^2	0.28	0.21	0.23	0.23	0.22	0.17

$* \text{ p} \leq 0.05; + \text{ p} \leq 0.10$

Note. Please consult the table in the main text table for additional information.

Chapter 4

Figure B4.1. Re-Estimation of Table 4.1 with Un-Trimmed Exposure Distribution
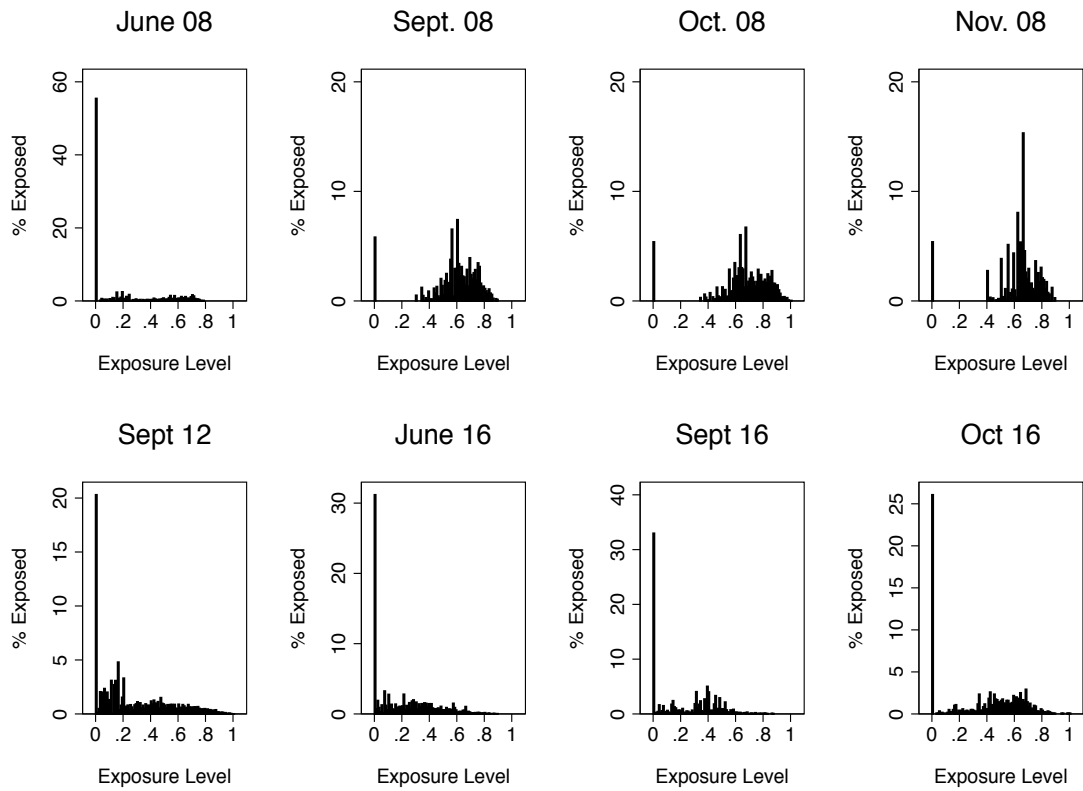
Table B4.1. Model Estimates for Figure 4.2

	Total			Policy		
	2008	2012	2016	2008	2012	2016
Age	0.26*	0.34*	0.24*	0.27*	0.33*	0.20*
	(0.03)	(0.02)	(0.06)	(0.03)	(0.02)	(0.05)
Female	0.01	0.01	0.02	0.01	0.01	0.02
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)
Black	0.07*	0.01	0.07+	0.07*	0.01	0.05
	(0.02)	(0.02)	(0.04)	(0.02)	(0.02)	(0.04)
Hispanic	0.00	-0.01	-0.04	0.00	-0.01	-0.01
	(0.03)	(0.02)	(0.04)	(0.03)	(0.02)	(0.04)
Income	0.07*	0.03	0.02*	0.07*	0.03+	0.02*
	(0.04)	(0.02)	(0.01)	(0.04)	(0.02)	(0.01)
Labor Force	-0.00	-0.00	-0.03	0.00	-0.01	-0.03
	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.03)
College	-0.05*	-0.02+	-0.03	-0.06*	-0.02+	-0.04
	(0.01)	(0.01)	(0.04)	(0.01)	(0.01)	(0.03)
Battleground State	0.09*	0.30*	0.03	0.08*	0.29*	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
β_0	0.55*	0.12*	0.17*	0.54*	0.13*	0.13*
	(0.04)	(0.02)	(0.05)	(0.04)	(0.02)	(0.05)
N	2271	5354	1431	2270	5360	1418
R^2	0.13	0.22	0.05	0.13	0.22	0.04

* $p \leq 0.05$; + $p \leq 0.10$

Note. Please consult the table in the main text table for additional information.

Table B4.2. Table B4.1 with Addition of News Viewing Covariate (2016 Only)

Age	0.14*	0.15*
	(0.06)	(0.06)
Female	0.06*	0.07*
	(0.03)	(0.02)
Black	0.03	0.02
	(0.04)	(0.04)
Hispanic	-0.03	0.02
	(0.05)	(0.04)
Income	0.01	0.01+
	(0.01)	(0.01)
Labor Force	-0.02	-0.02
	(0.03)	(0.03)
College	-0.01	-0.03
	(0.03)	(0.03)
Battleground State	0.04	0.03
	(0.03)	(0.03)
News Viewing	0.78*	0.73*
	(0.07)	(0.08)
Constant	0.27*	0.18*
	(0.06)	(0.06)
N	1105	1096
R^2	0.13	0.12

* $p \leq 0.05$; + $p \leq 0.10$

Note. Please consult the table in the main text table for additional information.

Table B4.3. Table B4.1 with Addition of Political Knowledge and Interest Covariates

| | Total | | | Policy | | |
	2008	2012	2016	2008	2012	2016
Age	0.24*	0.28*	0.16*	0.24*	0.28*	0.16*
	(0.04)	(0.02)	(0.06)	(0.04)	(0.02)	(0.06)
Female	0.02	0.03*	0.04+	0.02	0.03*	0.04+
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)
Black	0.06*	0.00	0.05	0.06*	0.00	0.05
	(0.02)	(0.02)	(0.04)	(0.02)	(0.02)	(0.04)
Hispanic	-0.02	-0.01	-0.00	-0.02	-0.01	-0.00
	(0.03)	(0.02)	(0.04)	(0.03)	(0.02)	(0.04)
Income	0.06	0.02	0.02*	0.06	0.02	0.02*
	(0.04)	(0.02)	(0.01)	(0.04)	(0.02)	(0.01)
Labor Force	0.01	-0.00	-0.04	0.01	-0.00	-0.04
	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.03)
College	-0.06*	-0.04*	-0.05+	-0.07*	-0.04*	-0.05+
	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.03)
Pol. Interest	0.17*	0.20*	0.19*	0.17*	0.20*	0.19*
	(0.03)	(0.02)	(0.04)	(0.03)	(0.02)	(0.04)
Battleground State	0.09*	0.30*	0.03	0.08*	0.30*	0.03
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)
Civic Knowledge	-0.03	-0.01	0.02	-0.04	-0.01	0.02
	(0.03)	(0.02)	(0.05)	(0.03)	(0.02)	(0.05)
β_0	0.47*	0.04+	0.03	0.47*	0.04+	0.03
	(0.04)	(0.02)	(0.06)	(0.04)	(0.02)	(0.06)
N	2117	5351	1408	2115	5357	1408
R^2	0.17	0.25	0.07	0.17	0.25	0.07

* $p \leq 0.05$; + $p \leq 0.10$

Note. Please consult the table in the main text table for additional information.

Chapter 5

Table B5.1. Model Estimates for Table 5.1

	2008		2012	2016	
	FEE	LGM	OLS	FEE	LGM
Exposure	0.21*	0.10*	0.04*	0.13*	0.08*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Wave (Fixed)	-	0.02*	-	-	0.04*
		(0.00)			(0.00)
Civic Know.	-	0.20*	-	-	0.34*
		(0.02)			(0.03)
Civic Know	-	-	0.41*	-	-
			(0.03)		
PID Strength	-	0.10*	0.11*	-	0.08*
		(0.01)	(0.02)		(0.02)
Camp. Media Exp.	-	-	0.16*	-	-
			(0.03)		
Female	-	-0.02*	-0.02*	-	-0.06*
		(0.01)	(0.01)		(0.01)
Income	-	0.09*	0.10*	-	0.17*
		(0.02)	(0.02)		(0.03)
Age	-	0.01	-0.01	-	0.15*
		(0.02)	(0.03)		(0.04)
White	-	0.01	0.05*	-	0.05*
		(0.01)	(0.01)		(0.02)
Married	-	0.00	-0.02	-	-
		(0.01)	(0.01)		
Labor Force	-	-0.01	-0.02	-	-0.00
		(0.01)	(0.01)		(0.01)
Mobilized	-	-	0.01	-	-
			(0.01)		
Online Mode	-	-	-0.04*	-	-
			(0.01)		
BG State	-	-0.00	0.01	-	-0.02+
		(0.01)	(0.01)		(0.01)
College	-	0.07*	0.07*	-	0.04*
		(0.01)	(0.01)		(0.01)
Constant	0.36*	0.03	0.32*	0.59*	0.09*

	(0.01)	(0.03)	(0.03)	(0.01)	(0.04)
$\ln(\sigma_{Wave})$	-	-3.31*	-	-	-2.24*
		(0.06)			(0.05)
$\ln(\sigma_{Constant})$	-	-0.96*	-	-	-1.23*
		(0.05)			(0.03)
$\ln(\sigma_{Wave,Constant})$	-	-1.72*	-	-	-0.96*
		(0.06)			(0.05)
$\ln(\sigma_{Residuals})$	-	-2.11*	-	-	-2.17*
		(0.03)			(0.05)
N	6245	6029	4971	3041	2923

* $p \leq 0.05$; + $p \leq 0.10$

Note. Please consult the table in the main text table for additional information.

Table S5.2. Table S5.1 with Full Exposure Proxies (2008 - 2016)

	2016		2012	2008	
	FEE	LGM	OLS	FEE	LGM
Exposure	0.17*	0.08*	0.03	0.24*	0.10*
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)
Civic Know.	-	0.34*	0.41*	-	0.19*
		(0.03)	(0.03)		(0.02)
PID Strength	-	0.08*	0.10*	-	0.09*
		(0.02)	(0.02)		(0.01)
College	-	0.04*	0.07*	-	0.07*
		(0.01)	(0.01)		(0.01)
Female	-	-0.06*	-0.02+	-	-0.02*
		(0.01)	(0.01)		(0.01)
Income	-	0.16*	0.10*	-	0.09*
		(0.03)	(0.02)		(0.02)
Age	-	0.15*	-0.02	-	0.01
		(0.04)	(0.03)		(0.02)
White	-	0.05*	0.05*	-	0.01
		(0.02)	(0.01)		(0.01)
Labor Force	-	-0.00	-0.01	-	-0.01
		(0.01)	(0.01)		(0.01)
Battleground State	-	-0.02+	0.01	-	0.00
		(0.01)	(0.01)		(0.01)
Married	-	-	-0.02+	-	-0.00
			(0.01)		(0.01)
Camp. Media Attn	-	-	0.17*	-	-
			(0.03)		
Mobilized	-	-	0.02	-	-
			(0.01)		
Online Mode	-	-	-0.04*	-	-
			(0.01)		
Wave	-	0.04*	-	-	0.02*
		(0.00)			(0.00)
β_0	0.59*	0.09*	0.32*	0.36*	0.03
	(0.01)	(0.04)	(0.03)	(0.01)	(0.03)
$\ln(\sigma_{Wave})$	-	-2.31*	-	-	-3.32*
		(0.04)			(0.06)
$\ln(\sigma_{Constant})$	-	-1.26*	-	-	-0.96*

		(0.03)			(0.05)
$\ln(\sigma_{Cons.XWave})$	-	-0.93*	-	-	-1.72*
		(0.04)			(0.06)
$\ln(\sigma_{Residuals})$	-	-2.14*	-	-	-2.11*
		(0.05)			(0.02)
N	1,235	1,185	5,230	2,312	2,300

* p ≤ 0.05; + p ≤ 0.10

Note. Please consult the table in the main text table for additional information.

Table B5.3. Table B5.1. with TOTAL Ad Exposure Variable

	2008	2016
Exposure	0.07*	0.06*
	(0.03)	(0.03)
Wave (Fixed)	0.02*	0.04*
	(0.00)	(0.00)
Civic Know.	0.17*	0.34*
	(0.03)	(0.03)
PID Strength	0.10*	0.08*
	(0.02)	(0.02)
Female	-0.03+	-0.06*
	(0.02)	(0.01)
Income	0.08*	0.17*
	(0.04)	(0.03)
Age	0.06	0.14*
	(0.05)	(0.04)
White	-0.01	0.05*
	(0.02)	(0.02)
Married	0.02	-
	(0.02)	
Labor Force	-0.02	-0.00
	(0.02)	(0.01)
BG State	-	-0.02
		(0.01)
College	0.08*	0.04*
	(0.01)	(0.01)
β_0	0.01	0.09*
$\ln(\sigma_{Wave})$	-3.28*	-2.30*
	(0.06)	(0.04)
$\ln(\sigma_{Constant})$	-0.94*	-1.26*
	(0.05)	(0.03)
$\ln(\sigma_{Cons.XWave})$	-1.72*	-0.94*
	(0.06)	(0.04)
$\ln(\sigma_{Residuals})$	-2.10*	-2.15*
	(0.03)	(0.05)
N	6291	3099

* $p \leq 0.05$; + $p \leq 0.10$

Note. Please consult the table in the main text table for additional information.

Chapter 6

Table B6.1 Complete 2008 Model Estimates for Figures 6.4-6.6

	Knowledge	Interest	Education	Combined
Exposure	-0.02	0.02	0.05+	-0.04
	(0.06)	(0.06)	(0.03)	(0.08)
News Viewing	0.03*	0.00	0.04*	0.00
	(0.02)	(0.01)	(0.02)	(0.02)
PID Strength	0.09*	0.07*	0.10*	0.07*
	(0.01)	(0.01)	(0.01)	(0.01)
College	0.07*	0.08*	-	-
	(0.01)	(0.01)		
Female	-0.02*	-0.04*	-0.04*	-0.02*
	(0.01)	(0.01)	(0.01)	(0.01)
Income	0.09*	0.11*	0.13*	0.08*
	(0.02)	(0.02)	(0.02)	(0.02)
Age	-0.00	0.02	0.05*	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)
White	0.02	0.03*	0.03*	0.02*
	(0.01)	(0.01)	(0.01)	(0.01)
Labor Force	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Married	0.00	-0.00	-0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Battleground State	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
September	0.05	-0.02	0.08*	-0.02
	(0.07)	(0.05)	(0.04)	(0.08)
October	0.10	0.05	0.12*	0.05
	(0.06)	(0.04)	(0.03)	(0.07)
November	-0.00	0.04	0.10*	-0.03
	(0.06)	(0.04)	(0.03)	(0.07)
Sept X Exposure	0.06	0.12	0.00	0.14
	(0.10)	(0.07)	(0.05)	(0.11)
Oct X Exposure	0.02	0.10	-0.03	0.12
	(0.10)	(0.07)	(0.04)	(0.11)
Nov X Exposure	0.20*	0.17*	0.03	0.29*

	(0.09)	(0.08)	(0.04)	(0.10)
Civic Know.	0.11+	-	-	0.08
	(0.06)			(0.06)
Exposure X Civic	0.15+	-	-	0.15
	(0.09)			(0.09)
Sept X Civic	0.08	-	-	0.00
	(0.10)			(0.10)
Oct X Civic	0.04	-	-	0.03
	(0.09)			(0.10)
Nov X Civic	0.21*	-	-	0.15+
	(0.08)			(0.08)
Sept X Exp. X Civic	-0.13	-	-	-0.04
	(0.14)			(0.13)
Oct X Exp. X Civic	-0.10	-	-	-0.07
	(0.14)			(0.14)
Nov X Exp. X Civic	-0.35*	-	-	-0.23+
	(0.12)			(0.13)
Political Interest	-	0.16*	-	0.19*
		(0.05)		(0.05)
Exposure X Interest	-	0.06	-	0.03
		(0.08)		(0.08)
Sept X Interest	-	0.21*	-	0.21*
		(0.07)		(0.08)
Oct X Interest	-	0.12+	-	0.09
		(0.07)		(0.07)
Nov X Interest	-	0.13+	-	0.07
		(0.07)		(0.08)
Sept X Exp. X Interest	-	-0.25*	-	-0.26*
		(0.11)		(0.11)
Oct X Exp. X Interest	-	-0.21+	-	-0.19
		(0.11)		(0.12)
Nov X Exp. X Interest	-	-0.28*	-	-0.20
		(0.11)		(0.12)
College	-	-	0.07*	0.06*
			(0.03)	(0.03)
Exposure X College	-	-	0.03	0.01
			(0.04)	(0.05)
Sept X College	-	-	0.05	-0.00
			(0.05)	(0.05)
Oct X College	-	-	0.01	-0.01

			(0.04)	(0.04)
Nov X College	-	-	0.07+	0.03
			(0.04)	(0.04)
College X Sept X Exp.	-	-	-0.05	0.01
			(0.07)	(0.07)
College X Oct X Exp.	-	-	-0.01	0.02
			(0.06)	(0.07)
College X Nov X Exp.	-	-	-0.11+	-0.05
			(0.06)	(0.06)
Constant	0.17*	0.14*	0.19*	0.12*
	(0.05)	(0.04)	(0.03)	(0.05)
σ_{Wave}	-3.32*	-3.32*	-3.32*	-3.33*
	(0.06)	(0.05)	(0.06)	(0.05)
$\sigma_{Constant}$	-0.96*	-0.97*	-0.96*	-0.98*
	(0.05)	(0.04)	(0.05)	(0.05)
$\sigma_{Wave,Const.}$	-1.73*	-1.75*	-1.69*	-1.78*
	(0.06)	(0.05)	(0.05)	(0.05)
$\sigma_{Resid.}$	-2.11*	-2.12*	-2.11*	-2.12*
	(0.03)	(0.02)	(0.02)	(0.02)
N	6447	6937	6938	6447

* p $\leq$ 0.05; + p $\leq$ 0.10

Note. Please consult the table in the main text table for additional information.

Table B6.2 Complete 2012 Model Estimates for Figures 6.4-6.6

	Know.	Interest	Educ.	Combined
Exposure	0.13*	0.12*	0.11*	0.11*
	(0.05)	(0.05)	(0.02)	(0.06)
Ideology (Cons.)	-	-	-	-
Democrat	-	-	-	-
Republican	-	-	-	-
PID Strength	0.12*	0.10*	0.13*	0.10*
	(0.02)	(0.02)	(0.02)	(0.02)
College	0.08*	0.11*	-	0.09*
	(0.01)	(0.01)		(0.02)
Female	-0.03*	-0.04*	-0.06*	-0.02+
	(0.01)	(0.01)	(0.01)	(0.01)
Income	0.11*	0.17*	0.18*	0.11*
	(0.02)	(0.02)	(0.02)	(0.02)
Age	-0.02	0.01	0.04	-0.04
	(0.03)	(0.03)	(0.03)	(0.03)
White	0.05*	0.08*	0.07*	0.05*
	(0.01)	(0.01)	(0.01)	(0.01)
Labor Force	-0.02	-0.02	-0.02	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)
Married	-0.02	-0.03*	-0.02	-0.02+
	(0.01)	(0.01)	(0.01)	(0.01)
Survey Mode	-0.04*	-0.02	-0.02*	-0.04*
	(0.01)	(0.01)	(0.01)	(0.01)
Battleground State	-0.00	0.02	0.00	0.01
	(0.01)	(0.02)	(0.02)	(0.01)
Mobilized	0.03*	0.02+	0.03*	0.02+
	(0.01)	(0.01)	(0.01)	(0.01)
Civic Knowledge	0.49*	-	-	0.38*
	(0.04)			(0.04)
Pol. Interest	-	0.29*	-	0.20*
		(0.03)		(0.03)
College	-	-	0.17*	0.10*
			(0.02)	(0.02)

Exp X Civic Know	-0.12+	-	-	0.04
	(0.07)			(0.08)
Exp X Interest	-	-0.16*	-	-0.13*
		(0.06)		(0.07)
Exp X College	-	-	-0.12*	-0.09*
			(0.03)	(0.03)
Constant	0.31*	0.38*	0.49*	0.27*
	(0.03)	(0.03)	(0.02)	(0.03)
N	4971	4969	4971	4969
r2	0.25	0.21	0.17	0.27

+ p ≤ 0.10; * p ≤ 0.05

Table B6.3 Complete 2016 Model Estimates for Figures 6.4-6.6

	Knowledge	Interest	Education	Combined
Exposure	0.25*	0.08	0.09*	0.00
	(0.08)	(0.06)	(0.03)	(.)
PID Strength	0.08*	0.05*	0.09*	0.05*
	(0.02)	(0.02)	(0.03)	(0.02)
College	0.04*	0.06*	-	-
	(0.01)	(0.01)		
Female	-0.05*	-0.07*	-0.09*	-0.04*
	(0.01)	(0.01)	(0.01)	(0.01)
Income	0.16*	0.19*	0.20*	0.16*
	(0.03)	(0.03)	(0.03)	(0.03)
Age	0.15*	0.21*	0.29*	0.10*
	(0.04)	(0.04)	(0.04)	(0.04)
White	0.05*	0.06*	0.06*	0.05*
	(0.02)	(0.02)	(0.02)	(0.02)
Labor Force	-0.00	-0.00	0.00	-0.01
	(0.01)	(0.02)	(0.02)	(0.01)
Battleground State	-0.02+	-0.01	-0.02	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Civic Know.	0.43*	-	-	0.39*
	(0.04)			(0.05)
Civic X Exp.	-0.24*	-	-	-0.26*
	(0.10)			(0.11)
Political Interest	-	0.28*	-	0.20*
		(0.04)		(0.04)
Exposure X Interest	-	-0.00	-	0.07
		(0.09)		(0.10)
College	-	-	0.08*	0.03+
			(0.02)	(0.02)
College X Exp.	-	-	-0.03	0.00
			(0.04)	(0.04)
Wave	0.04*	0.04*	0.04*	0.04*
	(0.00)	(0.00)	(0.00)	(0.00)
Constant	0.02	0.11*	0.23*	-0.04
	(0.05)	(0.04)	(0.04)	(0.04)
$\ln(\sigma_{Constant})$	-2.24*	-2.24*	-2.24*	-2.24*
	(0.05)	(0.05)	(0.05)	(0.05)

$\ln(\sigma_{Wave})$	-1.23*	-1.23*	-1.18*	-1.26*
	(0.03)	(0.03)	(0.03)	(0.03)
$\ln\sigma_{WaveXCons.}$	-0.96*	-0.93*	-0.91*	-0.97*
	(0.05)	(0.05)	(0.04)	(0.05)
$\ln(\sigma_{Residuals})$	-2.18*	-2.17*	-2.17*	-2.18*
	(0.05)	(0.05)	(0.05)	(0.05)
N	2923	2916	2933	2911

* $p \leq 0.05$; + $p \leq 0.10$

Note. Please consult the table in the main text table for additional information.

Table B6.4 Table S6.1 (2016) with Un-Trimmed Exposure Measure

	Knowledge	Interest	Education	Combined
Exposure	0.25*	0.03	0.08*	0.17*
	(0.10)	(0.07)	(0.04)	(0.09)
PID Strength	0.08*	0.05*	0.08*	0.05*
	(0.02)	(0.02)	(0.02)	(0.02)
College	0.04*	0.06*	-	-
	(0.01)	(0.01)		
Female	-0.05*	-0.06*	-0.09*	-0.04*
	(0.01)	(0.01)	(0.01)	(0.01)
Income	0.16*	0.18*	0.19*	0.15*
	(0.03)	(0.03)	(0.03)	(0.03)
Age	0.15*	0.20*	0.28*	0.10*
	(0.04)	(0.04)	(0.04)	(0.04)
White	0.05*	0.06*	0.06*	0.05*
	(0.02)	(0.02)	(0.02)	(0.02)
Labor Force	0.00	-0.00	0.01	-0.00
	(0.01)	(0.01)	(0.02)	(0.01)
Battleground State	-0.02+	-0.01	-0.02	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Wave	0.04*	0.04*	0.04*	0.04*
	(0.00)	(0.00)	(0.00)	(0.00)
Civic Know.	0.41*	-	-	0.38*
	(0.04)			(0.05)
Exposure X Civic	-0.25*	-	-	-0.29*
	(0.12)			(0.13)
Political Interest	-	0.26*	-	0.18*
		(0.04)		(0.04)
Exposure X Interest	-	0.07	-	0.14
		(0.11)		(0.12)
College	-	-	0.08*	0.03
			(0.02)	(0.02)
College X Exp.	-	-	-0.01	0.02
			(0.05)	(0.04)
β_0	0.05	0.13*	0.24*	-0.01
	(0.04)	(0.04)	(0.04)	(0.04)
$\ln(\sigma_{Constant})$	-2.32*	-2.31*	-2.31*	-2.31*
	(0.04)	(0.04)	(0.04)	(0.04)

$\ln\sigma_{Wave}$	-1.26*	-1.25*	-1.21*	-1.29*
	(0.03)	(0.03)	(0.03)	(0.03)
$\ln\sigma_{WaveXCons.}$	-0.93*	-0.91*	-0.88*	-0.95*
	(0.04)	(0.04)	(0.04)	(0.04)
$\ln(\sigma(Residuals))$	-2.14*	-2.14*	-2.14*	-2.14*
	(0.05)	(0.05)	(0.05)	(0.05)
N	1,185	1,185	1,185	1,185

* p $\leq$ 0.05; + p $\leq$ 0.10

Note. Please consult the table in the main text table for additional information.

Table B6.5 Table S6.2 (2012) with Un-Trimmed Exposure Measure

	Knowledge	Interest	Education	Combined
Exposure	0.13*	0.12*	0.09*	0.10
	(0.06)	(0.06)	(0.03)	(0.06)
PID Strength	0.11*	0.09*	0.12*	0.09*
	(0.02)	(0.02)	(0.02)	(0.02)
College	0.08*	0.11*	-	-
	(0.01)	(0.01)		
Female	-0.02*	-0.03*	-0.05*	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Income	0.10*	0.17*	0.18*	0.11*
	(0.02)	(0.02)	(0.02)	(0.02)
Age	-0.03	0.01	0.04	-0.04+
	(0.03)	(0.03)	(0.03)	(0.03)
White	0.04*	0.07*	0.07*	0.05*
	(0.01)	(0.01)	(0.01)	(0.01)
Labor Force	-0.01	-0.01	-0.02	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Married	-0.02+	-0.03*	-0.02+	-0.03*
	(0.01)	(0.01)	(0.01)	(0.01)
Battleground State	0.00	0.03+	0.00	0.02
	(0.01)	(0.02)	(0.02)	(0.01)
Online Mode	-0.04*	-0.01	-0.02+	-0.03*
	(0.01)	(0.01)	(0.01)	(0.01)
Mobilized	0.03*	0.02*	0.04*	0.02*
	(0.01)	(0.01)	(0.01)	(0.01)
Civic Know.	0.49*	-	-	0.39*
	(0.04)			(0.04)
Know. X Exp.	-0.12	-	-	0.04
	(0.09)			(0.10)
Political Interest	-	0.29*	-	0.20*
		(0.03)		(0.03)
Exposure X Interest	-	-0.20*	-	-0.15+
		(0.08)		(0.09)
College	-	-	0.16*	0.09*
			(0.02)	(0.02)
College X Exp.	-	-	-0.11*	-0.08*
			(0.04)	(0.04)

Constant	0.31*	0.39*	0.50*	0.27*
	(0.03)	(0.03)	(0.02)	(0.03)
N	5,230	5,228	5,230	5,228

* p ≤ 0.05; + p ≤ 0.10

Note. Please consult the table in the main text table for additional information.

Table B6.6 Table S6.3 with Un-Trimmed Exposure Measure

	Knowledge	Interest	Education	Combined
Exposure	0.00	0.04	0.08*	-0.03
	(0.07)	(0.07)	(0.03)	(0.09)
PID Strength	0.09*	0.07*	0.10*	0.07*
	(0.01)	(0.01)	(0.01)	(0.01)
College	0.07*	0.08*	-	-
	(0.01)	(0.01)		
Female	-0.02*	-0.04*	-0.04*	-0.02*
	(0.01)	(0.01)	(0.01)	(0.01)
Income	0.09*	0.11*	0.13*	0.08*
	(0.02)	(0.02)	(0.02)	(0.02)
Age	0.01	0.02	0.07*	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)
White	0.01	0.03*	0.02*	0.02*
	(0.01)	(0.01)	(0.01)	(0.01)
Labor Force	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Married	-0.00	-0.01	-0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Battleground State	0.00	0.01	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
September	0.04	-0.02	0.06+	-0.02
	(0.07)	(0.05)	(0.03)	(0.07)
October	0.08	0.04	0.09*	0.04
	(0.09)	(0.05)	(0.03)	(0.09)
November	-0.03	0.02	0.07*	-0.05
	(0.06)	(0.05)	(0.03)	(0.07)
Sept X Exposure	0.07	0.13	0.02	0.16
	(0.11)	(0.08)	(0.05)	(0.12)
Oct X Exposure	0.03	0.08	-0.00	0.12
	(0.12)	(0.08)	(0.05)	(0.14)
Nov X Exposure	0.23*	0.18*	0.06	0.31*
	(0.09)	(0.08)	(0.04)	(0.11)
Civic Know.	0.11+	-	-	0.08
	(0.06)			(0.06)
Exposure X Civic	0.16	-	-	0.16
	(0.11)			(0.11)

Sept X Civic	0.07	-	-	0.00
	(0.10)			(0.09)
Oct X Civic	0.03	-	-	0.01
	(0.12)			(0.14)
Nov X Civic	0.22*	-	-	0.15+
	(0.08)			(0.08)
Sept X Exp. X Civic	-0.13	-	-	-0.04
	(0.15)			(0.15)
Oct X Exp. X Civic	-0.10	-	-	-0.05
	(0.17)			(0.19)
Nov X Exp. X Civic	-0.37*	-	-	-0.24+
	(0.13)			(0.13)
Political Interest	-	0.17*	-	0.19*
		(0.05)		(0.05)
Exposure X Interest	-	0.05	-	0.01
		(0.09)		(0.10)
Sept X Interest	-	0.21*	-	0.22*
		(0.07)		(0.07)
Oct X Interest	-	0.14+	-	0.13+
		(0.07)		(0.08)
Nov X Interest	-	0.15*	-	0.09
		(0.07)		(0.08)
Sept X Exp. X Interest	-	-0.28*	-	-0.29*
		(0.12)		(0.13)
Oct X Exp. X Interest	-	-0.21+	-	-0.21+
		(0.12)		(0.13)
Nov X Exp. X Interest	-	-0.30*	-	-0.22+
		(0.12)		(0.13)
College	-	-	0.07*	0.06*
			(0.03)	(0.03)
Exposure X College	-	-	0.03	0.01
			(0.05)	(0.05)
Sept X College	-	-	0.05	-0.00
			(0.05)	(0.04)
Oct X College	-	-	0.04	-0.00
			(0.05)	(0.05)
Nov X College	-	-	0.08*	0.04
			(0.04)	(0.04)
College X Sept X Exp.	-	-	-0.06	0.00
			(0.07)	(0.07)

College X Oct X Exp.	-	-	-0.04	0.00
			(0.07)	(0.08)
College X Nov X Exp.	-	-	-0.13*	-0.06
			(0.06)	(0.07)
β_0	0.18*	0.14*	0.21*	0.12*
	(0.04)	(0.04)	(0.03)	(0.05)
$\ln(\sigma_{Constant})$	-3.32*	-3.32*	-3.33*	-3.33*
	(0.06)	(0.05)	(0.05)	(0.05)
$\ln(\sigma_{Wave})$	-0.96*	-0.97*	-0.96*	-0.98*
	(0.05)	(0.04)	(0.05)	(0.05)
$\ln(\sigma_{Cons.XWave})$	-1.72*	-1.75*	-1.68*	-1.77*
	(0.06)	(0.05)	(0.05)	(0.05)
$\ln(\sigma_{Residuals})$	-2.11*	-2.13*	-2.12*	-2.13*
	(0.02)	(0.02)	(0.02)	(0.02)
N	2,300	2,482	2,482	2,300

* $p \leq 0.05$; + $p \leq 0.10$

Note. Please consult the table in the main text table for additional information.

Figure B6.1. Re-Plotting Figure 6.3 with 95% Confidence Intervals
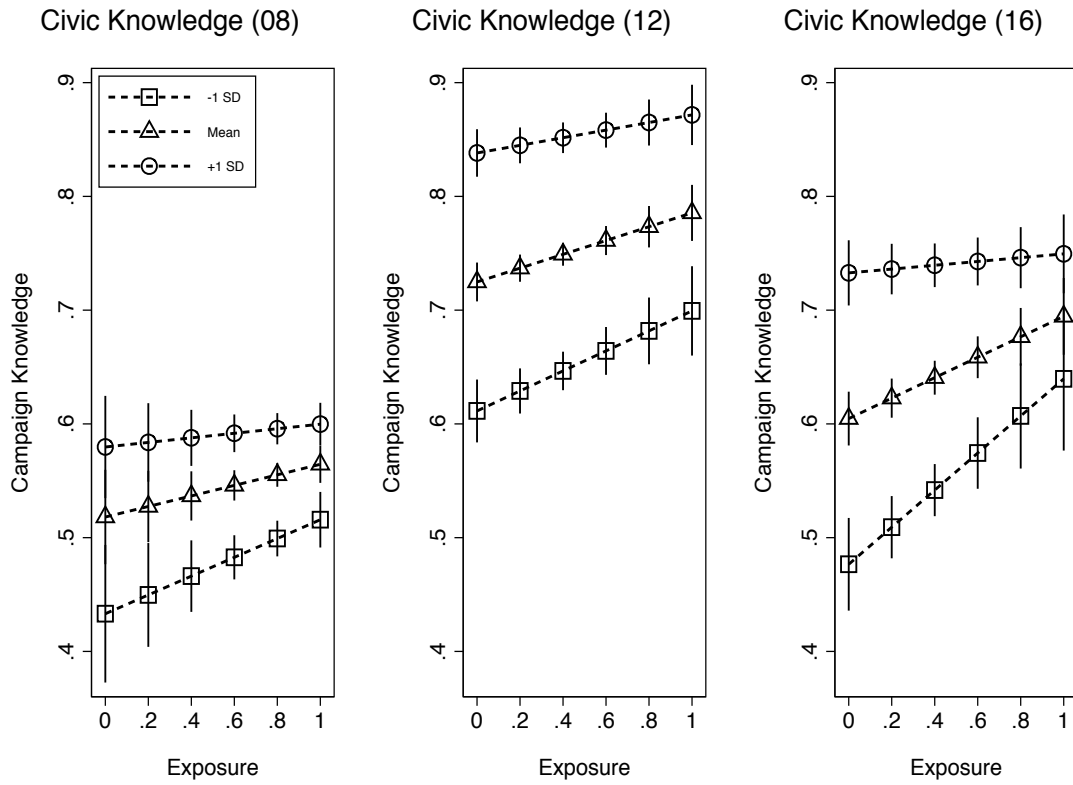
Note. See note accompanying Figures 6.3-6.5. Solid lines extending out from each point are 95% confidence intervals. Overlapping confidence intervals at high levels of exposure are referenced at times in the text, in Chapter 6.

Figure B6.2. Re-Plotting Figure 6.4 with 95% Confidence Intervals
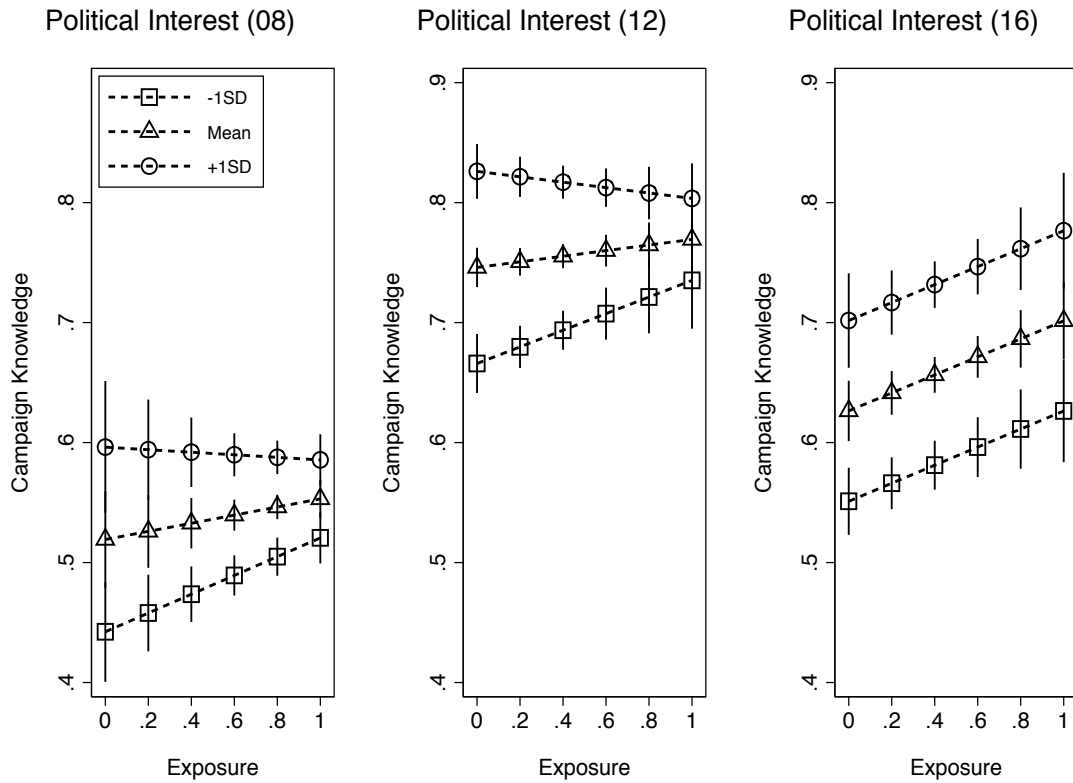
Note. See note accompanying Figures 6.3-6.5. Solid lines extending out from each point are 95% confidence intervals. Overlapping confidence intervals at high levels of exposure are referenced at times in the text, in Chapter 6.

Figure B6.3. Re-Plotting Figure 6.5 with 95% Confidence Intervals
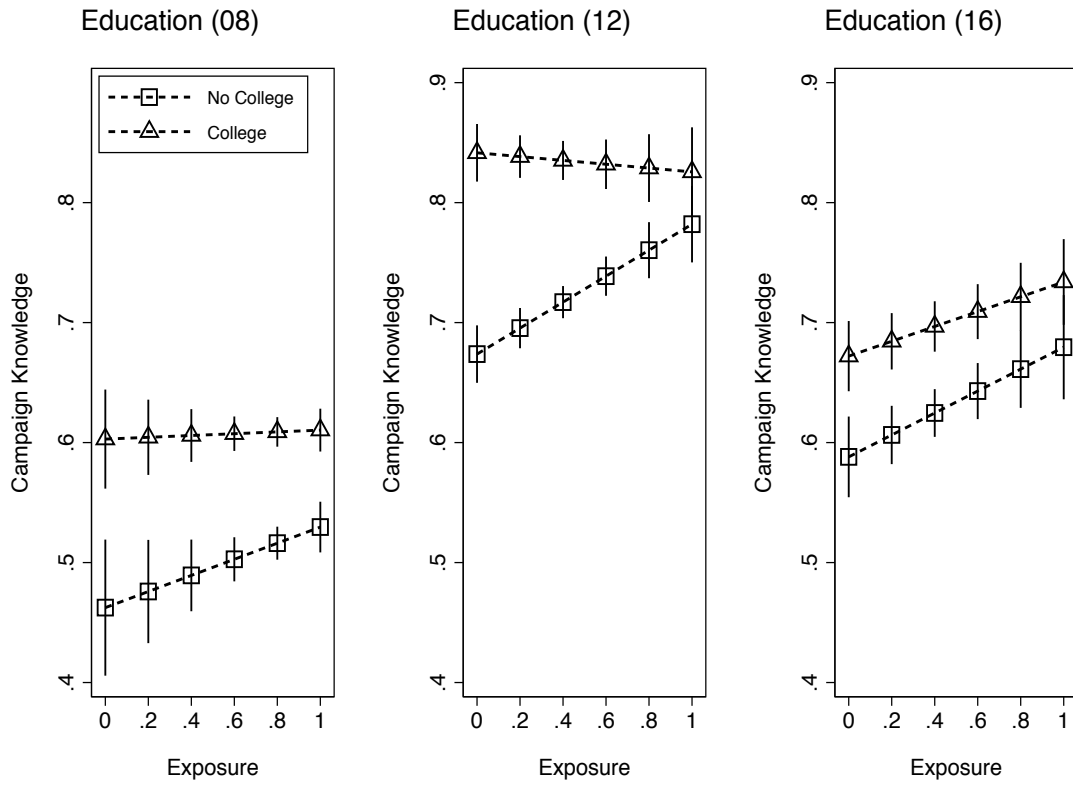
Note. See note accompanying Figures 6.3-6.5. Solid lines extending out from each point are 95% confidence intervals. Overlapping confidence intervals at high levels of exposure are referenced at times in the text, in Chapter 6.

Chapter 7

Table S7.1. Complete Model Estimates Goren 1997 Replication (In Text)

	2008	2012
Issue Index	-2.09	0.91
	(1.62)	(1.03)
Camp. Know.	-4.13*	-1.70*
	(1.59)	(0.56)
Civic Know.	-1.88	0.45
	(1.44)	(0.87)
Camp. Know. X Issues	7.69*	2.97*
	(2.86)	(1.23)
Civic Know. X Issues	3.01	-0.56
	(2.49)	(1.86)
PID Strength	-0.37	0.36*
	(0.33)	(0.17)
College	0.36*	0.12
	(0.18)	(0.10)
Female	0.07	0.15+
	(0.18)	(0.09)
Income	-0.22	0.11
	(0.42)	(0.18)
Age	-0.73+	0.08
	(0.42)	(0.20)
White	-0.51*	-0.60*
	(0.22)	(0.10)
News Viewing	0.22	-
	(0.29)	
Campaign Media	-	-0.11
		(0.24)
Political Interest	0.03	-0.01
	(0.37)	(0.19)
Democrat	0.86*	0.77*
	(0.34)	(0.17)
Republican	-0.71*	-1.19*
	(0.34)	(0.17)
Ideology	-2.02*	-1.13*
	(0.32)	(0.27)
Online	-	-0.10
		(0.10)
β_0	3.01*	0.58
	(1.02)	(0.56)
N	1,021	3,804

$$* \text{ p} \leq 0.05; + \text{ p} \leq 0.10$$

Note. Models employ the Goren 1997 method of estimating policy voting by interacting both civic and campaign knowledge with an index of respondents' issue positions ($\alpha = 0.69$ in 2008, $\alpha = 0.80$ in 2012). Please see the main text for a description of what these issues are. Models are otherwise analogous to those summarized in Table 7.1 and Figure 7.1.

Table S7.3. Complete Model Estimates for Table 7.2

Campaign Know	-	0.81*
		(0.32)
Civic Knowledge	0.48+	0.32
	(0.29)	(0.30)
Pol. Interest	0.43	0.24
	(0.29)	(0.30)
News View	-0.24	-0.24
	(0.22)	(0.23)
PID Strength	0.56*	0.53*
	(0.17)	(0.17)
College	0.17	0.14
	(0.13)	(0.13)
Female	-0.12	-0.09
	(0.12)	(0.12)
Income	0.28	0.18
	(0.30)	(0.30)
Age	0.06	0.07
	(0.37)	(0.37)
White	0.16	0.15
	(0.17)	(0.17)
β_0	-0.49	-0.62+
	(0.32)	(0.33)
N	1040	1040

* $p \leq 0.05$; + $p \leq 0.10$

Note. Please consult the table in the main text table for additional information.

Table S7.2. Complete Model Estimates for Figure 7.2-7.3

	Replicates Figure 7.2	Replicates Figure 7.3
Pol. Interest	0.41	0.53
	(0.44)	(0.44)
News View	-0.19	-0.29
	(0.36)	(0.37)
PID Strength	0.48+	0.32
	(0.25)	(0.27)
College	0.10	0.26
	(0.18)	(0.18)
Female	-0.23	-0.33+
	(0.18)	(0.18)
Income	0.11	-0.00
	(0.44)	(0.50)
Age	-0.38	-0.13
	(0.63)	(0.54)
White	0.22	0.58*
	(0.26)	(0.25)
Stayers	0.17	0.01
	(0.23)	(0.57)
Learners	0.65*	-0.53
	(0.24)	(0.59)
Exposure	-	-0.85
		(0.71)
Stay. X Exp.	-	0.33
		(0.81)
Learn. X Exp.	-	1.75*
		(0.81)
Constant	-0.71	0.32
	(0.48)	(0.68)
N	503	512

$$* \ p \leq 0.05; \ + \ p \leq 0.10$$

Note. Entries in the left hand column provide the baseline model estimates used to calculate Figure 7.2 (which uses them to calculate predicted levels of campaign knowledge across knowledge groups). The right hand column does the same for Figure 7.3 (which calculates predicted levels of campaign knowledge across levels of ad exposure, for just those whose knowledge increased over the course of the election).

Appendix C

Additional Information on Exposure Measure Generation

Basics of the Algorithm (2012 Example)

In theory, we want to know the total number of advertisements seen by individual i in media market m. This can be expressed as the number of advertisements aired on a series of non-local news programs (p_j, a list of these can be found in Table 1 in the Supplemental Materials)[1], on a particular day (d) weighted by frequency with which individuals report watching those programs (w_{i_j}), summed across all j. Added to this is the number of advertisements aired on local news programs (p_k) weighted by self-reported news viewership (w_{i_k}) divided by four (because individuals typically have four local news broadcasts available to them in any given time slot: see Franz et al. 2007 p. 44 for an explanation). This quantity can then be summed over seven days, ranging from six days prior to ANES administration ($d_i = 1$) to the date on which each respondent (i) took the survey ($d_i = 7$). Thus:

$$\text{Exposure 2012}_i = \sum_{d_i=1}^{d_i=7} \left(\sum_{j=1}^{j=N} \left(p_j \cdot w_{i_j} \right) + \frac{p_k \cdot w_{i_k}}{4} \right) \tag{C.1}$$

To determine the total amount of ad exposure to specific *types* of political ads, we can simply adjust the contents of each value p_j and p_k - reflecting instead the total number of advertisements with a particular quality aired in a particular media

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[1] See the main text for a description as to why these programs are measured separately. In short, because the ANES measures exposure to programs aired nation wide, it is possible to get a more-refined weight of who watches these shows (i.e., relative to local news).

market, on a particular show, and on a particular day.

Table 1. Programs Included in both WMP and ANES (English-Language Only)

Program	ANES	WMP
20/20	X	X
60 Minutes	X	X
ABC News Night-line	X	X
ABC World News Tonight	X	X
America Live	X	X
America This Morning	X	X
America's Newsroom	X	X
American Idol	X	-
Anderson Cooper	X	-
Big Bang Theory	X	X
CBS Evening News	X	X
CBS This Morning	X	X
Chris Matthews	X	X
Colbert Report	X	X
Daily Show	X	-
Dancing with the Stars	X	X
Dateline NBC	X	X
Doctors	X	X
Ellen Degeneres Show	X	X
Face the Nation	X	X
The Five	X	-
Fox Report	X	-
Frontline	X	-
Good Morning America	X	X
Hannity	X	-
Huckabee	X	-
Insider	X	X
Jimmy Kimmel Live	X	X
Key and Peele	X	X
Late Show	X	-
Late Late Show	X	X
Meet the Press	X	X

Mentalist	X	X
NBC Nightly News	X	X
NCIS	X	X
O'Reilly Factor	x	-
On the Record	X	X
Person of Interest	X	X
Rock Center	X	X
Saturday Night Live	X	X
Special Report	X	-
Tavis Smiley	X	-
Sunday Morning	X	X
The View	X	X
This Week	X	X
Today Show	X	X
The Voice	X	X
The Talk	X	X

Note: program airings *may* be available on some programs in the WMP file on dates not reflecting when individuals took the ANES. An **X** indicates that the show was available in that dataset, while a **-** indicates that it was not.

2008 Adjustment

The algorithm used to estimate 2008 exposure is similar to that of 2012. However, program-specific viewing measures were not available. Thus, the equation sums over all non-local news advertisements aired in a particular media market (p_j^*), and weights it by a single measure of news viewership (proxying television viewing habits). It then does the same for local news programming (p_k) and divides it by four.

$$\text{Exposure 2008}_i = \sum_{d_i=1}^{d_i=7} \left(p_j^* \cdot w_i\right) + \frac{p_k \cdot w_i}{4} \tag{C.2}$$

In essence, this equation is simply weighting exposure to *all programs in the WMP file* by reported news-viewing.

2016 Adjustment

The algorithm used to estimate 2016 exposure is also similar to that of 2012. However, as noted in the text, I this time make use of "daypart" measures, corresponding to the time(s) of day that people report watching television. Thus, in this equation, the weighting mechanism w_{i_l} corresponds to the frequency with which individuals report watching television during a general time of the day. It also doesn't include an additional "local news" term, since doing so would result in double-counting (i.e., news is aired a particular daypart, which is already accounted for in the equation).

$$\text{Exposure } 2016_i = \sum_{d_i=1}^{d_i=7} \left(\sum_{l=1}^{l=N} \left(p_l \cdot w_{i_l} \right) \right) \tag{C.3}$$

Practical Application

In order to use this algorithm to create exposure proxies in the 2012 ANES, the following steps must be taken:

- STEP ONE: ANES Date Management: the ANES provides information when each respondent took the survey. Prior to working with the airing data, it is first necessary to create a variable denoting the date in which each respondent was administered the ANES (in Stata date format), followed by six other variables denoting the date one (through six) days prior to the day listed of the "survey administration date" variable.[2] Because respondents were interviewed twice (face to face) or four times (online), this process will need to be repeated.

- STEP TWO: Airing Data Collapse: the WMP data will contain advertisements aired on more dates and programs than is necessary. For each program on which we have self-reported exposure data (see Table 1 in the Supplementary Materials), create a series of dummy variables that take on a value of 1 when an advertisement is aired on a particular program, and 0 otherwise. This data should then be collapsed (summed), such that each dummy variable now reflects the total number of advertisements *aired in a particular media market, and on a particular day.* When this is done, seven more variables (equal to the date on

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[2] Though I don't make use of post-election data in the 2012 ANES, one could simply substitute the date of the general election for the date on which individuals took the survey; as advertising is likely to die down once the election has been decided.

which each advertisement was aired, in proper Stata date format) can be gener-
ated simply mirroring the date on which each row (ad) appeared on television.
(This is necessary to "trick" Stata later on, when performing merges).

- STEP THREE: The Merge: Create six datasets of the ad airing data - each one
  containing one of the seven date variables (which are all identical) just created.
  These will represent the "using" data in all merges. Merge each of these datasets
  into the "master" public opinion data on the basis of two variables - the date
  variable(s) (which varies in the public opinion data, but does not in the airing
  data)[3], and the media market variable (which is constant across datasets). If
  looking at seven different dates, this means that seven successive merges will
  need to be accomplished. The results of each merge should be given different
  suffixes, which be become useful later on.

- STEP FOUR: Public Opinion Data Management: The public opinion data now
  contain a pretty large number of variables - reflecting the number of advertise-
  ments aired on each of approximately forty different shows, on seven different
  days. These need to be summed up into the total number of advertisements
  aired in each administration period. If each airing variable merged into the
  ANES has a unique and easily-identifiable suffix, can be done easily.

- ADDENDUM TO 1-4: Many of the programs available in the ANES are aired
  at both the national and local level (e.g., The Big Bang Theory may be re-
  run in syndication in one local market and not another, but continue to be
  aired nationally on CBS once per week). Because the ANES exposure measures
  do not ask individuals to report whether or not they are watching national or
  re-broadcasted shows, assign all users in the 2012 ANES a score of "1" on a
  dummy variable denoting their residence in a national media market (as anyone
  reporting having seen any of these shows theoretically has the possibility to
  view them both locally and nationally) and *re-preform* steps 1-4 for national
  spots. These totals can then be added to those produced earlier.

- STEP FIVE: Exposure Variable Generation: Create an additive index in the
  public opinion data mirroring the suggestions in Equation 1.

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[3] If we did not take the step of creating six different date variables in the WMP data, it would only
be possible to merge across one date variable (e.g. a match between administration date and some
day in the airing data). Repeating identical values of the date variable in the WMP is inefficient, but
allows Stata to pull unique airing information multiple times. Saving the files as separate datasets
may also seem unnecessary. Yet, because date columns (of which there must be several, for the
reason just described) must be given names identical to those in the ANES (for merging purposes),
the merge will overwrite varying date information (in the ANES) with non-varying date information
(from WMP).

How to Geocode the ANES

As the previous section detailed, exposure to advertisements cannot be estimated with a sense of where individuals live. The ANES freely provides information about the states where individuals live, as well as their Congressional Districts. But designated market areas (DMAs, or "media markets") are drawn independently of those two boundaries. In order to figure out where individuals live, it is necessary to request restricted zip code information from the ANES. One way that zip codes can be assigned to media markets and re-merged into each ANES file is via the procedures described below:

1. First, the researcher must request restricted zip code level data (DMA aggregations, if available), following ANES Restricted Data Protocol

2. Next, perhaps while awaiting approval form the ANES, the researcher should obtain as large a list of county DMA assignments as possible. Because information about which zip codes reside in which counties is freely available, this step will save time later on. County-to-DMA conversions can be accomplished as follows:

   (a) Download a population of zip codes, estimated population, and their corresponding counties.

   This information can be downloaded from a freely-available service like this one, for example: http://www.unitedstateszipcodes.org/zip-code-database/

   (b) Aggregate population by county and sort the data (descending)

   (c) For each of the top 500 counties, look up a corresponding DMA name and code (if numeric code is not readily accessible, Step Four provides a database with string-to-numeric conversions for DMA names). This can be done using a freely available web service like TruckAds (see link below).

   For example: Hennepin County, Minnesota is contained in the Minneapolis-St. Paul DMA. http://www.truckads.com/Affiliate/Minneapolis_St_Paul.htm

   Note: In the unlikely event that a county belongs to more than one media market (N = 2, in the top 500 counties), I simply assigned the county to the media market covering the largest geographic area.

(d) Re-expand the data (i.e., merge new DMA codes, on the basis of counties) back to the original zip code list. This will assign all zip codes in the top 500 counties to a DMA. (Approximately two-thirds of all zip codes). Save the zip code and DMA code columns (preferably numeric DMA codes to minimize inconsistencies with data used in later merges) as their own dataset.

3. Once restricted data is obtained, merge DMA information obtained in Step #2 to ANES

   (a) Create a dataset with columns corresponding to respondent "case IDs" and zip codes. This can be pooled across many datasets if need be (adding a third column indicating the dataset from which each code originates, to simply later merging)

   (b) Perform a many-to-one merge, where multiple zip codes in the ANES can be associated with a single DMA code in the file created in Step #2.

   (c) View the merge diagnostics. Drop all zip codes not represented in both the ANES and the county-to-zip file created earlier.

   (d) Create a new dataset containing all case IDs and zip codes observed in the ANES *but not in the county-to-zip* file created in Step #2. These "hard to reach" zip codes will need to be coded manually.

4. Manually code zip codes not reflected in Step One (which should be roughly 30% of the ANES sample). These are the "hard to reach" zip codes.

   (a) Enter each zip code in the "hard to reach" list into Applause TV's DMA-lookup module (available here: http://www.gilbarco.com/DMA/).

   (b) Applause TV lists both DMA (strings) and market ranking numbers (numeric), based on 2012-2013 television ownership data. Both of these outputs can be converted in to DMA codes as follows:

      i. Strings can be converted to DMA codes using this database (https://support.google.com/richmedia/answer/2745487?hl=en). If possible, manually re-name all DMAs to match the coding here, to facilitate merging (i.e., save the linked dataset as its own .dta file and merge DMA codes to DMA names).

      ii. Numeric rankings can be converted to DMA codes by downloading a list of 2012-2013 DMA rankings and converting each one's placement on the list to a corresponding media market. (http://www.tvb.org/media/file/TVB_Market_Profiles_Nielsen_Household_DMA_Ranks2.pdf)

(c) Merge "hard to reach" zip codes (on the basis of "case ID") to the collection of ANES codes provided in Step #2.

5. Merge respondent DMA codes back in to ANES on the basis of case ID. The file is now ready for merging with other data.