THE INFLUENCE OF COMMUNICATION CONTEXT ON POLITICAL
COGNITION IN PRESIDENTIAL CAMPAIGNS: A GEOSPATIAL ANALYSIS

DISSERTATION

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ABSTRACT

Due to targeting strategies employed by contemporary political campaigns, campaign intensity is not uniform across the whole country. People in different geographical locations would be influenced by campaigns differently depending on where they are. This study argues that political campaigns could shape a person's total communication context in which a person is conditioned, and accordingly both individual and contextual factors within this context should form synergistic influences on this person's cognitive responses to the election. Therefore, this study attempts to investigate how mass media and interpersonal communication factors at the individual level and the campaign level within an individual's communication context that is defined by some geospatial characteristics created by campaigns would influence this individual's political knowledge.

Data for this study come from three separate studies conducted during the 2000 presidential election in the U.S. Owing to the geospatial mapping nature of the study, these data files are combined and analyzed at the two geospatial units -- state and media market.

The results from a series of multilevel modeling analyses reveal that there is some evidence that political campaign practices, including televised political ads, candidate appearances, and campaign contacts, do promote some learning about politics. There is also evidence to support the information flow approach to contextual effects. More

specifically, it is found that macro-level political ads, candidate appearances, and campaign contacts influence people's newspaper use in predicting their political knowledge; and that macro-level political ads and candidate appearances influence people's political discussion in predicting their political knowledge. Finally, consistent with literature, people who read newspapers, watch network and cable television news, and engage in political discussion more frequently have more political knowledge. But, people who watch more local TV news have less political knowledge.

These findings suggest that communication, including both mass media and interpersonal communication, does play a significant role in informing people in political campaigns. However, political learning is conditioned on many factors -- media, people, stimuli, and place, all of which lead to different results. The present study not only demonstrates that conditional communication effects also hinge on geospatial, contextual factors but also helps to develop contextual theories in communication science that specifically take into account contextual factors and addresses cross-level inference. The present study, which assesses informing effects of communication in political campaigns from a macro-contextual perspective, provides a good understanding of the role that communication would play in a larger social, economic and political setting.

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CHAPTER 1

INTRODUCTION

Elections in the United States are largely driven by campaigns. Political campaigns have grown very sophisticated. A variety of communications, considerations, knowledge and tools, including advertising, press, public relations, grassroots efforts, polling, and voter analysis are brought together in a political campaign. Generally speaking, it is a strategic integration, coordination and orchestration between paid/controlled media and earned/free media. In addition to candidates themselves, other sources of political support and efforts, such as political parties, political action committees (PACs), and independent groups like Swift Vets and POWs for Truth and MoveOn.org in the 2004 presidential election also play important roles in political campaigns. This study conducts a series of multilevel modeling analyses to untangle some of the issues related to today's multifaceted and interconnected political campaigns. The study investigates how people's surrounding communication contexts could influence their political cognition in presidential campaigns. The following sections will discuss major aspects of current political campaign practices, including strategies, finance and geospatial dimensions.

Political Campaign Strategies

In political campaigns, candidates are the products. Both political and product marketing try to present positive images and create a positive environment for the product or the candidate. However, political campaigns are different – and more complex -- than product campaigns. Two characteristics make political campaigns more complicated and difficult to do and study than product campaigns. First, competing brands are usually not mentioned in product campaigns, whereas opponents are mentioned in political campaigns. In a political campaign, voters are presented with both positive and negative messages regarding a candidate. Second, product marketers do not have to coordinate the campaigns of two different products, e.g., computers and perfumes, at the same time. However, political campaign practitioners usually have to coordinate seemingly unrelated campaigns. Under the election law, different individuals and groups could run campaigns that are either officially coordinated or officially uncoordinated with the candidates' campaigns. This is why compared with product campaigns, political campaigns are obviously linked in some way, and may be officially uncoordinated. For example, in the 2004 presidential election, anti-gay marriage campaigns, which were created to engage the Republican base, particularly the religious right, seemed to be unrelated to Bush's presidential campaigns. However, the success of one hinges on the success of the other. The issue campaigns can be used to hook and mobilize people with special interests.

Generally speaking, two core concepts can help us understand today's increasingly sophisticated political campaigns – integrated marketing communications, and targeting strategies.

Integrated Marketing Communications

In political campaigns, integrated marketing communications means strategic integration and coordination of a variety of communications, knowledge and tools, including advertising, news media, public relations, grassroots efforts, polling, and voter analysis to seek maximum communication impacts on voters. The following section will discuss the three major types of communication efforts in presidential campaigns -- advertising, news media, and grassroots efforts. These three types of communication efforts coordinate with and complement each other.

The most prominent communication effort in presidential campaigns is paid or controlled media, i.e., advertising. Getting its start in 1952, televised political ads have accounted for the largest portion of campaign expenditures of major presidential candidates, and about 60 percent of campaign budgets is allocated for advertisements (West, 1999). In the two recent elections, television advertising continues to be the major tool that candidates used to influence the voters. In the 2000 election, the two major candidates and their party committees spent \$127 million on televised ads between June 1 and the Election Day; and in the 2004 election, each of the two major candidates spent about \$125 million on ads (West, 2005). Clearly, television advertising has become the primary tool that candidates use to communicate with voters (Abramowitz & Segal, 1992; Kaid, 2005; Perloff, 2002).

Advertising can be used to reach large audiences. In recent years, candidates have tended to buy ads mainly in local channels of broadcast TV stations, not much in national networks, mainly because they want to target voters in particular areas as part of their strategy to win an electoral vote majority. They also buy specialized cable TV channels

to reach groups of people with specific profiles or to reach opinion leaders that are attracted to the channels for their attention to high-end real-estate, expensive vacations, cooking and golf, to name just a few. In addition, they also buy ads on radio, the Internet, and even billboards. However, candidates do not have full control over advertising because political parties, independent groups, and even individuals can also run ads related to the election (West, 2005). The influence of independent groups has gained more weight in recent presidential elections. Independent groups are viewed as one of the three major types of organizations in an election: candidates' campaign organizations, political parties, and special interest groups (Foley, 1994). Independent groups became more active in running ads in recent presidential elections than in previous presidential elections (Kaid, 2005; West, 2005). According to West (2005), they spent about \$10 million on television advertising in the 2000 presidential election.

The second major category of communication efforts in presidential campaigns is so-called earned or free media. The public relations function is largely about the quest for free media, i.e., stories in news media. News media are free media and can present a candidate's faces and messages in a more credible way to large audiences. To attract local news media attention, candidates travel to place after place, and their surrogates such as their spouses, friends, cabinet members, and celebrities also travel to place after place to make appearances on behalf of the candidates. Candidates and their surrogates make public appearances in town hall meetings, forums, rallies and other types of gatherings to provide face-to-face opportunities for direct, personal contact and interaction with voters. Candidates and parties spend significant resources on traveling around for fundraising and mobilization. An important goal is to make some news to

attract free media coverage. They want to get their messages out on the local news.

National conventions and debates are other forms of free media in presidential campaigns.

The third major category of communication efforts in presidential campaigns is grassroots efforts. In today's political campaigns, those grassroots efforts -- ground operations -- are very sophisticated and organized. The goal is to turn out voters. The major approach is get-out-the-vote activities, in which campaign practitioners contact voters through various channels. Get-out-the-vote (GOTV) includes three techniques of directly contacting voters: telephone, direct mail, and face-to-face (Tyson, 1999).

Political campaign workers contact registered voters from door to door in neighborhood after neighborhood. The more sophisticated operations observe any political signs in the yard or windows of the house, and use PDAs to mark down the information about whether voters are home or not home; and whether they are Republicans, Democrats or independents, and the like. If they find that a given household belongs to the opponent, they won't come back. If they find that this household is composed of persuadable, undecided voters, they go back and revisit them -- in some cases multiple times. For weak supporters, they encourage them to vote. For strong supporters, they contact them to encourage them to donate funds. The goal is to keep those voters active, and make sure they will vote on the Election Day. This category of communication efforts can reach relatively fewer people at a time compared with advertising and news media, although the scope of these ground efforts in recent campaigns has been considerable -- particularly in the closely contested battleground states.

Targeting Strategies

The second core characteristic of today's political campaigns is targeting strategies. Product marketing uses targeting strategies to reach target audiences. Political marketing also uses targeting strategies. Instead of reaching voters by broad demographic and geographic characteristics, today's political campaigns employ a strategy called targeting that identifies and persuades particularly those voters who have great influences on winning the election (Tyson, 1999). For example, Stuckey (2005) suggested that in 2004, though generally the two major parties' candidates focused on the so-called swing states, the Democrats put more efforts in persuading demographically characterized voters, particularly undecided voters, whereas the Republicans put more efforts in mobilizing ideologically characterized voters, particularly supporters and those leaning toward Bush (also see Kenski & Kenski, 2005).

In presidential campaigns, a hotly contested battleground could be at the county level and the national level. During primary elections, candidates use targeting strategies based on demographic composition, partisanship, polling results, and other research to reach certain counties within a state. In presidential campaigns at the national level, targeting generally means targeting voters in swing states or so-called "battleground states" – the places where the race is highly contested, and ignoring those places that are already safely ahead or hopeless. The distinction between battleground states versus non-battleground states is based on the perceived winnability or contestedness of the race within a state based on polling. In swing states, a candidate can win just a little more than the other candidates, whereas in non-battleground states, who would win the election is

clearer and there's not much opportunity to change it, at least within the bounds of available resources.

Because presidential campaigns have to work with the Electoral College system, they are organized state by state. According to Kenski and Kenski (2005), for years presidential candidates allocated tremendous campaign resources to those largest states that have the most electoral votes. It should be noted that the notion of battleground states versus non-battleground states is developed on the basis of not only the number of electoral votes but also some characteristics of a state, including the number of popular votes, history of winning the election, party identification, and recent poll data about patterns of candidate support within a state. The goal of each campaign is to assemble a majority of the electoral votes – 270 – because winning the presidency in the United States is decided by winning a majority of the electoral votes. Each campaign begins with a list of relatively safe states and a list of hopeless states. Building on the list of the safe states, each campaign tries to figure out a strategy to win enough of the swing states to obtain an Electoral College majority.

As indicated by The U.S. Department of State (2004, p. 4), “Battleground states do not have to have a large number of Electoral College votes. The 2004 election is expected to be close, so even a small state with a few Electoral College votes can give the candidate the winning margin.” In recent presidential elections, about seventeen states have been characterized as the so-called battleground states, and some of them do have a small number of electoral votes. In the two most recent presidential elections, i.e., the 2000 election and the 2004 election, which states belong to battleground states or non-battleground states should be almost the same. In the 2004 presidential election

campaign, the battleground states refer to about 17 states, such as Arkansas, Arizona, Florida, Iowa, Maine, Michigan, Minnesota, Missouri, Nevada, New Hampshire, New Mexico, Ohio, Oregon, Pennsylvania, Washington, West Virginia, and Wisconsin (2004 Wisconsin Advertising Project; Kathy & Page, 2004). Figure 1.1 highlights these so-called battleground states in the 2000 presidential election. Figure 1.2 highlights the so-called safe states in the 2004 presidential election. Following targeting strategies, presidential candidates actually compete for only about 40% of the electoral votes which are in the so-called battleground states. The contested electoral vote 35%~40% was derived by dividing the total electoral votes of these 17 states by 538, or by inferring from the safe electoral votes, which were calculated based on those safe Republican states or safe Democratic states (see Table 1.1).

Figure 1.1: The states highlighted in yellow are considered "battleground states" in the 2000 presidential election. The states in blue are either safe Republican states or safe Democratic states (source: *CNN.com*).

Figure 1.2: Gray states are considered "battleground states" in the 2004 presidential election. Red states are safe Republican states and blue states are safe Democratic states (source: Time Inc.).

	2000 election		2004 election	
	Bush	Gore	Bush	Kerry
Electoral vote	271	266	286	251
Popular vote	50,456,002	50,999,897	62,040,610	59,028,444
Safe electoral vote	30%		30%	
Contested electoral vote	35~40%			

Table 1.1: Contested electoral votes in the 2000 and the 2004 presidential campaigns (The figures of the electoral and the popular votes are from Federal Election Commission.).

Both the 2000 and the 2004 presidential campaigns seemed to focus on winning the electoral votes only, and did not care much about the popular votes. In these two most recent presidential elections, owing to targeting strategies, candidates did not get maximum popular votes they might have received. In the 2000 presidential election, Al Gore got a popular-vote majority (won by about 0.5 million votes), whereas George W. Bush won the electoral votes, but not the popular votes. In the 2004 election, John Kerry did not get a popular-vote majority by about 3 million votes. If Democrats had structured their 2004 campaigns in a different way, they likely could have received more popular votes. If they would have put more efforts to get people to vote in some non-battleground Democratic-safe states, such as California, New York, Massachusetts, and District of Columbia, they would be more likely to win more popular votes nationwide. As a result, they might have been in a stronger position to consider a recount for the controversial race in Ohio, like Gore asked for a recount in Florida in 2000. The lack of popular votes in the nation as a whole seemed to limit Kerry's choices. Compared with Gore's campaign in 2000, Kerry's 2004 campaign seemed to focus on even fewer states.

According to the Electoral College System used at the present time, the winner takes all. Maine and Nebraska are the only two states that do not follow the winner-take-all rule, but use a different method called the Congressional District Method – giving two electoral votes to the statewide winner, and each of the remaining votes to the winner in each congressional district (The Center for Voting and Democracy, 2006). However, there are plans for reforming the winner-take-all system. For instance, Koza et al. (2006) proposed that the current winner-take-all system should be replaced by the system that winning the most popular votes nationwide gets the presidency. They argued that this

new system should make all states competitive, instead of only those so-called battleground states, and every vote equally important (Koza et al., 2006). For example, California has the greatest number of electoral votes, but for years presidential candidates have not campaigned a lot in California because it's not a battleground state, though they do raise money there. To put it simply, in the Electoral College it doesn't matter that Democrats win by one vote or one million popular votes in California. On the contrary, it matters very much whether they win Ohio or not no matter what the margin is. For the 2008 presidential election, California is filing a ballot initiative to change from the winner-take-all system to the congressional district allocation method (Hertzberg, 2007). The latest status of this reform effort is that it failed and the 2008 election will use the current winner-take-all method in California.

Large campaign resource allocations are planned according to targeting strategies. By adopting targeting strategies, candidates as well as other relevant campaign organizations, such as political parties and independent groups, should allocate relatively more resources, such as political advertising, candidates' visits, campaign contacts and other campaign efforts to reach certain clusters of voters according to demographics, partisanship, psychographics, strategies for winning the Electoral College, and the like. As far as general election campaigning is concerned, targeting battleground states accounts for major part of the targeting efforts. For example, analyzing candidate appearances in presidential campaigns from 1972 to 2000 at the county level, the media market level, and the state level, Althaus and his colleagues (2002) found that over time the number and the geographic coverage of candidate appearances have been increasing, and over time appearances still have been concentrated in areas that are more populated,

more competitive, and consistently vote for the opponents. Accordingly, battleground states should receive predominately more media attention than non-battleground states. The indicators of campaign intensity should coincide with those battleground states. As for the non-battleground states, generally speaking, the campaigns do not even ask people in these places to vote or to vote for a certain candidate because who would win is very clear and almost predetermined. As a result, in these places, a lot of people are likely to stay at home on the Election Day because they don't think their votes matter. Owing to targeting strategies, campaign intensity and effects should not be uniform across the whole country.

The Role of Campaigns in Elections

Integrated marketing communications and targeting strategies provide two perspectives to understand today's sophisticated political campaigns. Political campaigns use a combination of communication tools to inform, mobilize and persuade target audiences. In today's political elections, it's very difficult to disregard campaigns. Thus, it is important to understand campaigns' role in elections, especially the communication function of political campaigns.

Political campaigns can help fulfill democratic ideals. Different from modern democratic theory that focuses on democratic procedures and political representatives' accountability, classical democratic theory views participation in democracy as an educational opportunity for citizens to cultivate their reasoning ability with respect to the common good (Lawrence, 1991; Pateman, 1970). Fournier (2006) argued that "classical democratic theory expects campaigns to be a forum for debate about policies, ideas, and leadership, a debate that exposes the electorate to the major alternatives competing for

government, that allows voters to learn about them, compare them, and deliberate on their respective value” (p. 50). A general concern regarding campaigns is that campaigns could manipulate voters. But, it seems that this concern should not exist in the context of the U.S. presidential elections. Brady, Johnson, and Sides (2006) argued that several factors could minimize campaigns’ manipulation; for example, people do not believe whatever is told in campaigns; a candidate’s or a party’s claims may be challenged by other candidates or parties; and mass media play a watchdog role.

According to Brady, Johnson, and Sides (2006), there are four major types of campaign effects: persuasion, priming, informing and mobilizing voters, and changing voters’ strategic thinking of candidates’ or parties’ chance of winning and allying with partners (also see Perloff, 2002). Among these types of campaign effects, it is the third type -- informing and mobilizing voters – that contains most fundamental democratic values. However, it should be noted that persuasive effects, and informing and mobilization effects are inseparable. Persuasive effects manifest themselves in such dependent variables as vote choice, candidate perceptions and preferences. Holbrook and McClurg (2005) argued that “independents need to be persuaded and mobilized, while partisans mainly need to be mobilized” and “what are often interpreted as persuasive effects may in fact be the product of mobilization” (p. 691). That is, persuasive effects and mobilizing effects are closely related campaign products because voter turnout can be resulted from persuasion as well. Thus, assessing campaign effects should not ignore the interconnected nature of various types of effects.

The ideal format of representative democracy in the U.S. endows both elected officials and citizens their own positions and functions in the system and requires them to

assume their respective responsibilities. The bridge between elected officials and citizens in a democratic system lies in public opinion. Only when citizens have sufficient information and knowledge as well as direct participation in political processes can citizens produce informed opinions and make well-reasoned decisions and thereby, realize the democratic ideal of achieving the common good. Communication can help unfold campaigns' multidimensional and multidirectional nature. The major role of communication in political campaigns should be to inform, mobilize and persuade citizens. In sum, political campaigns have democratic implications, and communication, either mass communication or interpersonal communication, plays an essential role in political campaigns. The present study focuses particularly on investigating informing effects of communication in political campaigns.

Kenski and Kenski (2005) argued that campaigns could make a difference, especially in close races. The 2000 and the 2004 presidential elections are examples of highly contested races. Analyzing the survey data collected in the 1988, 1993, and 1997 Canadian federal elections, Fournier (2006) found that campaigns reduced individual differences between voters with different levels of political information in their vote intention or reported vote, but this reduction was not found in the aggregate-level. In Fournier's (2006) study, political information is operationalized by various indicators, such as factual political knowledge, knowledge of parties and candidates, parties' issue stances, etc. That is, comparing the actual vote choices and the hypothetical informed vote choices from imputation, campaigns was not found to decrease aggregate-level or the entire electorate's discrepancies, but decreased individual-level discrepancies (Fournier, 2006). Fournier (2006) concluded that campaigns do make a difference, and

help voters make more enlightened vote choices. However, Alvarez and Shankster (2006) argued that presidential elections are not suitable for investigating campaign effects because compared with other types of elections, such as statewide congressional and gubernatorial elections, the magnitude of their media coverage, campaign intensity, advertising, candidate appearances, and major events like debates and conventions, do not vary a lot between years, and there are relatively few presidential campaign cases available up to now.

Zaller's (1992) two-sided information flow hypothesis, which asserted that in a one-sided information flow condition, news media that consistently provide biased one-sided content are more likely to influence people's political attitudes, whereas in a two-sided information flow condition, news media that consistently provide two-sided content are less likely to influence people's political attitudes because the effects would cancel each other out. De Vreese and Boomgaarden (2006) argued that this conditionality of communication effects can occur at either the individual level or the aggregate level. Moreover, De Vreese and Boomgaarden (2006) argued that "changes in public opinion mostly do not imply the replacement of a crystallized belief by another but rather a change in the balance of positive and negative considerations relating to a given issue" (p. 21). This suggests that communication effects would vary spatiotemporally during the course of the campaign. Sometimes the information flow may be one-sided, and sometimes two-sided, and this fluctuation may be resulted from the interaction of many situational, intuitional, and individual factors. This suggests that if communication effects are summed up and evaluated just at the end of the campaign, it is likely to conclude that communication has little influence on voters, given almost equal amount of resources

invested and information flows created by the two parties in running presidential campaigns in a single presidential election.

Do campaigns have effects? Brady, Johnson, and Sides (2006) argued that campaign effects should be treated “not as dichotomies that do or do not exist but as variables or continua that depend on history, current circumstance, and the voters themselves” (p. 13), and thereby, the more meaningful question to ask is when and how campaign effects come into being. Brady, Johnson, and Sides (2006) still acknowledged the influence of individual and structural factors, such as party identification, social economic backgrounds, and broader social, economic and political conditions. But, they argued that the question to ask is whether campaigns could also influence voters.

Presidential Campaign Finance

A tremendous amount of money is spent in presidential campaigns to promote candidates, just like what product marketing does to build brand power. When all sources trying to influence the presidential election are considered, it is estimated that slightly less than \$1 billion was spent in the 2000 campaign, and about \$1.7 billion was spent in the 2004 campaign (Preface, 2005). Thus, it would be helpful to first understand the mechanism regarding how campaign fund is raised and spent when studying political campaigns because the flow of money not only provides an overview of critical campaign components but also suggests which components receive more weight. The current law that regulates finance of federal election campaigns, including both contributing and spending money, is Federal Election Campaign Act (FECA), and the Federal Election Commission (FEC) is the governmental organization which enforces the law (Corrado, 2000). The law stipulates the limits of the amount that each of the four major sources of

campaign funds, including individuals, political action committees (PACs), party committees, and candidates, could contribute (Corrado, 2000). According to King (1999), there are five ways to raise funds: candidate-involved solicitation from individuals, candidate-involved fund-raising events, supporters of the candidate using personal connections, direct mail, and PAC contributions.

There are two major ways to spend campaign money: coordinated expenditures and independent expenditures. Coordinated expenditures mean that political parties coordinate with candidates to spend the money received from the money under the law's limits of contribution, whereas independent expenditures mean that individuals and groups can spend unlimited amount of money from the money under the law's limits of contribution without having to coordinate with or contact a candidate, and they are usually spent on television or radio ads, and direct mailings (Corrado, 2000; Zuckerman, 1999). The law allows political parties to spend unlimited amount of money on some specific activities for the purpose of promoting citizens' participation in elections (Corrado, 2000). These expenditures include "voter registration," "turnout drives," "slate cards, sample ballots, brochures, posters, buttons, and bumper stickers for use in connection with volunteer campaign efforts," but do not include media advertising (Corrado, 2000, p. 21).

There are two types of financial activities that are not regulated by the FECA -- soft money and issue advocacy (Corrado, 2000). Unlike hard money, which refers to the funds raised under the law's contribution limits and given directly to candidates, soft money can come from unlimited sources and be spent without the limit of amount (Corrado, 2000; West, 2005). Soft money can be used for such activities as supporting a

party and promoting voter registration, but cannot be used to contribute to candidates, do coordinated or independent expenditures, or simply speaking, do something related to federal elections (Corrado, 2000). Issue advocacy refers to publicly communicating information about candidates' background, and about issues or policies (Corrado, 2000). Issue advocacy cannot contain words like "vote for," "elect," "defeat," "support," etc. that are expressively advocated for identifiable candidates (Corrado, 2000, p. 24; Zuckerman, 1999). Any source, even including corporations and labor unions, can make unlimited contributions to issue advocacy, and the information regarding how much and where the money is received and spent does not have to be disclosed to the public (Corrado, 2000). As for the sources of advertising funds, after the enactment of the 2002 Bipartisan Campaign Reform Act (BCRA), the current situation is that candidates can use hard money and parties can use hard and soft money to run ads; and interest groups can run issue ads with unlimited amount of money (West, 2005).

The transition from party-centered to candidate-centered campaigns has been noticed by researchers in the field of electoral politics (Abramowitz & Segal, 1992; Glynn et al., 1999). This trend implies that candidates' own qualities, but not partisanship, will increasingly become the key determinant of winning elections, and that the money to be spent in campaign, especially for challengers, will become a more important factor of winning elections (Abramowitz & Segal, 1992). The amount of money needed for running a political campaign has kept growing, and media advertising, especially television advertising, has been the main reason (Abramowitz & Segal, 1992; Corrado, 2000).

The Geospatial Dimension in Political Campaigns

From the above discussion about current political campaign practices and the situation of the recent presidential elections, it can be said that communication's role in a political campaign is multifaceted, multidirectional and intertwined with various components of a campaign. Trent and Friedenberg (2004) described four stages of the U.S. presidential campaigns: surfacing, primaries, national conventions, and general elections. According to the regular timeline of a U.S. presidential election, the surfacing stage usually starts one or two years ago before the election. At this initial stage, candidates try to surface themselves and build up the momentum. The second stage – presidential primary elections – usually takes place from February to June. The third stage -- presidential nominating conventions -- usually takes place in summer. The two major conventions are the Democratic National Convention and the Republican National Convention. Finally, general elections are held in November. Most research on communication effects in presidential campaigns centers around the general election.

At every stage, candidates make efforts to get more funds, media coverage, and supporters. Brady, Johnson, and Sides (2006) argued that campaigns are “usually characterized by heightened intensity” (p. 2), which includes three groups of indicators in various respects among voters, candidates and parties, and mass media: voters' attention to campaign news, interest in campaigns, political discussion and knowledge, strength of vote choice, etc.; candidates' and parties' effort, time and money invested in campaign ads, conventions, debates, appearances, mobilizing voters, etc.; and media's coverage of campaigns.

Because of the highly focused targeting strategies used by contemporary political campaigns, campaign intensity is not uniform across the whole country. People in different geographical locations would be influenced by campaigns differently depending on where they are. Owing to the interconnected nature of various forms of campaign intensity, it is difficult to study communication effects in political campaigns without a context. Different contexts would have different campaign intensity. As a result, how campaign intensity could influence the frequency, the content and the modality of communication would vary across contexts. In other words, it is important to understand how sociopolitical contexts that are created by campaigns by some geospatial characteristics resulted from targeting strategies would influence communication nature and effects in political campaigns. Communication effects on an individual's cognition, affection and behaviors may implicate a collective nature depending on this individual's context. Assuming media and other aspects of campaign communication are the same across all places in the country would miss the true nature of communication effects in political campaigns. Thus, the concept of contextuality should be incorporated into research on communication effects in political campaigns because contexts, especially social and political contexts, can influence how people generate knowledge and attitudes as well as how they behave in communication processes. According to Steinberg and Steinberg (2006), there are a variety of spatial questions that can be studied, such as the closeness, the adjacency, the distance, the directionality, and categorization of things. The present study is concerned with one of the question types discussed by Steinberg and Steinberg (2006) – the correspondence, which refers to “where items coincide in space (e.g., occur together and possibly indicate cause and effect relationships)” (p. 20).

Communication scientists (e.g., Dervin, 2003c; McLeod & Blumler, 1987; McLeod & Pan, 1989; McLeod, Kosicki, & McLeod, 2002; Pan & McLeod, 1991) viewed contexts or macro theorizing as an essential part in communication research and argued that contexts should not be disregarded when investigating various communication effects. McLeod, Kosicki and McLeod (2002) argued that political communication effects should be examined in specific sociopolitical environments from a broader spatial and temporal perspective. Researchers have approached the concept of context in different ways. Particularly, research has shown a close relationship between an individual and his or her surrounding. For example, Lane (1959) argued that ecological patterns of a community, i.e. the concentration of various social groups in certain areas according to such social demographic variables as social classes and ethnicity, could influence people's political participation. Similarly, Huckfeldt and Sprague (1995) argued that political campaigns function as a booster of a contextual influence process that molds an individual's political choices and preferences to be correspondent with his or her sociopolitical surroundings.

The relationship between the individuals and the context is an important topic in communication research, a.k.a the linkage between the micro level and the macro level from a multilevel perspective. Przeworski and Teune (1970) advocated conducting comparative research, referring to studies taking into consideration contexts, and conducted in several contexts and at multiple levels. McLeod & Pan (1989) advocated clearly-specified within-level or in their term, ontologically horizontal, communication theories, and more importantly, cross-level or in their term, ontologically vertical, theory construction in communication research. Similarly, Alexander and Giesen (1987) also

urged a linkage between micro and macro. Munch and Smelser (1987) argued that both the micro level, in which the processes form the network of interactions in society, and the macro level, whose frameworks produced by and also condition the micro-level processes, are equally important and mutually interdependent.

Most existing studies in the field of communication science are single-level studies, and a majority of them investigate phenomena at the individual level, as opposed to the contextual level. As Slater, Snyder, and Hayes (2006) argued, communication theories and studies rarely consist of multiple levels, though the call for developing multilevel and cross-level theories and research is not something new at all. Up to now, few studies deal with issues at both the micro and macro levels or use multilevel modeling methods (exceptions e.g., Kim & Ball-Rokeach, 2006; Southwell, 2005).

In terms of studies of communication effects in presidential campaigns, most of them have examined effects either only among individual-level variables or only among contextual-level variables. That is, they can be generally divided into two groups. One group of studies examined the relationships between individuals' media use behaviors, and political learning, participation and vote choice. The other group of studies focused on differential distribution of campaign resources, especially advertising and candidate appearances, between states or other macro-level units, and how this differential distribution leads to differential voter turnout and vote choice between states or other macro-level units. Macro-level studies, most of which are in the political science field, treat communication variables, especially advertising, just as another factor along with other non-communication factors in the analysis. The connections between individual-level variables and contextual-level variables have not been fully explored in current

research on communication effects in political campaigns. To fully understand communication effects on voters, contextual factors should be taken into consideration. To truly understand communication effects in political campaigns, the focus should be on the micro-macro linkage, i.e., the interplay of both individual-level variables and contextual variables in communication processes.

The Purpose of the Present Study

The core thesis behind the present study is that political campaigns could shape a person's total communication context in which a person is conditioned, and accordingly both individual and contextual factors within this context should form synergistic influences on this person's cognitive responses to the election. Studying communication effects on individuals should never ignore the broader social and political contexts that surround the individuals because different contexts may produce different ambient information and thereby, different consequences. The present study attempts to understand how differential allocation of campaign resources would result in differential communication activities in different geospatial locations, and thereby, influence people's responses with respect to the election.

The dominant voting model -- the Michigan model of voting, which originates in the pre-TV era in 1950s, when there were no political ads and the Internet, argues that people's early-learned predispositions, such as party identification, strongly bias people's perception of candidates' personal characteristics and issue positions as well as the evaluation of candidates' performance, and accordingly, influence their voting decisions (Lau & Redlawsk, 2006). According to this view, media play a minimal role and people

are not influenced by campaigns very much. Communication is relegated to a minor factor of influence in elections.

However, studying elections in the 21st Century should not ignore the role campaigns play in political processes, especially the communication function of political campaigns. Given that communication technologies, media markets, consumer markets, and campaign practices have become more complex, communication's role in political processes has likely become much more important and central than it was in early times. As discussed in previous sections, major political campaigns in recent years have been designed based on the concepts of integrated marketing communications and targeting strategies. They constantly innovate and adopt new ways to reach voters. Unfortunately, the dominant voting model has not accommodated the recent development of political campaigns. Existing studies and people's understanding have not yet kept up with this change in current political campaign practices.

The goal of communication research is to build theories of communication science and to make the theories more refined. McLeod and Pan (2005) defined theory as "a set of organized propositions that provide an explanation for some recurrent phenomena of research interest" (p. 32). They asserted that a theory should explain the phenomena abstractly enough for them to recur; in other words, "conceptually similar" phenomena occurred in other temporal and spatial dimensions should be observable by the same theoretical explanations (McLeod & Pan, 2005). Therefore, a good theory can well predict the conditions under which conceptually similar phenomena might take place (McLeod & Pan, 2005). Presidential elections over the years have some commonalities. However, each presidential election is also unique because the context is different and

thereby, all things within that particular context make each election unique. From the standpoint of building general theories of communication, both generality and uniqueness should be studied. Scientific studies should consider both general and unique factors in order to make substantive contribution to the building of communication theories.

If commonality is what is sought after, studying the role of communication in just one election campaign does not contribute to the building of communication theories as much as studying this phenomenon in multiple election campaigns. Studying multiple election campaigns can help build theories based on generalities, commonalities or similarities, as opposed to specificities or differences, through aggregating knowledge across a number of different election campaigns. Each election is also unique owing to its unique context. The unique factors in elections may include the national mood at that time, specific issues in that year, party identification change, historical circumstances, media patterns, candidates, campaign strategies, and the like. All these things may evolve and change year by year, and their meanings relative to other things change as well. As a result, all these contextual attributes provide each election a unique context in terms of time and space, and all the effects assessed in research should be explained within a context. Studying many elections across general principles or studying unique factors in a specific election year can be two different purposes of communication research with conceptually and methodologically different approaches. Either type of research purpose should be able to produce meaningful contribution to the building and refinement of communication theories.

The present study is conducted within the context of the 2000 presidential election in the U.S. The study aims to understand new trends of the nature and the character of

communication choices as well as the mechanisms of communication effects in political campaigns by incorporating the concept of sociopolitical contexts defined by geospatial characteristics. Particularly, this study focuses on linkages and interactions between micro and macro factors. Geospace is a dimension that has not been fully taken into account in existing studies of political campaigns. Given that many Americans are apathetic about certain aspects of politics, this study aims to demonstrate that communication is able to engage and influence people, either those mainstream members of the parties, i.e., those with strong party identification, or those without strong party identification, i.e., the independents, in political processes. More importantly, this study hopes to help build communication theories by modeling the influence of contextual factors rather than just explaining communication effects within a specific context.

CHAPTER 2

THEORETICAL FRAMEWORK

The theoretical framework for the present study involves theoretical models and findings of political communication research related to communication effects in political campaigns, the logic of geospatial inquiry and cross-level inference, and how these can help illuminate the study of contemporary campaigns. This chapter also discusses the details of the present study, and formulates relevant research hypotheses based on the theoretical framework.

Overview of the Present Study

This study, which attempts to understand communication effects in political campaigns, is designed from the perspective of a person's total communication environment. The study is concerned with how political campaigns could use geographic variables to conceptually define sociopolitical parameters in which differential communication effects take place. It is expected that both macro- and micro-level factors surrounding a specific voter should form synergistic influences on this voter's cognitive responses with respect to the election. The study attempts to understand how presidential campaigns could shape voters' total communication environments, and accordingly, influence their understanding of the candidates and the election. This is based on the notion that an individual's understanding of the election could be influenced not only by

his or her personal characteristics but also by contextual factors in the immediate environment. More specifically, the study attempts to understand how mass communication and interpersonal communication factors at both the micro and the macro levels as well as their interconnected relationships within an individual's communication environment created by campaign practices could influence this individual's political knowledge.

Communication's role in political campaigns can be more comprehensively understood by taking into account as many important aspects as possible. This study will simultaneously investigate the relationships among those essential factors in communication processes during a presidential campaign. The variables to be considered at the individual level include news media use and interpersonal political discussion. The variables at the campaign level include three major campaign intensity indicators -- televised political ads, candidate appearances, and campaign-related contacts. This study particularly incorporates the third form of campaign intensity. Although most campaign practices focus on convincing voters what or whom to support, it is the direct-contact get-out-the-vote efforts of a campaign that push voters to actually vote (Tyson, 1999). Campaign-related contacts play an important role in presidential campaigns, though their effect has not yet been assessed in existing studies. These three indicators -- televised political ads, candidate appearances, and campaign-related contacts -- represent the critical contextual influences of campaigns on voters in a presidential election.

Political campaigns could influence the frequency, the content and the modality of people's communicative acts as well as their responses to the election campaign, and these influences would vary across contexts. This study speculates that voters who are

conditioned in the environment with more intensified campaign practices in various respects should feel more receptive of, more interested in, and more targeted by election campaigns because campaigns make them notice that the race is very competitive and understand that their votes have important stakes. The flow of campaign-related cognitive transactions is likely to be more dynamic and interactive among various relevant participants, including voters, candidates, and mass media, in a highly intensified communication environment than in a less intensified communication environment. In those environments with more campaign-engineering, voters may be more likely to seek election-related news from mass media and engage in more interpersonal conversations and discussions about the election. These induced behaviors may accordingly influence their learning about the campaigns. Thus, communication effects in terms of informing voters should be more likely in some places than in other places. To capture differential communication effects, this study investigates relationships among these essential individual-level factors and campaign-level campaign intensity factors, including cross-level interactions, in explaining voters' learning about the election. Cross-level interactions could help understand the relationships between individuals and their surrounding sociopolitical mechanisms at work in communication processes.

Each respondent is nested within a certain communication context that is created by campaigns by some geospatial characteristics resulted from targeting strategies. Therefore, the present study assesses communication effects, i.e., communication's role in informing citizens, by partitioning these effects geographically into segments of different sociopolitical contexts. That is, this study takes into consideration geospatial factors and is context-focused. It emphasizes sociopolitical contexts or generally

speaking, communication contexts, defined by some geospatial characteristics created by campaigns, and attempts to investigate the relationships among the macro- and micro-level variables within particular sociopolitical contexts. Because campaign intensity should vary from place to place, e.g., from state to state or from media market to media market, this study geographically categorizes voters into different sociopolitical contexts defined by such geospatial units as state and media market. That is, both states and media markets are the contextual units in this study. These geospatial units should be correlated with overall sociopolitical and communication contexts in which voters are conditioned. Thus, voters' knowledge about the election could be adequately assessed.

The O-S-O-R communication effects model (McLeod, Kosicki, & McLeod, 2002) can be employed as the overarching theoretical framework for the present study, and various strands of theories or theoretical models and issues related to each essential concept of the present study could be accommodated within this paradigm. The O-S-O-R communication effects model encompasses the following components. The first O (organism) refers to the “structural, cultural, cognitive, and motivational characteristics” that an individual has and could interfere or interact with the incoming stimulus or message (S) (McLeod, Kosicki, & McLeod, 2002, p. 238). The second O refers to various activities happening between receiving the stimuli (S) and the final responses or effects (R). The second O could be various activities “at various levels ranging from short-term psychological responses to more enduring complex behaviors” (McLeod, Kosicki, & McLeod, 2002, p. 239).

The O-S-O-R model is viewed as a paradigm that addresses various communication effects by the same linear process constituted of these O^1 , S, O^2 and R

components. The original O-S-O-R communication effects model has been mostly applied in theoretical models and studies taking a cognitive psychological perspective, for instance, the extended cognitive mediation model (ECMM; Eveland, 2005). However, given its broad nature, the O-S-O-R model can also be applied in the present study that takes a macro perspective. Unlike the “level-friendly” first “O” (McLeod, Kosicki, & McLeod, 2008), the second “O,” which is an intervening component between stimuli and responses, and addresses individual characteristics, such as individuals’ various information-processing strategies in the ECMM, is beyond of the scope of the present study. Therefore, the present study is built upon a portion of the original O-S-O-R model, i.e., the O-S-R framework. In the O-S-R framework, the “level-friendly” “O” (McLeod, Kosicki, & McLeod, 2008) could refer to not only a person’s psychological characteristics but also larger structural characteristics that connect with a person. That is to say, the “O” accommodates the macro-level variables of the multilevel models employed in the present study.

More specifically, in the O-S-R framework of the present study, the first O includes two parts. The first part is individual characteristics, including some individual-level demographic variables, such as age, gender, education, and income. The second part is contextual factors, which condition individuals in specific communication environments. Because the present study defines people’s contexts by the use of various campaign intensity indicators, the first “O” also includes three campaign-level factors -- televised political ads, candidate visits, and campaign contacts. The S is represented by individual-level news media use and political discussion. The R is represented by individual-level political knowledge.

The present study asserts that different geospatial parameters would result in different communication effects. A clear understanding of contextual theories and geospatial dimensions should help assess all these relationships.

Contextual Theories and Cross-level Inference

The present study emphasizes geospatial dimensions, including micro-macro linkage and cross-level inference. This section will discuss the importance of incorporating the concept of context into communication research, conceptualizations of contexts, relationships between individuals and contexts, characteristics of the micro level and the macro level, the information flow perspective on contextual effects, and the role of sociopolitical contexts in existing communication studies. Moreover, this section will also indicate how the micro- and macro-level variables in the present study fit into the multilevel framework, and how they will be analyzed.

The Importance of Contexts

Context has an important, yet controversial role in social science research. Dervin (2003b) argued that universalist versus contextual theories is one of the antitheses in communication research. Przeworski & Teune (1970) also argued that there are two opposite views: one view is that social science observations can be generalized across spatiotemporal parameters, whereas the other view is that observations are extremely specific to where they are made and generalizations of social reality are limited. Dervin (2003c) pointed out that researchers' conceptualization of context is like a continuum – at one end, context is treated as another factor and there are numerous contextual factors because every possible attributes of other factors, such as person, structure, culture, etc., can be defined as context; and at the other end, context is embedded in every study and

therefore, generalization is impossible. These are the extreme views on the concept of context. According to Przeworski and Teune (1970), the less extreme view, especially in political science, asserts that “social science statements are relative to classes of nations or “areas” that share syndromes of historical, cultural and social characteristics” (p. 7).

Although the concept of context is important, it seems that communication research has not yet fully explored it. Dervin (2003a) argued that communication research “attempts to predict and explain communication behavior based on across time-space static conceptualizations of communication rather than time-space bound, dynamic, situated conceptualizations” and assumes “the entity (e.g., culture or individual in culture) moves from situation to situation in the same state condition” (p. 66). Thus, she argued that communication, or in her term “communicating” should situate in four things -- embedding in structures, occurring in specific time-space, fixing on a continuum of time, and the use of historical sense; and thus, understandings of reality resulting from communication should differ from situation to situation (Dervin, 2003a). The common themes regarding the concept of context that are more relevant to communication research along this line of thought identified by Dervin (2003c) include: meaning making requires context; reality varies across time and space; and the research focus is on process, as opposed to outcome.

Przeworski and Teune (1970) argued that the issue about whether historically fixed observations should be treated as specific to the system in that particular time and space or whether general theories without reference to a particular time and space should be developed is not in such an extreme situation; rather, they argued that the issue here is to define the conditions and the appropriate procedures for developing and testing general

theories. That is, by conducting comparative research in a way that is able to model systemic or contextual factors, Przeworski and Teune (1970) believed that the development of general theories is possible.

Conceptualizations of Contexts and Micro-Macro Linkages

Once the concept of context is incorporated into research, research should be examined from a multilevel perspective, which usually consists of the micro level and the macro level. Scholars use different terms to refer to the concept of micro and macro. The micro level, the lower level, the individual level, members, and objects within systems are used interchangeably; and the macro level, the higher level, the context level, the aggregate level, the group, the collective, and systems are used interchangeably. For example, Lazarsfeld (1959) defined a collective as “any element in a proposition composed of *members*, i.e., constituent parts, which are regarded as comparable” (p. 118). In the most general sense, contexts refer to the macro level, and contextual variables refer to variables at the macro level, as opposed to the micro-level variables within a context. That is, the micro level refers to the objects within a context or a system, and the macro level refers to the context or the system itself.

According to Dewey (1960), “Within a context there is a spatial and temporal background which affects all thinking, and a selective interest or bias which conditions the subject matter of thinking” (p. 88). Munch and Smelser (1987) defined micro and macro in such a way that they see “the micro level as involving encounters and patterned interaction among individuals (which would include communication, exchange, cooperation, and conflict) and the macro level as referring to those structures in society (groups, organizations, institutions, and cultural productions) that are sustained (however

imperfectly) by mechanisms of social control and that constitute both opportunities and constraints on individual behavior and interactions” (p. 357). From this perspective, contexts may generally refer to larger cultural contexts, social contexts, political contexts, and the like.

The concept of system discussed by several scholars can help further understand the concept of context. Przeworski and Teune (1970) argued that social phenomena are “not only diverse but always occur in mutually interdependent and interacting structures, possessing a spatiotemporal location” (p. 12), and if these patterns of interaction are stable, they can be treated as *systems*, which is composed of various interacting components. That is, social phenomena are handled as “components of systems” (Przeworski & Teune, 1970, p. 12). McLeod and Blumler (1987) defined a system as “a bounded set of interrelationships between units” (p. 275), and suggested several characteristics of systems: systems are dynamic organizations; systems can be described by their parts, processes, antecedents, and consequences. They also suggested that which subsystems a specific unit belongs to depends on the conditions (McLeod & Blumler, 1987). According to Przeworski and Teune (1970), societies, nations, and cultures are examples of systems, and individuals, groups, communities, institutions, or governments are examples of interacting components within social systems. Comparative research is to organize components of systems at multiple levels and assess interactions within these systems across these multiple levels (Przeworski & Teune, 1970). Thus, it can be said that contexts and systems are conceptually the same thing, and they usually constitute the macro level.

Micro and macro are linked according to objects' temporal dimension, referring to the differentiation between short and long time frame, and spatial dimension, referring to the differentiation between a single geometric spot and the unbounded universe (Gerstein, 1987). According to Przeworski and Teune (1970), the concept of "all historically located social systems" or "all spatiotemporal parameters" (p. 25) defines the maximum extent that any statements of scientific observations can be generalized. They argued that "this concept defines the entire population of conditions within which observations of social phenomena can be made, and any particular set of observations is a sample, random or not, of this population" (Przeworski & Teune, 1970, p. 25).

Characteristics of the Micro Level and the Macro Level

According to Lazarsfeld (1959), there are four characteristics of individual members of the collective: *absolute properties*, which can be directly found in individual members without any extra information about the collective or other members; *relational properties*, which is based on the relationships between a particular member and the rest of the members; *comparative properties*, which is based on the comparison between a particular member's value and the collective's value on some absolute or relational property; and *contextual properties*, which characterize individual members with the same value of a collective property. Contextual properties are obtained by a procedure called disaggregation, meaning data of the units at the macro level are disaggregated into data of the units at the micro level (Hox, 2002). For example, in the present study, the micro-level independent variables, the control variables, and the dependent variable can all be viewed as absolute properties. The macro-level campaign intensity variables can be viewed as contextual properties.

Compared with micro-level properties, macro-level properties are more complex because they usually have to involve the relationships with the micro level, i.e., the linkage between the micro level and the macro level. Scholars have proposed a variety of ways to look at relationships between the micro level and the macro level. For example, Lazarsfeld (1959) proposed three properties about collectives, including analytical properties, structural properties, and global properties. Przeworski and Teune (1970) proposed three types of macro-level characteristics and they called them systemic factors, including diffusion patterns, settings, and contexts.

Basically, there are three categories of conceptualization of the macro level or the linkage between micro and macro. As discussed by Przeworski and Teune (1970), macro-level factors in the first two categories are based on observations only at the macro level, whereas macro-level factors in the third category are based on the aggregation at the micro level.

According to Przeworski and Teune (1970), the first systemic factor is *diffusion patterns*, which means individual behaviors resulting from the spread of some internal cultural patterns within the system. This is similar to what Schegloff (1987) called differences in micro phenomena between macros, such as cultures and societies, as a way to relate the micro and macro levels.

According to Przeworski and Teune (1970), the second systemic factor is *settings*, which is the same as what Lazarsfeld (1959) called *global properties*, meaning that they cannot be directly observed among individual members. More specifically, Przeworski and Teune (1970) argued that *settings*, which may include historical, institutional, external, behavioral, and physical settings, are composed of characteristics that influence

individuals within the system. Munch and Smelser (1987) called this a way to move from the macro to the micro and called it “the macro as internalized,” meaning that elements at the macro level penetrate and reign individuals at the micro level. This is similar to the second way proposed by Schegloff’s (1987) to link micro and macro: participants in micro processes such as interactions demonstrate differences in attributes related to the macro level, such as class, ethnicity, and gender, etc. In the present study, the two macro-level campaign intensity variables – televised political ads and candidate appearances within each state or media market -- fall under this category. These two variables are more like the behavioral settings proposed by Przeworski and Teune (1970), meaning that the behaviors of a system may influence or be influenced by the behaviors of the individuals within this system. As discussed in the first chapter, political campaign practitioners use campaign resources, such as advertising and candidate appearances, differentially in different states and media markets to reach voters, and in turn, voters within each state and media market provide campaign strategists some information about how to allocate campaign resources through opinion poll, for example. That is, campaigns and voters reciprocally influence each other.

Finally, according to Przeworski and Teune (1970), the third systemic factor is *contexts*, which is based on aggregates of characteristics at the individual level. Przeworski and Teune (1970) argued the following:

Within each social system, individuals hold certain attitudes and interact both with each other and with their physical environment. When the characteristics of individuals – whether predispositional, behavioral, or relational – are aggregated, the social system of which they are members acquires a parameter. (p. 56)

This definition of contexts argued by Przeworski and Teune (1970) is consistent with the general conceptual meaning of the contexts discussed above. Przeworski and Teune (1970) said that a good distinction among contextual factors is what R. B. Cattell called structural and population variables. According to Przeworski and Teune (1970), *structural contexts*, which are aggregates of relational properties at the individual level and corresponds to what Lazarsfeld (1959) called *structural properties*, meaning that they are obtained on the basis of the relations among members or among subunits, consisting of individual members, within a larger unit; and *population contexts*, which are aggregates of individual characteristics, and corresponds to what Lazarsfeld (1959) called *analytical properties*, meaning that they are obtained on the basis of the property of each member. This is also a way that Munch and Smelser (1987) discussed to move from the micro to the macro and called it “aggregation,” meaning summing up the parts to get the whole. In the present study, the macro-level campaign intensity variable – campaign contacts within each state or media market -- falls under this category because this variable comes from the aggregate of the data at the individual level.

The macro level can present in various specific and concrete forms. Schegloff (1987) argued that contexts provide a way to link micro and macro levels, though his conceptualization of contexts is slightly different from the above-mentioned conceptualization of contexts. Schegloff (1987) argued that contexts, as a bridging concept, serve as a mediator between micro and macro levels. According to Schegloff (1987), some people have viewed contexts as “a scope intermediate between the largest structures of a society and the details of interaction – ‘contexts of the middle range’” (p. 218), such as institutional or organizational contexts, contexts characterized by activities

to be done, and contexts characterized by relationships between participants. Similarly, Rhodebeck (1995) argued that context “takes many forms, ranging from those quite near the individual to those far removed” (p. 239), for instance, interpersonal interaction versus broader social, economic and cultural environments. Books and Prysby (1995) and Prysby and Books (1987) look at contexts from a geographical point of view. They argued that contexts are defined by such areal terms as neighborhood, community, county, city, state, etc. However, Books & Prysby (1988) also argued that it is valid to view contexts as “nongeographical environments surrounding the individual, such as the family, voluntary associations, and the workplace” (p. 214).

The macro level in the present study is defined based on campaign intensity, which varies by two geospatial units -- state and media market. Thus, like Books and Prysby, the present study also takes a geospatial approach to study the macro level, which generally refers to “context” in the present study.

The Information Flow Perspective on Contextual Effects

McLeod (2001) argued that “contextual effects require evidence showing that characteristics of the social unit account for variance after all individual-level effects have been removed” (p. 222). Contextual effects refer to the phenomenon that individuals within a context are influenced by some characteristics of this context. From a political communication point of view, Books and Prysby (1991) defined contextual effects as the effects of the characteristics, which vary across contextual units, of a local context on individuals’ political attitudes and behaviors. Huckfeldt and Sprague (1995) differentiate contextual effects from environmental effects. According to Huckfeldt and Sprague (1995), environmental effects generally refer to any effects of individually extraneous

factors on individual behaviors. Contextual effects are more narrowly defined than environmental effects. Contextual effects occur “when individual behavior depends upon some individually external factor after all individual-level determinants have been taken into account” (Huckfeldt & Sprague, 1995, p. 9). Contextual effects do not refer to any effects resulted from variables outside the individuals, but only those effects resulted from characteristics with contextual variation (Books & Prysby, 1988).

The variance of contextual units could be found either among the aggregates of the individual units or among the attributes within each of the individual units (Pan & McLeod, 1991). How the macro-level factors are obtained is an important issue in multilevel research because it is related to whether or not contextual effects exist. It can be found in some multilevel studies that macro-level variables are aggregates of data of micro-level units when macro-level attributes cannot be found directly from micro-level units. Pan and McLeod (1991) warned that it would be difficult to legitimate a level if all its important concepts are aggregated from the units at the lower level. In the present study, only one of the macro-level campaign intensity variables is of this kind.

Contextual processes or mechanisms explain how contextual effects take place. Erbring and Young (1979) argued that contextual effects are “mediated through processes that are somehow contingent upon the social structure in which the individual is embedded” (p. 399). Contextual processes “spring from the social environment in which the individual is located, rather than from the characteristics of the individual alone” (Weatherford, 1983, p. 871). Literature suggests an information flow approach to contextual effects (Books & Prysby, 1988; Books & Prysby, 1991; Books & Prysby, 1995; Orbell, 1970; Prysby & Books, 1987). This information flow approach can be used

to explain the mechanism of contextual effects in the present study, which examines how communication in political campaigns would produce differential informing effects in different geospatial units.

According to the information flow approach, contextual effects are brought about by the variations in the nature of information flow structured by the sociopolitical contexts, and conditioned by how people react to these localized variations, i.e., the formation of people's attitudes and behaviors based on the information from the context in which they are embedded (Books & Prysby, 1991; also see Prysby & Books, 1987; Books & Prysby, 1995). This information difference across contexts is the root of contextual effects (Books & Prysby, 1995). Contexts influence the sources, amount, content and tone of the information that flows to citizens and condition their reaction to the information (Books & Prysby, 1991; Books & Prysby, 1995; Books & Prysby, 1999). Contexts influence "the receptivity individuals have to information, reinforcing or diluting responses they would otherwise make to it" (Books & Prysby, 1991, p. 77). Contextual effects result from "the structuring of political information by the social environment in such a way as to influence how people within those settings think and act politically" (Burbank, 1997, p. 114). People obtain political information from their local environments, which would bias the information that people receive (Burbank, 1997). This information flow perspective is the broad form of contextual effects conceptualized by Rhodebeck (1995), as opposed to the narrow form, which work through interpersonal transmission.

Prysby and Books (1987) argued that contextual effects "can include not just influences from the social/political composition of one's context, but also from the

structured interactions and general characteristics of the area” (p. 226). According to this information flow approach, there are four primary sources of information: personal observation, social interaction, organizational involvement, and mass media (Books & Prysby, 1988; Books & Prysby, 1991; Books & Prysby, 1995; Prysby & Books, 1987). *Personal observation* means that people make direct observations about local contexts; *social interaction* refers to informal interaction with other people in the context; *organizationally based interaction* refers to interaction with other people via membership in various organizations, such as church, union, etc.; and finally, *mass media* especially refers to local media, as opposed to national media (Books & Prysby, 1991). Books and Prysby (1991) also identified three attributes of the information flow that could influence individuals, including the content, the volume, and the consistency of the information.

The major mechanism of contextual effects discussed most in literature is social interaction, though its conceptualizations are not completely the same (see e.g., Books & Prysby, 1991; Erbring & Young, 1979; Huckfeldt & Sprague, 1995; Przeworski & Teune, 1970). In this mechanism, the characteristics of the contextual unit influence an individual’s political attitudes and behaviors by influencing the character of the social interaction that this individual experiences (Books & Prysby, 1991). Huckfeldt and Sprague (1995) argued that social interaction within specific environments produces social contexts and contextual effects. Rhodebeck (1995) advocated that more research takes a broader approach focusing on larger contexts, which “highlights the sorts of social conditions and events that provide the raw material for discussions among friends, family, neighbors and co-workers” (p. 250).

Determining appropriate geographical contextual units requires clear understanding of the underlying informational mechanisms at work (Books & Prysby, 1995). In sum, the present study takes the information flow approach to examine informing effects of both mass media and interpersonal communication in political campaigns. In the present study, due to the multifaceted campaign practices, the mechanism of contextual effects should contain multiple information sources, including mass media, social interaction, organizational interaction, and even personal observation. Moreover, the present study focuses on one of the attributes of the information flow, i.e., its volume or frequency.

Multilevel Analysis

Gerstein (1987) argued that micro and macro are relative concepts and objects should not be treated as intrinsically micro or macro. How objects should be treated as micro or macro also depends on the analytic purpose (Gerstein, 1987). One of the features of contextual-effects models identified by Blalock (1984) is that the independent variables contain at least one micro-level variable and one macro-level variable. A contextual analysis refers to a cross-level analysis involving both individual-level and contextual-level variables (Books & Prysby, 1988).

Boyd and Iversen (1979) argued that the two major purposes of multilevel analysis are to explain individual-level behaviors by variables at both the individual level and the macro level, and to explain macro-level relationships within a single macro-level unit with information of individual-level behaviors. Hox (2002) argued that multilevel modeling focuses on the models in which the dependent variables are at the micro level, and models that assess micro-level influence on macro-level outcomes are rare.

Przeworski & Teune (1970) also discussed three types of multilevel study design and analysis: First, all variables are observed and analyzed at a single level; second, variables are observed at multiple levels, but treated and analyzed only at the macro level, i.e., the cross-systemic level as called by Przeworski and Teune; and finally, variables are observed and analyzed at multiple levels. In terms of causal relationships between micro and macro, Gerstein (1987) argued that researchers should assume that they have interactive potential, and directions of causality change in different conditions.

The present study focuses on assessing the effects of both micro- and macro-level predictor variables on the micro-level outcome variable. More importantly, the present study attempts to understand possible cross-level interaction effects among these variables.

The Role of Sociopolitical Contexts in Communication Research

In light of the multilevel perspective discussed above, it would be interesting to know how researchers have dealt with micro-macro or in other words, individual-context lineage in communication studies. The concept of sociopolitical contexts in communication processes has been taken into account in communication research, though most existing studies do not really model contextual factors. Pan and McLeod (1991) argued that there are four types of relationships in communication processes, including macro to macro, macro to micro, micro to macro, and micro to micro, which are also the routes linking individuals to broader social and political properties. Most existing communication studies deal with micro-to-micro processes. They examine the relationships among micro-level variables, such as the influence of an individual's media use on his or her cognitive, affective and behavioral responses like political learning,

candidate evaluation, vote choice, and political participation. These studies treat macro-level variables more like a container for testing the relationships among micro-level variables. That is, the implicit assumption is that micro-level variables reside within broader social and political contexts.

A geospatial dimension can be easily detected in either the micro to macro route or the macro to micro route. For example, in studies of the knowledge gap hypothesis (e.g., Donohue, Tichenor, & Olien, 1975), the macro-level factors, including media publicity of an issue as well as the extent of social conflict and personal relevance of this issue within the community, influence micro-level mass media use or interpersonal communication through enhanced interest in this issue, and then, result in the macro-level narrowing of knowledge gaps through more learning of this issue among individuals. These micro-macro linkages embed themselves in a social and political context. Similar mechanism can be found in other knowledge gap studies (e.g., Holbrook, 2002; Jerit, Barabas, & Bolsen, 2006; Moore, 1987) at the levels beyond communities.

Other studies that examined the relationships between micro-level variables and macro-level variables by linking individual-level effects with media content within a given social and political context through individual media use behaviors. Media content here is concerned with how messages are produced and conveyed to the public. These social and political contexts are communities, neighborhoods, and counties (e.g., Kosicki, Becker, & Fredin, 1994; Viswanath, Kosicki, Fredin, & Park, 2000); media markets (e.g., Soontae, Jin, & Pfau, 2006); and the whole nation characterized by particular national issues, such as in the studies of framing (e.g., Park & Kosicki, 1995; Pan & Kosicki, 2001) and priming (e.g., Pan & Kosicki, 1997). Studies of presidential elections could

also be viewed as being nested within a given social and political context at the national level. In addition to mass media coverage, other studies (e.g., Huckfeldt & Sprague, 1991; Huckfeldt & Sprague, 1995; McLeod et al., 1996a; Sotirovic & McLeod, 2001) examined the relationships between the nature of discussion network or social network and individual-level effects, such as knowledge, participation and vote choice. Here, the role of characteristics of social network is similar to the role of characteristics of news media content. That is, these social network studies also connect macro-level factors in a given social and political context with micro-level effects. It should be noted that these studies follow the macro to micro route, not the micro to macro route. That is, it is the influence of social, political and institutional products, e.g., media content or social network, on individuals.

It is difficult to study micro-to-macro relationships that attribute macro-level consequences to individual-level variables, such as individuals' contribution to aggregate public opinion or macro-level sociopolitical changes. There are two reasons. First, macro-level consequences "are manifested through institutional policies, practices, and laws and other outcomes that transcend individual judgments"; and second, they are "not reducible to the simple aggregation of individual-level effects" (McLeod, Kosicki, & McLeod, 2002, p. 237). The studies of the knowledge gap hypothesis mentioned above are examples that contain both the macro to micro route and the micro to macro route (also see Pan & McLeod, 1991). Furthermore, there are only a few studies investigating the relationships among macro-level variables and follow the macro-to-macro route, such as mass media's influence on other sociopolitical institutions or on macro-level sociopolitical changes. For example, studies (Hill & McKee, 2005; Shaw, 1999a)

investigated the relationships among campaign strategies, campaign resource allocation, and voter turnout between different states.

Finally, some studies investigate interaction effects between micro-level variables and macro-level variables within a given sociopolitical context. For example, studies examined interactions between contextual variables, which manifest in such community or neighborhood characteristics as community stability and integration, institutional confidence and connectedness, etc., and individual-level variables, such as media use, in predicting individuals' behaviors, such as civic participation (e.g., Kang & Kwak, 2003; Paek, Yoon, & Shah, 2005; Shah, McLeod, & Yoon, 2001). The concept of context can also be found in multilevel studies which test interaction effects between individual-level variables and media characteristics as contextual variables (e.g., Eveland & Dylko, 2006; Eveland & Liu, 2005).

Since communication plays such a crucial role in today's political campaigns, it is important to know whether communication has positive effects, negative effects or no effect in informing voters. The following sections will discuss the theories or the theoretical models and issues related to the important variables assessed in the present study. Moreover, theoretical statements about the nature of the relationships among these variables that the present study expects to find, i.e., the hypotheses, will be proposed accordingly. Most existing studies in communication science examine relationships among variables only at the individual level. Thus, most of the theories and the theoretical models that will be discussed in the following sections are based on relationships only among micro-level variables. However, relevant hypotheses beyond the individual level will be proposed.

Mass Media Use and Political Knowledge

The function of mass media in campaigns should be to provide citizens relevant information about candidates and policy issues, and to mobilize them to engage in political processes as much as possible. Price (1999) defined political information as factual knowledge in the political domain. Political knowledge or political learning is usually measured by recognition of public officials' names, candidates' personal background information, candidates' issue positions, parties' issue positions, and the like.

People's information processing behaviors influence how they learn from news content. There are three levels of these activities, from the lowest level of exposure, the middle level of attention, and to the highest level of elaboration. Attention is the allocation of cognitive focus to news or particular news stories (Eveland, Shah, & Kwak, 2003). Elaboration refers to cognitive processing of news content by connecting it to prior knowledge or experience and deriving implications of news content (Eveland, 2001, 2005). Elaborative activities can increase learning because they increase the strength of memory storage and increase recall by using more mental pathways (Eveland, 2001, 2005).

Research (Chaffee & Schleuder, 1986; Drew & Weaver, 1990; McLeod & McDonald, 1985) indicated that exposure and attention are different constructs, and examining the effects of media use on knowledge solely based on exposure without considering attention would underestimate or misestimate true media effects. Drew and Weaver (1990) argued that exposure is a necessary condition for attention, and people can simply watch television without paying much attention. Eveland and his colleagues (2002) argued that reading newspaper almost equals to engaging in attention activities.

Chaffee and Schleuder (1986) argued that attention requires more cognitive efforts than exposure, and assessing knowledge gain by using attention measure in addition to exposure measure will more accurately understand people's media use behaviors. They said that reading newspaper involves both exposure and attention, and thus, measuring newspaper exposure means simultaneously measuring newspaper attention. However, they said that people can watch television without investing much mental effort so exposure to television may not necessarily involve attention. Therefore, including measures of exposure and attention as well as elaboration if it's possible can more accurately assess the relationship between news media use and political knowledge.

There are differences in the nature of newspaper and television news that may explain why the strength of their associations with knowledge is different. Graber (1994) argued that headlines and anchors' introduction in television news and newspaper's inverted pyramid format of news presentation, which presents the most important and the most recent information first in the sequence order, all help people learn from news.

Newspapers have several unique attributes that help people learn. First, although background and contextual information are put near the end of a news story, the newspaper still contains more background and contextual information than television (Eveland & Scheufele, 2000; Sotirovic & McLeod, 2004). Moreover, newspapers provide more complete and detailed description of news events (Eveland, Seo, & Marton, 2002; Walma Van Der Molen & Van Der Voort, 2000b). Compared with a regular television newscast, a daily newspaper provides not only more news stories but also more information in a single news story (Eveland, Seo, & Marton, 2002). Finally, newspapers allow people to decide their own reading speed (Sotirovic & McLeod, 2004).

Television also has some unique attributes that help people learn. Graber (1990, 2001) argued that audiovisuals, as opposed to verbal stimuli, either spoken or written, have their unique contribution to people's learning from television news. From the perspective of human beings' basic learning capacity, Graber (2001) said that people process information rich in audiovisual stimuli more "quickly, easily and accurately" (p. 24) than information without these kinds of stimuli. According to Graber (2001), audiovisual information enhances memory and thus, increase recall and accuracy because they are useful than verbal stimuli for serving as shortcuts for people to form impressions on unfamiliar people and issues in news. Audiovisual information is more similar to real-life or firsthand experience, which generally activates more sensory neurons, and thereby, increases recall (Graber, 2001). Moreover, Neuman, Just and Crigler (1992) argued that visuals in television news make television a more approachable medium because they provide the kind of contextual information that cannot be found in newspaper, and this merit makes television more effective in communicating abstract and distant issues.

Research on mass media's role in informing people generally argues that both newspaper use and television news use could contribute to political knowledge, and newspaper use is consistently a stronger predictor than TV news use.

Early research (e.g., McLeod & McDonald, 1985) found that newspapers were a more effective medium for news learning than television. Studies found that exposure to newspapers (Drew & Weaver, 1990; McLeod & McDonald, 1985) and attention to newspapers (Chaffee & Schleuder, 1986; McLeod & McDonald, 1985) are positively associated with knowledge. Some studies argued that exposure to newspapers (Drew & Weaver, 1990; Sotirovic & McLeod, 2004) and attention to newspapers (Sotirovic &

McLeod, 2004) are stronger predictors of political knowledge than television news use. Sotirovic and McLeod (2004) found that either exposure and attention to television national news or campaign programs or exposure and attention to newspapers have positive associations with political knowledge, though newspaper's effects are stronger than television's effects. More importantly, they found that attention to newspaper campaign news is the strongest predictor. Druckman (2005) even found that newspaper use, not television news use, leads to political learning.

Without discounting newspaper's contribution, studies, especially more recent ones, found that television news use could also contribute to political learning. Studies (Neuman, Just, & Crigler, 1992; Walma Van Der Molen & Van Der Voort, 2000a, 2000b) argued that television may be an effective or more effective medium for learning from news. Particularly, attention to television news (Chaffee & Schleuder, 1986; Chaffee, Zhao, & Leshner, 1994; McLeod & McDonald, 1985) is a strong predictor of knowledge. Drew and Weaver conducted a series of studies (1991, 1995, 1998, 2001, 2006) of the presidential elections from 1988 to 2004, and found that exposure (1995) and attention to TV campaign news (2001) predict issue knowledge in one of the studies respectively, but exposure and attention to newspaper do not predict issue knowledge in any of the presidential election studies. Other studies (e.g., Norris & Sanders, 2003) found that there is no difference in the amount of learning between television news use and newspaper use.

Furthermore, some studies produced more complex findings regarding the relationships between knowledge and news media use. For example, Chaffee, Zhao, and Leshner (1994) found that both exposure to newspaper and exposure to television news

have positive relationships with three types of political knowledge: party's issue stances, candidate's issue stances, and candidate personal knowledge. They found that although both attention to newspaper and attention to television are positively associated with candidate personal knowledge, attention to newspaper predicts knowledge of parties' issue stances, and attention to television predicts knowledge of candidates' issue stances. More importantly, they found that attention to television campaign news is the strongest predictor of knowledge of candidates' issue stances. Thus, Chaffee, Zhao, and Leshner (1994) suggested that overall television news use and other types of election-related television programs positively influence voters' knowledge gain about candidates' issue stances and their personal information, whereas newspaper seems to contribute more to knowledge of issue stances between the two major parties. Similarly, Chaffee and Kanihan (1997) argued that television is an information source of individual candidates, whereas newspaper is an information source of parties' differences in issue stances.

Among different types of television news, local TV news is controversial due to its "softer" nature. It can be said that soft news is in the middle of a continuum in which one extreme is hard news and the other is pure entertainment. Prior (2003) argued that soft news refers to both the nature of news stories and news programs in which news stories appear. Some studies use the former definition (e.g., McLeod et al, 1996a; Scott & Gobetz, 1992), while other studies use the latter definition (e.g., Baum, 2003; Eveland, 2006; Moy, Xenos, & Hess, 2005; Prior, 2003).

From the perspective of the first definition, news stories can be categorized into hard news or soft news. Patterson (2000) defined soft news as news that is not clearly connected to public policy issues and is "typically more sensational, more personality-

centered, less time-bound, more practical, and more incident-based than other news” (p. 4). Soft news is presented as being more personal and familiar as well as less distant and institutional (Patterson, 2000). Hard news focuses on current policy issues, public events, or social issues, whereas soft news focuses on human interest topics, features or issues unrelated to policies (Scott & Gobetz, 1992). More specifically, hard news is stories about national, international, and local matters of government or urgent criminal issues concerning the general public; and soft news is stories that are not so exigent, and are about non-criminal narratives of ordinary people, lifestyles, and arts (Turow, 1983).

The second definition refers to the differences between traditional hard news sources and nontraditional, new, softer news sources. Soft news in this sense refers to those news formats that provide a mix of both information and entertainment (Prior, 2003). These “entertainment-oriented, quasi-news media outlets” are called soft news media (Baum, 2002). Traditional news formats generally refer to newspaper, and local and national television news; and nontraditional, soft news formats may include talk shows, late-night comedies, and other infotainment programs (see e.g., McLeod et al., 1996b; Moy, Xenos, & Hess, 2005; Prior, 2003).

Is local TV news hard news or soft news? Baum (2002) categorized local TV news into hard news on the basis of his reliability statistical testing results. However, Baum (2002) argued that the dividing line between soft and hard news media is not always clear; and local TV news, for example, is a relatively obscure instance. Owing to economic considerations, local news media have been criticized for focusing on trivial, yet entertaining, aspects of important issues, events, and affairs in order to sell the news to the regionwide audience and survive (Kaniss, 1991). Moreover, Prior (2003) found

that people who have a strong preference for entertainment, but not for news, like soft news and local TV news, whereas people who have a strong preference for news, but not for entertainment, like newspaper. National TV news is liked by those who have a preference for news, but is not significantly associated with entertainment preference at all (Prior, 2003). Therefore, it can be said that local TV news is between hard news and soft news, and seems to be closer to soft news.

Whether soft news also informs citizens as hard news does is inconclusive. Some studies (Baum, 2003; Prior, 2003) argued that generally speaking, there is limited evidence that soft news contributes to learning about politics. Prior (2003) found that soft news consumption has little consistent effects on knowledge about either soft news or hard news. Baum (2003) argued that there is some, though limited, association between soft news consumption and increase in knowledge of some political facts. However, analyzing three surveys conducted in 2004, Eveland (2006) found that there are consistent positive relationships between nontraditional media, including talk radio, talk shows, late night comedies, and the Internet news, and political knowledge, which was measured by public affairs and candidates' issue stances.

Does local TV news inform citizens? Like soft news, the answer is inconclusive. Prior (2003) found that a preference for local TV news has negative effects on knowledge about hard news. Druckman (2005) conducted research on people's local newspaper and local television news use behaviors during the 2000 Minnesota Senate campaign, and found that reading local newspapers, not watching the local television news, is associated with the increase in knowledge of candidate issue stances. Moy, McCluskey, McCoy, and Spratt (2004) found that attention to both local newspapers and local television news is

positively associated with political knowledge, but there is no significant difference between newspapers and television news in the extent to which they contribute to people's political knowledge gain. However, in this study (Moy et al., 2004), the political knowledge measure is respondents' self-perceived or -assessed levels of knowledge about local news and politics, and as Druckman (2005) pointed out, this measure does not assess knowledge about election campaigns specifically.

Research on the effect of televised political ads on people's political knowledge is relatively mixed compared with traditional news sources. A series of survey studies of election campaigns conducted by Drew and Weaver showed that effects of exposure and attention to televised political ads on knowledge of candidates' issue positions are found only in the 1990 senatorial election (Weaver & Drew, 1993), but not in any of the studies of presidential elections (Drew & Weaver, 1991; Drew & Weaver, 1998; Drew & Weaver, 2006; Weaver & Drew, 1995; Weaver & Drew, 2001). Analyzing six presidential and Senatorial campaign surveys from 1984 to 1992, Zhao and Chaffee (1995) found that attention to television news is a consistent and stronger predictor of knowledge of candidates' issue positions than attention to televised ads. Although they found that attention to ads predicts issue knowledge in some of the six races they analyzed, Zhao and Chaffee (1995) concluded that "televised political advertising is not a channel to which the enlightenment of the electorate can – or need – be entrusted" (p. 54).

On the other hand, analyzing the 1992 ANES survey data collected during the presidential campaign, Briars and Wattenberg (1996) found that recall of televised ads is a stronger predictor of knowledge of candidates' issue positions and evaluation of

candidates based on issues than exposure and attention to newspaper and television news, and recall of televised ads is still a strong predictor later in the campaign when both types of news media use are not significant. Particularly, Briars and Wattenberg (1996) found that recall of negative political ads is positively associated with issue knowledge and issue-based candidate evaluation in the final stage of the campaign. They suggested that political campaign advertising plays an important role in both voters' political learning and evaluation of candidates based on this learning. Ridout, Shah, Goldstein, and Franz (2004) also found that people learn from political ads about candidates and their issue positions above and beyond the sources of TV news and newspaper.

The majority of studies provide evidence that mass media, especially newspaper and television news, contribute to people's political knowledge gain. Most studies found that televised political advertising is positively related to political knowledge more or less, though its effect seems weaker and instable than other traditional news sources like TV news and newspaper. Thus, it is predicted:

H1a: People who have more newspaper use will have more political knowledge than people who have less newspaper use.

H1b: People who have more television news use will have more political knowledge than people who have less television news use.

Political Discussion and Political Knowledge

Talk about politics is an essential component of the democratic process. Political philosophers, such as John Dewey and Gabriel Trade, have emphasized the importance of political discussion among citizens in a democracy. According to Dewey (1954), talk or communication, association, interaction or intercourse among citizens is a critical

component of a democratic practice and plays an important role in democratic life. He thought that the key to a better democratic public is “the improvement of the methods and conditions of debate, discussion and persuasion” (Dewey, 1954, p. 208). Tarde (1898) argued that before the coming of the press, only conversations among citizens function as a check on governments.

The notion of political discussion can be traced back to the origin of public spheres. A public sphere is a domain of social life in which public opinion can be formed (Habermas, Lennox, & Lennox, 1974). A public sphere is the sphere of “public discussion, public knowledge, and public opinion” (Starr, 2004, p. 5). A part of the public sphere is formed in every conversation in which individual citizens, acting as a public body, have the freedom to assemble and express their opinions about things concerning general interest (Habermas, Lennox, & Lennox, 1974).

The relationship between talk about politics and the formation of public spheres cannot be fully explained without taking into account the role of media information in this process. The nature of interpersonal political discussion and public spheres fostered by it has been greatly influenced by the development of information and communication industry. Because of the lack of communication networks, including postal service and regular flow of information like periodical press, public spheres did not come into being among European societies before 1600 (Starr, 2004). Later, with the coming of capitalism, coupled with printing revolution, the elite class implemented control of the information and print industry through censorship and surveillance (Starr, 2004). Thus, it can be said that public spheres in the early days were generally associated with talks among social elites. However, conversation, discussion and debate among ordinary

citizens in salons, coffeehouses, clubs and other types of reading and learning groups should not be ignored in this regard (Tarde, 1898; Zaret, 2000). The fact that public spheres did not always develop inside the elite class was also exemplified in such events as the English Revolution (Starr, 2004).

At the present time, making decisions based on opinions generated from well-informed reasoning and deliberation is also emphasized in the constitutional design of the American democratic system. The Founders of American democracy preferred a representative democracy to a participatory democracy. The rationale behind this preference is that a representative democracy provides a “constitutional space” between citizens and the government (Pearson, 2004, p. 60), and this space provides elected representatives time and detachment to deliberate and improve public opinions in order to minimize demagoguery, which is more easily to occur in direct democratic systems (Pearson, 2004). That is, what is emphasized here is public decision making based on informed, reasoned and deliberated opinions, not based on temporary passion and information. In sum, political discussion has played a critical role throughout the historical development of democracy.

Political discussion is a multidimensional construct based on place or occasion, content, and discussion partners (Scheufele, 2000). Researchers use various terms to describe the notion of talking about politics, such as political discussion, political conversation, political talk, political deliberation, and the like. Political discussion is generally used to refer to similar notions that fall into this category of political behavior. These notions can be placed in a continuum ranging from casual, extemporaneous conversations to more formal, purposeful discussions.

According to Tarde (1898), conversation is defined as “any dialogue without direct and immediate utility, in which one talks primarily to talk, for pleasure, as a game, out of politeness” (p. 308). Kim, Wyatt, and Katz (1999) defined “political conversation” as “all kinds of political talk, discussion, or argument as long as they are voluntarily carried out by free citizens without any specific purpose or predetermined agenda” (p. 362). This perspective of political talk is also termed “ordinary political conversation” by Wyatt, Katz, and Kim (2000; Wyatt, Kim, & Katz, 2000).

Some use the term “political discussion,” though their conceptualizations are not different from aforementioned conceptualizations of political conversation. Conover, Searing, and Crewe (2002) defined political discussion as “conversations that are spontaneous, unstructured and without clear goals” (p. 24). Barabas (2004) defined political discussion as discussing or chatting about politics with family members, friends, neighbors, or co-workers informally. Nevertheless, some scholars think political discussion is different from casual talk. Scheufele (2000) argued that political talk is different from casual conversation because it is politics-centered and more oriented by the goals of exchanging information, expressing one’s opinions and evaluating other people’s opinions. However, those (e.g., Dewey, 1954; Tarde, 1898) who hold the view that informal conversation among citizens plays an important role in democratic life seem to suggest that citizens do not intentionally separate conversations about political issues from talks about other issues.

A stricter form of political discussion is political deliberation. Deliberation is defined as “a wide range of competing arguments is given careful consideration in small-group, face-to-face discussion” (Fishkin, 1995, p. 34). It is “a request for a certain kind of

talk: rational, contained, and oriented to a shared problem” (Sanders, 1997, p. 370).

Dutwin (2003) argued that the two major characteristics of deliberation are equality, meaning that all voices are equally heard, and rationality, meaning that reasoned arguments are presented. Manin (1987) argued that the process of deliberation helps individuals to figure out what they really want for themselves with respect to making political decisions.

Judging from these definitions, casual political conversation is obviously different from political deliberation. Some people think that conversation is very different from other more serious, regulatory, purposeful forms of political discussion, such as deliberation, which is widely acknowledged to be truly beneficial for a democracy. This school of thought suggested that if conversation meets the standards of deliberation, it could be beneficial to democracy. Schudson (1997) argued that public, norm-directed, common end-oriented problem-solving conversations, but not spontaneous, free, non-utilitarian, pleasure-oriented sociable talks, are desirable in a democracy. The former notion is similar to deliberation. In Fishkin’s (1991) ideal model of democracy, deliberation, along with political equality and nontyranny, are the three democratic conditions that need to be satisfied. However, it should be noted that although political deliberation is widely regarded as a primary way to revive and improve American democracy, it hasn’t been fully realized yet and its feasibility is still doubted.

Is there any empirical evidence that conversation among ordinary citizens also leads to something good for democracy? Some researchers (e.g., Wyatt, Katz, & Kim, 2000; Wyatt, Kim, & Katz, 2000) believed that informal conversation about politics among citizens has important democratic implications and is meaningful for citizens’

democratic life. Thus, Wyatt, Katz, and Kim (2000) suggested that it should be encouraged along with other types of political discourse, such as formal, purposeful deliberation and debate. Dutwin (2003) suggested that political conversation prepares citizens to participate in political deliberation.

In the present study, the conceptualization of political discussion excludes more formal, goal-oriented political talk, such as deliberation, and focuses on how frequently people engage in discussing politics with others in various occasions.

Judging from the historical development of public spheres, it can be concluded that there is an inseparable relationship among media, information, talk about politics, and formation of opinions. As discussed previously, political campaigns today take an integrated marketing communications approach. Communication in campaigns consists of various phases, including advertising, news, interpersonal involvement, and the like. Campaign strategists and practitioners recognize that interpersonal contact is an important communication tool for grassroots efforts so they visit and talk to voters, especially opinion leaders. They also hope that these people whom they personally contact can help them disseminate the messages.

Both political discussion and mass media could be people's sources of learning about politics. News media are generally regarded as the source of the content of political discussion or as the stimulus or promoter of interpersonal discussion about politics. Tarde (1898) argued that it is conversation that is "the most continuous and the most universal, its invisible source, flowing everywhere and at all time in unequal waves" (p. 307), and media is only one of the sources of opinion. The theory of two-step flow of communication puts more emphasis on interpersonal discussion than on news media.

According to the theory of two-step flow of communication (Katz & Lazarsfeld, 2006), in the first stage information of news media is transmitted to only those who are well-informed, and in the second stage those who receive information from news media in the first stage inform and interpret the messages to other people through interpersonal discussion. A relevant notion is from the news diffusion research, asserting that some segments of the public learn about a news story not from the major news diffusing source -- mass media, but from interpersonal communication sources (Larsen & Hill, 1954; Rogers, 2000). Delli Carpini and Williams (1994) found that people use information from both mass media and interpersonal sources when they engage in conversations about politics. In political campaigns, both mass communication and interpersonal communication can be voters' source of information about the election, and the interplay of these two could also influence people's knowledge, opinions, attitudes and behaviors with regard to the election.

Research has showed that there is a close relationship between mass media use and interpersonal political discussion, and both can lead to political knowledge gain. Eveland and his colleagues (2005a) found that there are direct unidirectional causal relationships from concurrent news media use, operationalized as television news use and newspaper use, and concurrent interpersonal political discussion to concurrent political knowledge as well as indirect unidirectional causal relationships from prior news media use and prior political discussion to concurrent knowledge through concurrent communication variables. As for the relationship between the two communication variables, they found that there are direct causal relationships from either prior discussion or concurrent discussion to concurrent news media use, and a slightly less strong causal

relationship from concurrent news media use to concurrent discussion (Eveland et al., 2005b).

Empirical research generally asserts that the more frequently people discuss politics or news, the more knowledgeable they are about politics (Bennett, Flickinger, & Rhine, 2000; Eveland & Thomson, 2006; Holbert, Benoit, Hansen, & Wen, 2002; Kennamer, 1990; Robinson & Levy, 1986; Scheufele, 2000; exceptions e.g., de Boer & Velthuijsen, 2001). Conducting a survey during the 1988 presidential election, Kennamer (1990) found that political conversations are positively related to learning about the campaign. Bennett, Flickinger and Rhine (2000) analyzed multiple surveys conducted in Britain and the U.S. across years, and concluded that political discussion is a predictor of knowledge about government and public affairs. Robinson and Levy (1986) found that more talking about the news, especially national and international news, results in better understanding of the news. Eveland and Thomson (2006) found that political discussion and political knowledge are positively associated. Scheufele (2000) found that discussing politics and public affairs with others is positively related to factual political knowledge. Holbert et al. (2002) found that political discussion is positively related to knowledge of presidential candidates' issue stances. Although the majority of studies support a positive relationship between political discussion and political knowledge, de Boer and Velthuijsen (2001) found that engaging in conversations about the news is not associated with factual political knowledge.

Eveland (2004) showed that political discussion could help increase people's learning about political issues through an information processing mechanism called elaboration. As mentioned previously, elaboration refers to cognitive processing of news

content by connecting it to prior knowledge or experience and deriving implications of news content (Eveland, 2001, 2005). However, it should be noted that though interpersonal political discussion could contribute to increase in political knowledge, the problem of misinformation would result in reverse consequences. That is, uninformed discussion partners would convey incorrect, ungrounded, and deceptive political information, and thereby, hinder meaningful political learning (Eveland, 2004).

Based on the above discussion, it is predicted:

H2: People who have more political discussion will have more political knowledge than people who have less political discussion.

Hypotheses of Macro-level and Interaction Effects

Communication variables in a person's immediate environment would have some overall influence on his or her learning about things. The information flow perspective (see Books & Prysby, 1991 etc.) argued that variations in ambient information, which may come from personal observation, social interaction, organizational involvement, and mass media, produce contextual effects. Southwell (2005) argued that studies (e.g., Chaffee & Wilson, 1977) have suggested that "the sheer physical prevalence of information in an environment should be predictive of individual likelihood of exposure to that information" (p. 117). This proposition is held in the present study.

The campaign-level variables are indicators of campaign intensity, including televised political advertising, candidate appearances, and contacts from campaigns. These three variables, which constitute communication contexts in different geospatial areas, would influence people's learning about the campaign. Thus, the following hypotheses are posed:

H3: The increase in televised political advertisements will be positively associated with the increase in political knowledge.

H4: The increase in candidate appearances will be positively associated with the increase in political knowledge.

H5: The increase in campaign contacts will be positively associated with the increase in political knowledge.

In addition to examining the direct effects of the campaign-level variables, this study attempts to understand possible cross-level interaction or moderation effects. The information flow approach argued that contextual effects occur when the nature of information flow structured by the context influences how people within the context react to this locally varying information (see Books & Prysby, 1988; Books & Prysby, 1991; Books & Prysby, 1995; Burbank, 1997; Erbring & Young, 1979; Huckfeldt & Sprague, 1995; McLeod, 2001; Prysby & Books, 1987), and the four primary sources of information are personal observation, social interaction, organizational involvement, and mass media (Books & Prysby, 1988; Books & Prysby, 1991; Books & Prysby, 1995; Prysby & Books, 1987). According to the Pew survey in the 2000 election, the order of people's first four campaign information sources are newspapers, cable TV, network TV, and local TV (Farnsworth & Lichter, 2007). Thus, in the study, people's the information sources include mass media, e.g., newspapers, network TV news, cable TV news, and local TV news, and interpersonal political discussion. The theoretical logic here is that newspapers, TV news, and political discussion carry information of televised political ads, candidate appearances, and campaign contacts, which vary across contexts.

Assessing interaction effects can help understand the geospatial variation of informing effects of communication.

In political campaigns, the same set of campaign messages would be conveyed through both newspapers and televised ads. People in the places with more televised ads are more likely to encounter the campaign messages in the ambient environment and be more familiar with these messages than those in the places without the advertisement information in the environment. Goldstein and Ridout (2004) categorized the Wisconsin Advertising Project data, which was used in the present study, as one of the measures of “the information environment of a particular campaign” (p. 215). Thus, reading the same or relevant information on newspapers reinforces people’s memory of the information. Having the foundation of the campaign messages makes the same or relevant messages in the newspaper easier to comprehend. Repetition of message exposure makes people learn more when reading newspaper. Thus, it is predicted:

H6a: The relationship between newspaper use and political knowledge will be stronger in the places with more political advertising than in the places with less political advertising.

According to a recent Gallup Poll research, the first four news sources that people in the U.S. use daily are as follows: local television news (55%), local newspapers (44%), the evening network news and cable news (34-35%; both are at the 3rd place); and only about 7% of the respondents said they read national newspapers on a daily basis (Saad, 2007). The fact that more people watch local TV news than network and cable news, and most people read local newspapers, not national newspapers helps manifest the contextual differences of these information sources emphasized in the study. Candidates’

visits to town would definitely be covered by local media, such as local newspapers.

Thus, it is predicted:

H6b: The relationship between newspaper use and political knowledge will be stronger in the places with more candidate appearances than in the places with fewer candidate appearances.

In political campaigns, people would encounter the same set of campaign messages from multiple channels, including brochures, pamphlets and flyer inserts in newspapers as well as direct contact from the campaigns or other groups either face to face on various occasions or on the phone. People in the places with more campaign-related contacts are more likely to encounter the campaign messages in the ambient environment and be more familiar with these messages than those in the places without the information in the environment. Thus, based on the same logic of H6a, reading the same or relevant information in newspapers reinforces people's memory of the information. Repetition of message exposure makes people learn more when reading newspaper. So, it is predicted:

H6c: The relationship between newspaper use and political knowledge will be stronger in the places with more campaign contacts than in the places with fewer campaign contacts.

TV news can be the platform of both news content and televised political ads. Goldstein and Freedman (2002b) argued that "political ads are most often aired on local and national news broadcasts" (p. 731). Because political ads run on news, TV news exposure can be the surrogate of exposure to televised political ads. TV news use, including national network news, cable news, and local news, can serve as a proxy

measure of people's advertising exposure magnitude at the individual level. Therefore, it is predicted:

H7a: The relationship between TV news use and political knowledge will be stronger in the places with more political advertising than in the places with less political advertising.

Unlike serving as a proxy of ad exposure as in H7a, TV news content itself is an information source for campaign messages. Candidates' visits to town would definitely be covered by local TV news. The volume of the coverage of candidate visits on local TV news would reflect the volume of candidate visits locally. Information about candidates' travel from place to place would also be broadcast on network and cable TV news. Unlike the volume of this kind of coverage on local TV news that would vary from place to place, the coverage of candidate appearances on network and cable TV news should be the same across the nation. However, based on the campaign's targeting strategies, candidates would visit those battlegrounds more frequently than non-battlegrounds. Accordingly, battlegrounds would be covered more heavily on network and cable TV news than non-battlegrounds. In addition, there should be more campaign information available in the ambient environment within those frequently visited places. When people watch or hear their counties, cities or states in network and cable TV news, they would become more attentive to the news about candidate visits and relevant campaign messages, and thereby, increase their political knowledge. Thus, overall, in the places with more candidate appearances, people would gain more political knowledge from watching TV news. Thus, it is predicted:

H7b: The relationship between TV news use and political knowledge will be stronger in the places with more candidate appearances than in the places with fewer candidate appearances.

Based on the same logic of H6a and H6c, the same set of campaign messages would be conveyed through multiple channels. People in the places with more campaign-related contacts are more likely to encounter the campaign messages in the ambient environment and be more familiar with these messages than those in the places with fewer campaign contacts. Thus, when people are exposed to the same or relevant campaign messages on TV news, their memory of the messages is reinforced. Repetition of message exposure makes people learn more when watching TV news. Thus, it is predicted:

H7c: The relationship between TV news and political knowledge will be stronger in the places with more campaign contacts than in the places with fewer campaign contacts.

Interpersonal political discussion is also an important information source of campaign messages. The theory of two-step flow of communication (Katz & Lazarsfeld, 2006) and the news diffusion research (Larsen & Hill, 1954; Rogers, 2000) asserted that some people rely on talking with other people to learn about news. In the context of presidential campaigns, the content of interpersonal political discussion may include a variety of campaign messages, such as candidates' issue stances, candidates' personal characteristics, candidates' visits, specific political ads, and the like. From the information flow perspective (see Books & Prysby, 1991 etc.), the frequency and content of political talk should reflect local campaign situations. Discussion content carries

campaign messages. People in the places with more campaign information in the ambient environment are more likely to build the foundation of political knowledge. So, when people in the places with more televised ads, candidate appearances, and campaign contacts discuss politics with each other, they are more likely to increase their knowledge of the election than people in the places with less campaigning. Thus, the following hypotheses are posed:

H8a: The relationship between political discussion and political knowledge will be stronger in the places with more political advertising than in the places with less political advertising.

H8b: The relationship between political discussion and political knowledge will be stronger in the places with more candidate appearances than in the places with fewer candidate appearances.

H8c: The relationship between political discussion and political knowledge will be stronger in the places with more campaign contacts than in the places with fewer campaign contacts.

Figure 2.1 shows the proposed conceptual model of the present study, which indicates the major independent and dependant variables, and the predicted relationships between them.

Figure 2.1: The proposed conceptual model of the present study.

CHAPTER 3

METHODS

This chapter discusses the research design, the data files, the measurement of the concepts, and the data analysis plan of the present study.

Data Sources

Data for this study came from three separate studies conducted during the 2000 presidential election in the U.S., including National Annenberg Election Survey (NAES), Wisconsin Advertising Project, and a data file on candidate travel compiled by Professor Daron Shaw in the Department of Government at University of Texas at Austin. In the present study, each respondent is nested within a certain communication context that is created by some geospatial characteristics resulted from the campaign's targeting strategies. That is, communication contexts are created by campaign intensity, which would vary in such geospatial units as state and media market. Therefore, there are two levels in this study -- the individual level and the campaign level (the contextual level). The variables at these two levels are from the following data files respectively.

Individual-level Data

For all the variables at the individual level, this study analyzed the data gathered as part of National Annenberg Election Survey (NAES) during the 2000 presidential election. The 2000 NAES was done by the Annenberg School for Communication and

the Annenberg Public Policy Center of the University of Pennsylvania. Princeton Survey Research Associates and Schulman, Ronca & Bucuvalas Inc. directed some components of this project like sampling, fieldwork, data processing, and so on. The 2000 NAES was in the field for about fourteen months before and after the election. 79,458 adults in the U.S. were interviewed, and a total of 100,626 interviews were conducted. All the interviews were conducted by telephone. The 2000 NAES contains several sub-studies, including the national rolling cross-section study; cross-section studies in important states like Iowa, New Hampshire, Ohio, etc.; pre-post panel studies around such major events as presidential primary elections, presidential nominating conventions, the Bush-Gore debates, and the general election; multiple interview panel studies; and some other minor studies. Each respondent was initially interviewed as part of one cross-section study, and some of them were re-interviewed to form other types of sub-studies of the 2000 NAES as indicated above. Cross-section interviews were conducted on a daily basis, and about 50 to 300 interviews on average were conducted each day. Each interview was about 30 minutes long on average, and was conducted in either English or Spanish. The 2000 NAES asked questions mainly about the 2000 presidential election as well as some questions about general politics and voting in the elections of Senate and House of Representative. The main study of the 2000 NAES -- the national rolling cross-section study, which was conducted from December 14, 1999 to January 19, 2001, interviewed a total of 58,373 respondents. The present study used the data file, which is part of the national rolling cross-section study conducted between October 3 and November 6, 2000, and contains a total of 10,825 interviews in 49 states and 199 media markets.

All the 2000 NAES cross-section studies, except some minor studies, used rolling cross-section (RCS) samples. RCS, which is a special type of repeated cross-section design, distributes a series of cross-sections by a predetermined equal time interval over a period of time (Kenski, 2004a). In the case of the 2000 NAES, the time interval was day because the NAES conducted a cross-section survey to collect data from a random sample of the same population every day during the presidential campaign period. In other words, a RCS design divides the sample, i.e., randomly selected members of the population, into a number of “replicates” (Kenski, 2004b; Weisberg, 2005). In the 2000 NAES, each replicate consisted of fifty phone numbers (Kenski, 2004b). Both a phone number’s chance of being selected from the population to be included in the initial sample, and the number’s chance of being put into a specific replicate were random (Kenski, 2004b). Each day a certain number of replicates, i.e., a new set of phone numbers, were added to the pool of numbers to be calling, and how many replicates were released to the field was decided based on the number of interviews desired to be completed that day (Kenski, 2004b). The 2000 NEAS suggested a ratio of six sampled phone numbers to 1 completed interview (Kenski, 2004b). Each sampled phone number was called by interviewers a maximum of 18 times over 14 days.

That is, the NAES intended to treat every selected phone number equally, and to make the sample of any single day as representative as possible so on each day they balanced the proportion of respondents who were called a few times and those who were called many time before completing an interview (Kenski, 2004b; Waldman, 2004). A RCS design attempts to make each cross-section sample truly random (Kenski, 2004a). Thus, the NAES argued that “the day on which a respondent was interviewed may for

purposes of analysis be considered a random event” (Waldman, 2004, p. 14). Thus, it can be said that in the RCS design, each of the cross-sections is conducted among randomly selected samples from the same population (Kenski, 2004a; 2004b). However, it should be noted that a RCS design may have analytical challenges owing to small sample size of a single cross-section (Brady & Johnston, 2006). Moreover, a RCS design cannot be used to assess individual-level changes over time because individuals sampled are different from one cross-section to another (Kenski, 2004a). That is, there are two appropriate types of unit of analysis in a RCS design – the individual at a single point in time or the population over time (Kenski, 2004b).

There are two steps in the selection of the samples in the NAES cross-section studies. First, all households were randomly sampled by randomly generated telephone numbers. The first eight digits of a 10-digit telephone number, including the 3-digit area code, the 3-digit exchange, and the 2-digit bank, “were randomly generated proportional to telephone company estimates of the count of residential numbers in each combination of area code, exchange, and bank” (Waldman, 2004, p. 13-14). As for the last 2-digits suffixes, they were generated completely at random. Second, interviewers randomly selected one of the adult residents aged 18 or older to interview at each sampled household. Depending on the number of the adults in the household, different random selection schemes were followed. Regarding other aspects of the fieldwork, interviews were conducted between 10 a.m. and 11 p.m. of the respondent’s local time. The NAES said that the response rate was 31%¹.

¹ The formula for calculating the overall response rate is: (completed interviews) / (total numbers sampled – ineligible households – e * indeterminate status). “e” is an estimated percentage of numbers of indeterminate status that are not eligible households.

Political campaign strategies are dynamic, which means that sometime during the course of the campaign, a specific place may receive a lot of campaigning, and at other times this same place may receive little campaigning. In addition, communication effects can fluctuate and diffuse over the course of the campaign. Communication effects can be either temporary or enduring because communication can either take effects instantaneously or cumulate over extended period of time. The time when the data are collected should not be a major issue in a one-shot study, such as the present study. However, given the nature of communication effects in political campaigns, the time frame of all the data files used in this study was made as comparable as possible. Therefore, this study investigated communication effects around the general election and used data collected during the time closest to the Election Day. The Election Day was November 7, 2000.

There are three variables about campaign intensity at the campaign level. These three variables come from three separate sources, and were incorporated into the NAES data file.

Televised Political Ads

The first variable – televised political ads – comes from the Wisconsin Advertising Project² conducted during the 2000 U.S. presidential election by Department of Political Science at University of Wisconsin – Madison (Goldstein, Franz, & Ridout, 2002). The data in this project were bought from Campaign Media Analysis Group

² “The data were obtained from a joint project of the Brennan Center for Justice at New York University School of Law and Professor Kenneth Goldstein of the University of Wisconsin-Madison, and includes media tracking data from the Campaign Media Analysis Group in Washington, D.C. The Brennan Center-Wisconsin project was sponsored by a grant from The Pew Charitable Trusts. The opinions expressed in this article are those of the author(s) and do not necessarily reflect the views of the Brennan Center, Professor Goldstein, or The Pew Charitable Trusts.” (direct quote from the code book)

(CMAG), which used information gathered especially by Competitive Media Reporting's Ad Detector technology, a satellite transmissions tracking system. They monitored political advertising activities of the national network television stations, including ABC, CBS, NBC, and Fox, 25 national cable networks such as CNN, ESPN, etc. as well as local advertising in the largest 75 media markets (DMAs) in the U.S. They argued that more than 80 percent of the U. S. population lives in these 75 media markets (Goldstein & Freedman, 2002a).

The Wisconsin Advertising Project collected both quantitative, i.e., ad frequency data, and qualitative information, i.e., storyboard (content), of televised political advertisements. The frequency data contained each ad's targeting information, such as the date, the time, the length, the station, the program, the media market, the estimated cost, and the like. The storyboards were coded to obtain such information as the sponsor, the tone, the issues, the purpose, the race, and the like. Finally, the targeting information and the coded content information were merged into a single data set, which contained about 35 questions in total. According to Goldstein and Ridout (2004), these data can be aggregated on a variety of variables, such as specific ads, media markets, types of ad, and the like. On the basis of the high correlation between the CMAG tracking data regarding broadcast information of the ads and billing invoices obtained from television stations, they argued that the CMAG data is valid (Goldstein & Freedman, 2002a; Goldstein & Ridout, 2004).

Candidate Appearances

The second variable about campaign intensity -- candidate appearances -- comes from a data file compiled and provided by Professor Daron Shaw at University of Texas

at Austin. This data file is published in Professor Shaw's book *The Race to 270* (2006).

The number of appearances of both presidential candidates and vice presidential candidates of the two major parties -- Bush, Gore, Cheney, and Lieberman -- was estimated based on the information provided by the Republican and the Democratic campaigns, and validated with the information published in the *Hotline* and *The New York Times* (Shaw, 2006). Shaw (2006) argued that the two campaigns are the primary source of this appearance information because they are more likely to report any last-minute update of the candidates' schedules. Scheduled activities that do not actually happen, of course, should not be included in the final data set.

The number of appearances made by each of the four candidates in public occasions was recorded at the media market and the state levels, and multiple appearances made in the same place on the same day were counted independently (Shaw, 2006). Shaw (2006) argued that the rationale behind this recording criterion is that free media coverage that candidates' public appearances may earn is what is desired to be measured; therefore, each appearance incident has its own weight. Besides, the purposes of the candidates' appearances, including official duties, campaign-related events, and fund raising, were indicated in the information provided by the campaigns (Shaw, 2006). Fund-raising activities and vacation days were not recorded in order to decrease the possibility that non-public events may take up a major portion in the analysis result (Shaw, 2006). The data reflect the candidates' travel situation between August 20 and November 6, 2000.

Campaign Contacts

The third variable about campaign intensity -- campaign contacts -- also comes from the data files gathered as part of National Annenberg Election Survey (NAES) during the 2000 presidential election. The number of campaign contacts that each individual respondent received was aggregated by media market and state to form the campaign-level campaign contact variables.

Merging Data Files

In this study, the hypotheses are proposed based on communication contexts as the theoretical unit of analysis. Communication contexts can be either state or media market because campaign intensity would vary by these two kinds of geospatial units. Both geospatial concepts, i.e., state and media market, can help demonstrate the geographical mapping nature of this study. Thus, both state and media market were used as the unit of analysis at the campaign level. That is, both state and media market were used as the merging variables to combine the data file of the individual-level variables and the data files of the campaign-level variables.

Goldstein and Freedman (2002b) argued that political ads are bought according to media markets, and media markets in the same state are often treated very differently. Defined at the county level, media markets are “the geographic definition of the combined viewership for an area’s TV stations and the combined listenership for an area’s radio stations” (Hutchens, 1999, p. 123). Which media market a county belongs to is decided by which area’s TV or radio stations have the largest portion of combined viewership and listenership from the residents (Hutchens, 1999). Thus, when budgeting for political advertising, campaigns consider the geographic relationship between media

markets and political areas, such as congressional districts, statewide, and other demarcation (Hutchens, 1999). However, media markets do not consider newspaper readership. Hutchens (1999) argued that high-circulation daily newspapers are not a major communication method used in political campaigns. One of the reasons is that it is difficult to use newspaper ads to target voters with specific demographic profiles (Edmonds, 1999; Hutchens, 1999). It can be said that because newspapers can reach “diverse, mass audiences across a city, county, or even state” (Edmonds, 1999, p.156), they are not usually considered as part of targeting strategies in political campaigns.

The purpose of using both state and media market as the campaign-level geospatial unit in the present study is to understand whether they produce different results. It is speculated that using media market as the unit of analysis should produce more precise findings because larger states may contain multiple media markets, each with different levels of campaign intensity, and a media market may cover a part of a battleground state and a part of a non-battleground state. For example, Ohio is a battleground state, and has twelve different media markets (see Figure 3.1). Ohio has four media markets of its own, including Columbus, Cleveland, Lima, and Zanesville, and eight media markets shared with other states. For instance, one of the media markets in Ohio – Cincinnati – covers part of Indiana and part of Kentucky, which are not characterized as battleground states in the recent U.S. presidential elections. On the contrary, Delaware has no media markets of its own (see Figure 3.2), but is encompassed by two media markets sharing with other states – Philadelphia (Pennsylvania and New Jersey), and Salisbury (Maryland). Pennsylvania is viewed as a battleground state, but Delaware, New Jersey, and Maryland are not.

Figure 3.1: Designated Market Areas (DMAs) of Ohio (source: *Polidata Demographic and Political Guides*).

Figure 3.2: Designated Market Areas (DMAs) of Delaware (source: *Polidata Demographic and Political Guides*).

Therefore, two merging variables – state and media market -- were used to merge these data files, including National Annenberg Election Survey (NAES), Wisconsin Advertising Project, the date file of candidate appearances, and the data file of campaign contacts. The first merging variable -- state – is contained in all the existing data files used in the present study except the Wisconsin Advertising Project. The second merging variable – Designated Market Areas (DMAs) or media market – is contained in all these data files. According to The Nielsen Company, there are a total of 211 media markets in 2000.

There were three major steps in the procedure for merging the individual-level data file with the three campaign-level data files. The first step was to arrange the three campaign-level data files by state and media market. Second, these three new files were merged with the individual-level data file to generate a single data file. Finally, extensive checking and validation were done after merging all the data files in order to make sure they were merged accurately.

Measures

There are four individual-level independent variables, four individual-level control variables, three campaign-level independent variables, and one individual-level dependent variable in the present study. Table 3.1 shows the descriptive statistics of the individual-level variables, which are all contained in the NAES data file. The Appendix provides the question wording of the NAES items used to construct the individual-level variables in the study.

Individual-level Independent Variables. The four predictors at the individual level are newspaper use, network and cable television news use, local television news use, and political discussion.

Newspaper use was constructed from one exposure item (days in the past week reading a daily newspaper) and one attention item (attention to newspaper articles about the presidential campaign). Because the cases of “don’t know” and “no answer” responses were extremely few, they were treated as missing values. Because these two items used different metrics, they were standardized before constructing the index ($r = .35$; $\alpha = .52$).

Network and cable television news use was constructed from two exposure items (days in the past week watching national network news or cable news) and one attention item (attention to stories about the presidential campaign on national network or cable TV news). The two exposure items -- watching national network news and cable news -- were weighted by 1/2 to make exposure and attention measures have equivalent weight for the additive index of network and cable television news use. Because the cases of “don’t know” and “no answer” responses were extremely few, they were treated as missing values. Because the exposure and attention items used different metrics, they were standardized before constructing the index ($r = .33$; $\alpha = .49$). Local television news use was constructed from one exposure item (days in the past week watching local TV news) and one attention item (attention to stories about the presidential campaign on local TV news). Because the cases of “don’t know” and “no answer” responses were extremely few, they were treated as missing values. Because the exposure and attention items used different metrics, they were standardized before constructing the index ($r = .32$; $\alpha = .48$).

The political discussion variable was constructed from two items: the number of days in the past week respondents discussed politics with their family or friends, and people at work or on the Web ($r = .47$; $\alpha = .63$). Because the cases of “don’t know” and “no answer” responses were extremely few, they were treated as missing values. The wording of the second item is not good because people at work and people on the web are very different. However, this study focuses on sheer frequencies of discussion activities. Therefore, discussion partners’ characteristics, for instance, their relationships, and the anonymity issue, are not variables of concern in the present study.

Individual-level Control Variables. Four demographic variables, including age, gender, education, and income, were statistically controlled in the analysis. The age measure ranged from 18 to 96 years old ($M = 46.07$, $SD = 16.58$). Gender was coded with males as 1 (45.2%) and females as 0 (54.8%). Respondents were asked to give the last grade or class they had completed in school. The education measure was an ordinal variable with 9 categories ranging from grade eight or lower to graduate or professional degree (median = 5 [some college, no degree]). Income was an ordinal variable with 9 categories ranging from less than \$10,000 to \$150,000 or more (median = 5 [\$35,000 to less than \$50,000]).

Individual-level Dependent Variable. Political knowledge was constructed from the twenty items asking respondents’ knowledge of candidates’ positions on thirteen issues. In these items, respondents are asked whether or not Bush or Gore supports: biggest tax cut, cutting taxes by using the Medicare surplus, paying the national debt, biggest increase in social security spending, investing social security in the stock market, paying senior citizens’ prescription drugs, providing health insurance for every child,

providing patients the right to sue health maintenance organizations, abortion, the sale of RU-486, handgun licenses, owning concealed handguns, and selling oil reserve for the winter heating demand ($\alpha = .84$). If respondents place the two candidates in the correct absolute position on an issue, they were given one point. “Don’t know” and “no answer” were treated as incorrect answers and given no point. Respondents’ responses to the 20 items were tallied. The average of the points earned was calculated and then a percentage index was constructed.

Campaign-level Variables. The three predictors at the campaign level are televised political ads, candidate appearances, and campaign contacts.

Televised Political Ads. In the present study, this variable refers to the total amount of televised political advertisements a state or a media market receives during the presidential election campaign. The televised political ads variable included the ads sponsored by candidates (Bush and Gore), parties (The Democratic Party and The Republican Party/Grand Old Party or GOP), Republican National Committee, Democratic National Committee, and independent groups supporting for Bush or Gore. To make the time frame comparable with other campaign intensity variables as much as possible and also conserve sufficient valid cases, the ads run between July 18 and November 6, 2000 were analyzed.

Based on the Wisconsin Advertising Project data file, two types of measures of political ads could be used: the number of spots aired and the estimated cost of ads in a state or a media market. The value of either the total number of spots aired in each media market or the total amount of estimated cost of ads in each media market was obtained from aggregating the number of the ads aired or the amount of money spent in each

media market. Because the Wisconsin Advertising Project data file doesn't indicate which state an ad was aired, the value of either the total number of spots aired or the total amount of estimated cost of ads in a state was calculated by a formula explained later in this section. In addition to the number of spots aired and the estimated cost of ads, another commonly used measure is gross rating points (GRPs). Southwell (2005) used "media weight" of an advertisement to refer to the "sheer prevalence" of that ad (p. 117), and they used GRPs to define media weight. However, there is no GRPs information in the Wisconsin Advertising Project data file.

Gross Rating Point (GRP) is "a unit of measurement of audience size" and is used to "measure the exposure to one or more programs or commercials, without regard to multiple exposures of the same advertising to individuals" (Nielsen Media Research, n.d.). It is calculated as follows: gross impressions (the sum of the audience size) divided by the population size and then times 100 (Sissors & Baron, 2002). GRPs are "a measure of the total gross weight delivered by a vehicle" or in other words "the sum of the ratings for all of the individual announcements or programs" (Sissors & Baron, 2002, p. 409). In short, GRPs, which is an estimate composed of both reach and frequency, measure the chances of an audience group's exposure to media messages (Southwell, 2005; Farris & Parry, 1991). That is, GRPs figure is equal to frequency times reach (%) (Sissors & Baron, 2002). Reach, as a measure of message dispersion, refers to how many different people will see the ad at least once over a defined time frame, and frequency, as a measure of message repetition, refers to the average number of times that the audience is exposed to the same ad (Sissors & Baron, 2002). One hundred GRPs mean that

approximately 100% of people in a media market see an ad one time (Shaw, 1999a, 1999b).

In the Wisconsin Advertising Project data file, the cost of an ad was measured by giving the average cost of an ad broadcast during that time, and this value was calculated based on various market information (Goldstein & Freedman, 2002a). According to Goldstein and Freedman (2002a), this variable “combines information on both the number of times a spot was aired and the number of people who were likely to have seen it” (p. 26). It can be said that the operationalization of this variable contains the two core concepts associated with GRPs, though based on the information provided in the data file, it seems that this variable doesn’t directly taken into account GRPs.

How much to pay to get an ad broadcast varies from media market to media market because some places are more expensive than others. GRPs do not reflect these cost discrepancies in their measures (Hill & McKee, 2005; Shaw, 1999a). GRPs “equalize market-advertising cost discrepancies” (Hill & McKee, 2005, p. 709). Thus, some studies (e.g., Hill & McKee, 2005) adjusted advertising spending with gross rating points (GRPs) to obtain more accurate assessment of advertising magnitude in a place, and to do comparison of advertising magnitude from place to place. Although Goldstein and Ridout (2004) also argued that this method can “account for the differential cost of air time” (p. 216), they pointed out the fact that the GRPs information is not readily available for researchers. Owing to the difficulty of obtaining the GRPs information and the estimated cost of ads variable in the data file seems to already take into account the concepts of reach and frequency, the present study did not do any kinds of weighting to this variable. Moreover, Goldstein and Freedman (2002a) argued that they are not so

confident in the estimated cost of ads variable in the data set because they think they may underestimate how much were actually paid, particularly by political parties and interest groups.

As for the other type of measure of political ads that was also used in the present study, Goldstein and Freedman (2002a) argued that the number of spots aired is not a perfect unit of analysis because there are different numbers of people exposed to the ads aired in different times and media markets, and this measure doesn't account for this difference. By comparing the number of spot aired and GRPs, Goldstein and Freedman (2002a) found that these two types of measures are correlated well with each other; therefore, they concluded that these two types of measures are not different in terms of understanding advertising buys at the media market level.

Goldstein and Freedman (2002a) argued that all these three types of measures -- the number of spots aired, advertising spending, and GRPs -- do not actually measure advertising exposure at the individual level, and suggested that a better approach is to include individual viewers' media use information, such as the show, the time, and the like (also see Goldstein & Ridout, 2004). That is, though these three approaches are able to reflect the fact that volume of advertising aired varies from place to place, they do not take into account that individual respondents' media use behaviors also vary.

As mentioned earlier, the individual-level data file and the data files of the other two campaign intensity variables, i.e., candidate appearances and campaign contacts, originally contain the information of both states and media markets. In these two data files it is already known to which state a media market belongs. The values of either candidate appearances or campaign contacts are already known in the data sets or can be

directly computed at either the state level or the media market level. However, the Wisconsin Advertising Project data file doesn't provide which state an ad was aired, since media markets can include multiple states. As a result, regarding the state-level political ads variable, i.e., the value of either the total number of spots aired or the total amount of the estimated cost of ads in a state, needs to be calculated by a formula. This is an important issue that should be considered when categorizing the media markets into the fifty states.

As explained previously, a single state may contain more than one media market, and a media market may cover an area across state lines. Thus, the proportion of population in each media market within a state should be considered. The political ads of a media market should be taken into account in all the states it covers. The present study used the following formula to calculate the value of total political ads of a state with n media markets.

A state's total ads spending = (total spending in the 1st media market * proportion of population in the 1st media market) + (total spending in the 2nd media market * proportion of population in the 2nd media market) + ... + (total spending in the n^{th} media market * proportion of population in the n^{th} media market)

The total spots aired and the total ad spending of the media markets that are not in the Wisconsin Advertising Project data file were treated as missing values in this equation. Similar formulas using different measures of advertisements that make population adjustments can be found in other studies (e.g., Hill & McKee, 2005; Shaw, 1999a, 1999b). The information about population of residents in each media market was obtained from *Polidata Demographic and Political Guides*. This formula can be applied

to the other political ads measure used in the present study -- the total spots aired. The population adjustment reflects the fact that campaign efforts should be more cost effective in more-populated areas than in less-populated areas. Therefore, the political ads variable calculated based on the nature of media markets within a state could more appropriately reflect statewide advertising intensity.

In the final data file, a total of 226,864 ads and a total of \$152,131,615 ad expenditure were grouped according to media market. The final data file contains the information of advertising frequencies ($M = 3,719.08$, $SD = 2,955.42$) and expenditures ($M = 2,493,960.90$, $SD = 2,860,658.93$) for 61 media markets. The values of these 61 media markets were used to obtain the values of advertising frequencies ($M = 2,194.92$, $SD = 2,329.85$) and expenditures ($M = 1,751,670.09$, $SD = 2,463,132.84$) of the 45 states by using the method described above. Figure 3.3 and 3.4 show the geospatial distribution of state advertising frequencies and political knowledge. The states in blue are missing values, and darker states get more ads. The yellow circles are political knowledge, and larger circles indicate more political knowledge. Figure 3.7 and 3.8 show the geospatial distribution of state advertising expenditures and political knowledge. Figure 3.5, 3.6, 3.9 and 3.10 suggest that political ads seem to be positively related to political knowledge. Table 3.2 shows the descriptive statistics of the campaign-level variables.

Figure 3.3: Univariate map of advertising frequencies (state).

Figure 3.4: Bivariate map of advertising frequencies and political knowledge (state).

Figure 3.5: Bivariate plot of advertising frequencies and political knowledge (state).

Figure 3.6: Bivariate plot of advertising frequencies and political knowledge (DMA).

Figure 3.7: Univariate map of advertising expenditures (state).

Figure 3.8: Bivariate map of advertising expenditures and political knowledge (state).

Figure 3.9: Bivariate plot of advertising expenditures and political knowledge (state).

Figure 3.10: Bivariate plot of advertising expenditures and political knowledge (DMA).

Candidate Appearances. The variable of candidate appearances was constructed from the information about the number of times that the two presidential candidates -- Bush and Gore -- and the two vice-presidential candidates -- Cheney and Lieberman -- visited certain places during the 2000 presidential election. In the original data file, the number of appearances is tallied by media markets in each state, and shows the four candidates' travel between August 20 and November 6, 2000. The value of the total candidate appearances in each state or in each media market was obtained from aggregating candidate appearances in each state or media market. There are a total of 50 states and District of Columbia tallied in the original data file, and 24 of which have a value of 0 ($M = 8.61$, $SD = 12.67$). Moreover, there are a total of 155 media markets in the original data file, and 65 of which have a value of 0 ($M = 2.83$, $SD = 3.95$). Those media markets that are not in the original data file of candidate appearances were treated as missing values. Figure 3.11 and 3.12 show the geospatial distribution of candidate appearances and political knowledge. Blue states are missing values, and darker states get more candidate appearances. The yellow circles are political knowledge, and larger circles indicate more political knowledge. It can be seen from the maps that these variables vary across places. Figure 3.13 and 3.14 show that candidate appearances seem to be positively related to political knowledge.

Figure 3.11: Univariate map of candidate appearances (state).

Figure 3.12: Bivariate map of candidate appearances and political knowledge (state).

Figure 3.13: Bivariate plot of candidate appearances and political knowledge (state).

Figure 3.14: Bivariate plot of candidate appearances and political knowledge (DMA).

Campaign Contacts. The variable of campaign-related contacts comes from three items, including whether respondents are contacted by anyone from the campaigns in person or on the phone about the presidential election; whether they are contacted by any other groups about the presidential election; and whether they receive any brochures or flyers about the presidential campaigns. To make the time frame comparable with the other two campaign intensity variables and to obtain campaign contact information based on sufficient valid cases, the four data files of the NAES studies conducted between July 18 and September 4, September 5 and October 2, October 3 and November 6, and between November 8 and December 7, 2000 were used. A total of 8,129 responses of having campaign contacts and 54,203 responses of having no campaign contacts were categorized according to each state and media market.

The “yes” response to each of the three items in each of the four data files was given one point, whereas “no” response was given zero point. “Don’t know” and “no answer” were treated as missing values. The points obtained from the three items in the four data files were aggregated according to states and media markets. As long as a “yes” or “no” response was provided to any one of the three items among any one of the four data files, the points were tallied for this specific state or media market. The total points obtained in each state or each media market were divided by the total “yes” and “no” responses in that state or media market to construct a percentage index, which represents the intensity of campaign contacts. In the final data files, a total of 48 states and Washington D.C. have valid values ($M = 12.59$, $SD = 3.65$), and a total of 204 media markets have valid values ($M = 11.97$, $SD = 6.02$). Figure 3.15 and 3.16 show the geospatial distribution of campaign contacts and political knowledge. Blue states are

missing values, and darker states get more campaign contacts. The yellow circles are political knowledge, and larger circles indicate more political knowledge. Figure 3.17 and 3.18 suggest that there seems to be a positive relationship between campaign contacts and political knowledge.

Figure 3.15: Univariate map of campaign contacts (states).

Figure 3.16: Bivariate map of campaign contacts and political knowledge (states).

Figure 3.17: Bivariate plot of campaign contacts and political knowledge (states).

Figure 3.18: Bivariate plot of campaign contacts and political knowledge (DMA).

	Valid Cases	Mean	S.D.	Min.	Max.
Political knowledge	5279	53.79	23.93	.00	100.00
Biggest tax cut	5279	.63	.48	.00	1.00
Cutting taxes by Medicare surplus	5279	.52	.50	.00	1.00
Paying down national debt the most	5279	.52	.50	.00	1.00
Biggest increase for social security	5279	.55	.50	.00	1.00
Investing social security-Bush	5279	.65	.48	.00	1.00
Investing social security-Gore	5279	.59	.49	.00	1.00
Prescription drugs-Bush	5279	.37	.48	.00	1.00
Prescription drugs-Gore	5279	.50	.50	.00	1.00
Health insurance for children-Bush	5279	.38	.49	.00	1.00
Health insurance for children-Gore	5279	.74	.44	.00	1.00
The right to sue HMOs-Bush	5279	.36	.48	.00	1.00
The right to sue HMOs-Gore	5279	.47	.50	.00	1.00
Abortion-Bush	5279	.66	.47	.00	1.00
Abortion-Gore	5279	.64	.48	.00	1.00
The sale of RU-486	5279	.48	.50	.00	1.00
License to buy a handgun-Bush	5279	.38	.48	.00	1.00
License to buy a handgun-Gore	5279	.69	.46	.00	1.00
Legislation for concealed handguns	5279	.55	.50	.00	1.00
Selling oil reserve-Bush	5279	.48	.50	.00	1.00
Selling oil reserve-Gore	5279	.61	.49	.00	1.00
Newspaper use	10790	-.15	.91	-1.37	1.24
Newspaper exposure	10790	3.78	2.88	.00	7.00
Newspaper attention	8330	2.69	.95	1.00	4.00
Network & cable television news use	10797	-.11	.88	-1.58	1.79
Exposure to national network news	10752	3.22	2.69	.00	7.00
Exposure to cable news	10759	2.68	2.77	.00	7.00
Attention to network/cable TV news	9020	2.90	0.92	1.00	4.00
Local television news use	10753	-.14	.93	-1.57	1.24
Exposure to local TV news	10753	4.22	2.69	.00	7.00
Attention to local TV news	8806	2.71	.89	1.00	4.00
Political discussion	5410	2.09	1.93	.00	7.00
Discus with family or friends	5400	2.92	2.50	.00	7.00
Discuss at work or online	5402	1.25	1.96	.00	7.00
State	10825			49 states	
Media Market	10825			199 markets	
Age	10728	46.07	16.58	18.00	96.00
Male	10825	.45	.50	.00	1.00
Education	10747	5.16	2.30	1.00	9.00
Income	9615	4.94	2.07	1.00	9.00

Table 3.1: Descriptive statistics of the individual-level variables.

	Valid Cases	Mean	S.D.	Min.	Max.
<i>State</i>					
Ad frequencies	45	2,194.92	2,329.85	.28	7,575.94
Ad expenditures	45	1,751,670.09	2,463,132.84	64.82	11,858,164.80
Candidate appearances	50 & DC	8.61	12.67	.00	47.00
Campaign contacts	48 & DC	12.59	3.65	6.41	23.41
<i>Media market</i>					
Ad frequencies	61	3,719.08	2,955.42	1.00	8,799.00
Ad expenditures	61	2,493,960.90	2,860,658.93	234.00	14,822,706.00
Candidate appearances	155	2.83	3.95	.00	16.00
Campaign contacts	204	11.97	6.02	.00	35.71

Table 3.2: Descriptive statistics of the campaign-level variables.

Data Analysis

The present study employed one of the five forms of macro-to-micro multilevel analysis illustrated by McLeod, Kosicki and McLeod (2008) – contextual analysis. A series of multilevel modeling analyses (using HLM software) were conducted to assess these effects. Various models were used to test the proposed hypotheses. The multilevel modeling analysis followed the procedures outlined by Raudenbush and Bryk (2002) (also see Luke, 2004; Park, Eveland, & Cudeck, 2008).

CHAPTER 4

RESULTS

This chapter presents the results of the data analyses. The first section provides the results of the descriptive analyses, and the second section provides the results of the multilevel analyses.

Descriptive Analysis

There were a total of eight campaign-level variables, including state advertising frequencies, state advertising expenditures, state candidate appearances, state campaign contacts, media market advertising frequencies, media market advertising expenditures, media market candidate appearances, and media market campaign contacts. The campaign-level variables were analyzed one at a time. Therefore, each campaign-level variable was combined with the data file of the individual-level variables respectively by either state or media market. During the process of combining the individual-level and the campaign-level variables, listwise deletion was performed to delete the missing values in the data files. Thus, there were a total of eight data files to be analyzed by the multilevel modeling method. Tables 4.1-4.8 show the descriptive statistics of the combined data sets.

	Valid Cases	Mean	S.D.	Min.	Max.
Political knowledge	2,281	54.59	23.90	.00	100.00
Newspaper use	2,281	-.18	.90	-1.37	1.24
Network/cable television news use	2,281	-.13	.86	-1.58	1.50
Local television news use	2,281	-.17	.92	-1.57	1.24
Political discussion	2,281	2.06	1.89	.00	7.00
Age	2,281	45.04	16.05	18.00	94.00
Male	2,281	.46	.50	.00	1.00
Education	2,281	5.18	2.29	1.00	9.00
Income	2,281	4.93	2.04	1.00	9.00
Advertising frequencies	45	2,194.92	2,329.85	.28	7,575.94

Table 4.1: Descriptive statistics of the individual-level variables and state advertising frequencies.

	Valid Cases	Mean	S.D.	Min.	Max.
Political knowledge	2,281	54.59	23.90	.00	100.00
Newspaper use	2,281	-.18	.90	-1.37	1.24
Network/cable television news use	2,281	-.13	.86	-1.58	1.50
Local television news use	2,281	-.17	.92	-1.57	1.24
Political discussion	2,281	2.06	1.89	.00	7.00
Age	2,281	45.04	16.05	18.00	94.00
Male	2,281	.46	.50	.00	1.00
Education	2,281	5.18	2.29	1.00	9.00
Income	2,281	4.93	2.04	1.00	9.00
Advertising expenditures (unit: \$1000)	45	1,751.67	2,463.13	.06	11,858.16

Table 4.2: Descriptive statistics of the individual-level variables and state advertising expenditures.

	Valid Cases	Mean	S.D.	Min.	Max.
Political knowledge	2,322	54.62	23.90	.00	100.00
Newspaper use	2,322	-.18	.90	-1.37	1.24
Network/cable television news use	2,322	-.13	.86	-1.58	1.50
Local television news use	2,322	-.16	.92	-1.57	1.24
Political discussion	2,322	2.06	1.89	.00	7.00
Age	2,322	45.01	16.01	18.00	94.00
Male	2,322	.46	.50	.00	1.00
Education	2,322	5.18	2.29	1.00	9.00
Income	2,322	4.93	2.04	1.00	9.00
Candidate appearances	48	9.15	12.87	0	47

Table 4.3: Descriptive statistics of the individual-level variables and state candidate appearances.

	Valid Cases	Mean	S.D.	Min.	Max.
Political knowledge	2,322	54.62	23.90	.00	100.00
Newspaper use	2,322	-.18	.90	-1.37	1.24
Network/cable television news use	2,322	-.13	.86	-1.58	1.50
Local television news use	2,322	-.16	.92	-1.57	1.24
Political discussion	2,322	2.06	1.89	.00	7.00
Age	2,322	45.01	16.01	18.00	94.00
Male	2,322	.46	.50	.00	1.00
Education	2,322	5.18	2.29	1.00	9.00
Income	2,322	4.93	2.04	1.00	9.00
Campaign contacts	47 & DC	12.66	3.66	6.41	23.41

Table 4.4: Descriptive statistics of the individual-level variables and state campaign contacts.

	Valid Cases	Mean	S.D.	Min.	Max.
Political knowledge	1,440	55.47	24.02	.00	100.00
Newspaper use	1,440	-.17	.91	-1.37	1.24
Network/cable television news use	1,440	-.15	.86	-1.58	1.50
Local television news use	1,440	-.17	.93	-1.57	1.24
Political discussion	1,440	2.06	1.88	.00	7.00
Age	1,440	44.87	15.99	18.00	94.00
Male	1,440	.46	.50	.00	1.00
Education	1,440	5.32	2.31	1.00	9.00
Income	1,440	5.12	2.07	1.00	9.00
Advertising frequencies	61	3,719.08	2,955.42	1.00	8,799.00

Table 4.5: Descriptive statistics of the individual-level variables and media market advertising frequencies.

	Valid Cases	Mean	S.D.	Min.	Max.
Political knowledge	1,440	55.47	24.02	.00	100.00
Newspaper use	1,440	-.17	.91	-1.37	1.24
Network/cable television news use	1,440	-.15	.86	-1.58	1.50
Local television news use	1,440	-.17	.93	-1.57	1.24
Political discussion	1,440	2.06	1.88	.00	7.00
Age	1,440	44.87	15.99	18.00	94.00
Male	1,440	.46	.50	.00	1.00
Education	1,440	5.32	2.31	1.00	9.00
Income	1,440	5.12	2.07	1.00	9.00
Advertising expenditures (unit: \$1000)	61	2,493.96	2,860.66	.23	14,822.71

Table 4.6: Descriptive statistics of the individual-level variables and media market advertising expenditures.

	Valid Cases	Mean	S.D.	Min.	Max.
Political knowledge	2,008	54.82	23.84	.00	100.00
Newspaper use	2,008	-.18	.90	-1.37	1.24
Network/cable television news use	2,008	-.15	.86	-1.58	1.50
Local television news use	2,008	-.17	.93	-1.57	1.24
Political discussion	2,008	2.03	1.87	.00	7.00
Age	2,008	44.93	16.11	18.00	94.00
Male	2,008	.46	.50	.00	1.00
Education	2,008	5.19	2.28	1.00	9.00
Income	2,008	4.95	2.04	1.00	9.00
Candidate appearances	142	3.05	4.05	0	16

Table 4.7: Descriptive statistics of the individual-level variables and media market candidate appearances.

	Valid Cases	Mean	S.D.	Min.	Max.
Political knowledge	2,322	54.62	23.90	.00	100.00
Newspaper use	2,322	-.18	.90	-1.37	1.24
Network/cable television news use	2,322	-.13	.86	-1.58	1.50
Local television news use	2,322	-.16	.92	-1.57	1.24
Political discussion	2,322	2.06	1.89	.00	7.00
Age	2,322	45.01	16.01	18.00	94.00
Male	2,322	.46	.50	.00	1.00
Education	2,322	5.18	2.29	1.00	9.00
Income	2,322	4.93	2.04	1.00	9.00
Campaign contacts	185	12.14	5.84	.00	35.71

Table 4.8: Descriptive statistics of the individual-level variables and media market campaign contacts.

The Issue of Sample Representativeness

Some efforts have been made to conserve cases, such as imputing missing values.

For example, respondents were included in the data file even if they provide responses

only to exposure or attention items when creating news use indexes. Table 4.9 presents the descriptive statistics of the individual-level variables before and after combining with the campaign-level variables. It seems that the margining procedure did not significantly change the mean and variance very much. Although it looks like there's no big discrepancy, statistical tests were conducted to ascertain this conclusion. Two data files – candidate appearances (state) and advertising spending (media market) were checked.

Valid Cases	All cases before merging		2,322		1,440	
Variables	Mean	S.D.	Mean	S.D.	Mean	S.D.
Political knowledge	53.79	23.93	54.62	23.90	55.47	24.02
Newspaper use	-.15	.91	-.18	.90	-.17	.91
Network & cable television news use	-.11	.88	-.13	.86	-.15	.86
Local television news use	-.14	.93	-.16	.92	-.17	.93
Political discussion	2.09	1.93	2.06	1.89	2.06	1.88
Age	46.07	16.58	45.01	16.01	44.87	15.99
Male	.45	.50	.46	.50	.46	.50
Education	5.16	2.30	5.18	2.29	5.32	2.31
Income	4.94	2.07	4.93	2.04	5.12	2.07

Table 4.9: Descriptive statistics of the individual-level variables before and after merging with campaign-level variables.

When categorizing the 10,825 respondents into the group with the candidate appearance (state) variable and the group without this variable, there's only one case that doesn't have this variable. It is obvious that the result from the independent groups t-test indicate that there's no significant difference between these two groups in terms of political knowledge, news media use, political discussion, and all the demographic

variables. Then, the respondents in the group with the candidate appearances variable were further excluded by deleting missing values listwise. When compare this final group (N= 2322) and the rest of the respondents (N = 8503), the result from the independent groups t-test indicate that this group is more knowledgeable, $t(5277) = -2.24, p < .05$ (two-tailed), has less newspaper use, $t(10788) = 2.09, p < .05$ (two-tailed), and is younger, $t(10726) = 3.48, p < .01$ (two-tailed).

When categorizing the 10,825 respondents into the group with the advertising spending (media market) variable (N= 6721) and the group without this variable (N= 4104), the result from the independent groups t-test shows that the former group is more knowledgeable, $t(5277) = -4.63, p < .001$ (two-tailed), more educated, $t(10745) = -8.12, p < .001$ (two-tailed), and wealthier, $t(9613) = -11.87, p < .001$ (two-tailed). Then, the respondents in the group with the advertising spending variable were further excluded by deleting missing values listwise. When compare this final group (N= 1440) and the rest of the respondents (N = 9385), the result from the independent groups t-test indicate that this group is more knowledgeable, $t(5277) = -3.13, p < .01$ (two-tailed), younger, $t(10726) = 2.97, p < .01$ (two-tailed), more educated, $t(10745) = -2.92, p < .01$ (two-tailed), wealthier, $t(9613) = -3.59, p < .001$ (two-tailed), and use less network and cable TV news, $t(10795) = 2.07, p < .05$ (two-tailed).

The above findings suggest that most cases were dropped due to deleting missing values listwise, and two major sources are the political knowledge and political discussion variables because only half the sample was asked the items used to construct these two variables. The third source is the income variable. Overall, relatively fewer cases were dropped due to merging with the campaign-level variables. The eight final

data files used in the multilevel analysis cover most of the 50 states. The four data files with state as the campaign-level unit have 45-48 states. But, not all the four data files with media market as the campaign-level unit have 211 media markets. The candidate appearances file and the campaign contacts file have 142 and 185 media markets respectively. These six data files have the case number between 2000 and 2400. The major concern is the political ads files, which have only 61 media markets and the smallest case number ($N=1440$) at the individual level.

The results from the independent groups t-test of the media market political ads data set reveal that major discrepancies between the included group and the excluded group exist in three variables – political knowledge, education, and income. These three variables are closely related to one another. Higher education and income are two strong predictors of higher level of political knowledge. Thus, it's conceivable that when the included group has more education and income than the excluded group, this group also has more political knowledge.

Regarding the issue of the impact of smaller number of cases on the significance of effects, no major difference was found between the data file with more cases and the data file with fewer cases in terms of the effects of individual-level variables or cross-level interaction effects based on the multilevel analysis results presented in the next section in this chapter. All the campaign-level variables with different numbers of units ($J = 45, 48, \text{ and } 48$ states; $J = 61, 142, \text{ and } 185$ media markets) have interaction effects with specific individual-level communication variables. However, there's a small difference between the two political advertising data files with the smallest case number ($N=1440$, $J=61$ media markets) and the rest of the data files with more case number in terms of the

significant findings of the main effects of the campaign-level variables. The effect of political advertising in media markets is a little weaker than media market candidate appearances and campaign contacts. The main effect of state political advertising is even weaker, and there are two types of measures of political advertising, which may somewhat confound this finding.

In addition to the issue of item nonresponse, unit nonresponse is another issue in the NAES. According to the 2000 NAES, the cooperation rate was 53% and the overall response rate was 25-31% for the national RCS studies (Waldman, 2004; Winneg, Kenski, & Adasiewicz, 2006). Response rates can be interpreted in two ways: A low response rate means that the sample size is smaller than wanted; that nonresponse bias may exist; and that the representativeness of the sample is doubtful (Weisberg, 2005). On the other hand, response rates are a function of the time and effort put into call-backs, refusal conversion and other telephone survey management tools. The NAES said that their response rates are comparable to those of most telephone surveys at the present time, and that their samples well reflected demographic parameters of the population, except the education variable (Waldman, 2004). The education of the NAES sample is higher than that of the population (Waldman, 2004).

Therefore, it can be concluded that overall the sample of the present study is not perfectly representative of the population, especially in terms of social economic status, and while there may be some biasing effects, these are likely to be small.

Multilevel Analysis

The following equations and their explanations were adapted from Raudenbush and Bryk (2002) (also see Luke, 2004), and the analysis followed the procedures

suggested by Raudenbush and Bryk (2002) (also see Luke, 2004; Park, Eveland, & Cudeck, 2008). All the independent and control variables at the individual level, and the independent variables at the campaign level were grand-mean centered in the models.

T. Snijders and R. Bosker (as cited in Luke, 2004) argued that the differences between full maximum likelihood estimation and restricted maximum likelihood estimation are very small, especially when the number of level-2 units is large, i.e., 30 or more. Thus, all the analyses were conducted by the use of full maximum likelihood estimation because the numbers of the campaign-level units in all the eight data files are over 30.

Moreover, all the results reported here are with robust standard errors because the number of the campaign-level units is relatively large. Robust standard errors are appropriate when the number of units at the higher level is large (Raudenbush & Bryk, 2002). Besides, in all the analyses, there was no significant discrepancy between model-based standard errors and robust standard errors; therefore, it can be said that there is no indication of model misspecification (Raudenbush & Bryk, 2002). Finally, the variable of campaign contacts was obtained from aggregating the values at the individual level in four NAES data files. In order to assess the effect of the aggregated variable at the higher level, its counterpart at the lower level should be controlled in the model (see Park, Eveland, & Cudeck, 2008; Raudenbush & Bryk, 2002). Because the responses from the individual-level data set used in the present study account for only 26% of the total responses used to construct the campaign contacts variable at the campaign level, the individual-level campaign contacts were not controlled in the models.

Five types of hierarchical linear models were employed to test the hypotheses. They are one-way random effects ANOVA model, random-coefficients regression model, means-as-outcomes regression model, intercepts-as-outcomes model, and intercepts-and-slopes-as-outcomes model.

(1) One-way Random Effects ANOVA Model

Analysis of the one-way random effects ANOVA model was conducted to understand whether multilevel modeling analysis is appropriate for the present study. The statistical model is as follows:

$$\begin{aligned} \text{Level 1 model: } Y_{ij} &= \beta_{0j} + r_{ij} & r_{ij} &\sim N(0, \sigma^2) \\ \text{Level 2 model: } \beta_{0j} &= \gamma_{00} + u_{0j} & u_{0j} &\sim N(0, \tau_{00}) \end{aligned}$$

$$\text{Mixed-effects model: } Y_{ij} = \gamma_{00} + u_{0j} + r_{ij}$$

where

Y_{ij} : political knowledge of individual i in state or media market j .

β_{0j} : the mean score of political knowledge for state or media market j .

r_{ij} : the residual variance (random effect or random error) for individual i in state or media market j , which is assumed to be normally distributed with a mean 0 and variance σ^2 .

γ_{00} : the grand mean of political knowledge, i.e. the average of the state or media market means.

u_{0j} : the residual variance (random effect or random error) of state or media market j in the intercept β_{0j} (i.e., the deviation of state or media market j 's mean from the grand mean γ_{00}), which is assumed to have a mean of 0 and variance τ_{00} .

According to Table 4.10, the results suggest that the average initial status of political knowledge is about 54~55 for all participants. σ^2 captures the within-state or -media market variability, whereas τ_{00} captures the between-state or -media market variability. The intraclass correlation coefficient (ICC) $\rho = \tau_{00} / (\tau_{00} + \sigma^2)$ was calculated to see if between-states or -media market variance accounts for a sufficient proportion of the total variance in political knowledge. It is found that the ICCs were only about 1 or 2% across the models with different campaign-level variables and units ($6.980 / [6.980 +$

564.373] = 0.012; $6.660 / [6.660 + 564.643] = 0.012$; $6.660 / [6.660 + 564.643] = 0.012$;
 $7.514 / [7.514 + 569.610] = 0.013$; $9.804 / [9.804 + 558.686] = 0.017$; $10.261 / [10.261 + 561.084] = 0.018$). That is, only about 1 or 2% of the total explainable variance in political knowledge could be attributed to between-state or between-media market differences. Variance in political knowledge largely comes from individual differences. In other words, states or media markets accounted for only 1 or 2% of the variability of political knowledge.

Some people would argue that the small ICCs suggest that it is not justifiable and useful to conduct multilevel analysis. However, Kreft and de Leeuw (1998) claimed that a small ICC can increase the alpha level (the assumed Type I error probability 0.05), and this increase is significant particularly when the number of lower-level units within a higher-level unit is large. That is, Kreft and de Leeuw (1998) suggested that multilevel modeling should be used even in the condition of small ICCs. Similarly, Hayes (2006) also argued that it is beneficial to use multilevel modeling “even when the ICC is near zero” (p. 394). Moreover, the results of the random effect tests also indicate that there remains statistically significant unexplained variance among states and among media markets, $\chi^2(44) = 74.16, p < .01$; $\chi^2(47) = 76.10, p < .01$; $\chi^2(47) = 76.10, p < .01$; $\chi^2(60) = 84.29, p < .05$; $\chi^2(141) = 184.83, p < .01$; $\chi^2(184) = 234.16, p < .01$. Thus, based on the theoretical and the methodological justification as well as the statistical test results, the present study continues to conduct multilevel analysis to investigate possible main effects of the individual-level and the campaign-level variables as well as cross-level interaction effects.

Level 2 variable: Political advertisements				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.774	.685	79.906	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.980	44	74.164	.003
Level-1 residuals, r_{ij} (σ^2)	564.373			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,942.810		3	
Level 2 variable: Candidate appearances				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.805	.670	81.794	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.660	47	76.095	.005
Level-1 residuals, r_{ij} (σ^2)	564.643			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	21,321.629		3	
Level 2 variable: Campaign contacts				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.805	.670	81.794	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.660	47	76.095	.005
Level-1 residuals, r_{ij} (σ^2)	564.643			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	21,321.629		3	
Level 2 variable: Political advertisements				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	55.175	.759	72.679	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
Media market mean, u_{0j} (τ_{00})	7.514	60	84.288	.021
Level-1 residuals, r_{ij} (σ^2)	569.610			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	13,238.749		3	
Level 2 variable: Candidate appearances				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	54.384	.637	85.417	.000

Continued

Table 4.10: Results from the one-way random effects ANOVA models.

Table 4.10 continued

<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
Media market mean, u_{0j} (τ_{00})	9.804	141	184.829	.008
Level-1 residuals, r_{ij} (σ^2)	558.686			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	18,428.852		3	
Level 2 variables: Campaign contacts				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	54.223	.589	91.991	.000
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
Media market mean, u_{0j} (τ_{00})	10.261	184	234.158	.007
Level-1 residuals, r_{ij} (σ^2)	561.084			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	21,322.404		3	

(2) Random-coefficients Regression Model

The random-coefficients regression model helps investigate the effects of individual-level variables on political knowledge. The parameter of each individual-level predictor, including newspaper use, network and cable TV news use, local TV news use, and political discussion, was set to vary across states or media markets as a function of a grand mean and a random error. On the other hand, the individual-level control variables, including age, gender, education and income, were fixed to have a common effect for all states and media markets. The statistical model is as follows:

Level 1 model: $Y_{ij} = \beta_{0j} + \beta_{1j}(\text{NPUSE})_{ij} + \beta_{2j}(\text{NE/CATV})_{ij} + \beta_{3j}(\text{LOTV})_{ij} + \beta_{4j}(\text{DISCU})_{ij} + \beta_{5j}(\text{AGE})_{ij} + \beta_{6j}(\text{MALE})_{ij} + \beta_{7j}(\text{EDUCA})_{ij} + \beta_{8j}(\text{INCOME})_{ij} + r_{ij}$

Level 2 model:

$$\begin{aligned}\beta_{0j} &= \gamma_{00} + u_{0j} \\ \beta_{1j} &= \gamma_{10} + u_{1j} \\ \beta_{2j} &= \gamma_{20} + u_{2j} \\ \beta_{3j} &= \gamma_{30} + u_{3j} \\ \beta_{4j} &= \gamma_{40} + u_{4j} \\ \beta_{5j} &= \gamma_{50}\end{aligned}$$

$$\beta_{6j} = \gamma_{60}$$

$$\beta_{7j} = \gamma_{70}$$

$$\beta_{8j} = \gamma_{80}$$

Mixed-effects model: $Y_{ij} = \gamma_{00} + \gamma_{10}(\text{NPUSE})_{ij} + \gamma_{20}(\text{NE/CATV})_{ij} + \gamma_{30}(\text{LOTV})_{ij} + \gamma_{40}(\text{DISCU})_{ij} + \gamma_{50}(\text{AGE})_{ij} + \gamma_{60}(\text{MALE})_{ij} + \gamma_{70}(\text{EDUCA})_{ij} + \gamma_{80}(\text{INCOME})_{ij} + u_{0j} + u_{1j}(\text{NPUSE})_{ij} + u_{2j}(\text{NE/CATV})_{ij} + u_{3j}(\text{LOTV})_{ij} + u_{4j}(\text{DISCU})_{ij} + r_{ij}$

where

Y_{ij} : political knowledge of individual i in state or media market j .

β_{0j} : the mean score of political knowledge for state or media market j .

β_{1j} : the relationship between newspaper use and political knowledge for state or media market j .

β_{2j} : the relationship between network and cable television news use and political knowledge for state or media market j .

β_{3j} : the relationship between local television news use and political knowledge for state or media market j .

β_{4j} : the relationship between political discussion and political knowledge for state or media market j .

r_{ij} : the residual variance (random effect or random error) for individual i in state or media market j after controlling for the individual-level predictors; r_{ij} is assumed to be normally distributed with a mean 0 and variance σ^2 .

γ_{00} : the grand mean of political knowledge, i.e. the average of the state or media market means or the average intercept across states or media markets.

γ_{10} : the average (mean value) newspaper use-political knowledge slope across states or media markets.

γ_{20} : the average (mean value) network and cable television news use-political knowledge slope across states or media markets.

γ_{30} : the average (mean value) local television news use-political knowledge slope across states or media markets.

γ_{40} : the average (mean value) political discussion-political knowledge slope across states or media markets.

u_{0j} : the residual variance (random effect or random error) of state or media market j in the intercept β_{0j} (i.e., the deviation of state or media market j 's mean from the grand mean γ_{00}), which is assumed to have a mean of 0 and variance τ_{00} .

u_{1j} : the residual variance (random effect or random error) of state or media market j in the slope β_{1j} .

u_{2j} : the residual variance (random effect or random error) of state or media market j in the slope β_{2j} .

u_{3j} : the residual variance (random effect or random error) of state or media market j in the slope β_{3j} .

u_{4j} : the residual variance (random effect or random error) of state or media market j in the slope β_{4j} .

The results reported in Table 4.11 are the main effects of a specific predictor over all values of the other predictors in the model. According to Table 4.11, people who read newspaper more frequently had more political knowledge across all six data sets, $t(44) = 10.22, p < .001$; $t(47) = 10.25, p < .001$; $t(47) = 10.25, p < .001$; $t(60) = 6.51, p < .001$; $t(141) = 7.24, p < .001$; $t(184) = 7.30, p < .001$. Therefore, H1a, which predicts that people who have more newspaper use will have more political knowledge than people who have less newspaper use, is supported.

People who watched network and cable television news more frequently had more political knowledge across all six data sets, $t(44) = 5.98, p < .001$; $t(47) = 6.01, p < .001$; $t(47) = 6.01, p < .001$; $t(60) = 4.35, p < .001$; $t(141) = 5.68, p < .001$; $t(184) = 6.82, p < .001$. Unexpectedly, people who watched local television news more frequently had less political knowledge in four data sets, $t(44) = -2.32, p < .05$; $t(47) = -2.26, p < .05$; $t(47) = -2.26, p < .05$; $t(184) = -2.03, p < .05$. Therefore, H1b, which predicts that people who have more television news use will have more political knowledge than people who have less television news use, is partially supported.

The results also indicate that people who discussed politics more frequently had more political knowledge across all six data sets, $t(44) = 9.95, p < .001$; $t(47) = 10.17, p < .001$; $t(47) = 10.17, p < .001$; $t(60) = 9.14, p < .001$; $t(141) = 10.18, p < .001$; $t(184) = 11.02, p < .001$. Therefore, H2, which predicts that people who have more political discussion will have more political knowledge than people who have less political discussion, is supported.

Moreover, the results of the first three data sets in Table 4.11 show that there remains some statistically significant unexplained variability among the state means

(variance of individual-level intercepts) on political knowledge, $\chi^2(43) = 80.90, p < .01$; $\chi^2(45) = 81.02, p < .01$; $\chi^2(45) = 81.02, p < .01$. The deviance statistics suggest that the random-coefficients regression model has a better fit to the data than the one-way random effects ANOVA model, $\chi^2(22) = 857.71, p < .001$; $\chi^2(22) = 870.30, p < .001$; $\chi^2(22) = 870.30, p < .001$; $\chi^2(22) = 550.02, p < .001$; $\chi^2(22) = 715.86, p < .001$; $\chi^2(22) = 856.00, p < .001$.

Level 2 variable: Political advertisements				
Fixed Effect	Coefficient	SE	t-ratio	p-value
Intercept (average state mean), γ_{00}	54.891	.589	93.149	.000
Newspaper use, γ_{10}	3.261	.319	10.220	.000
Ne/Ca television news use, γ_{20}	4.341	.726	5.976	.000
Local television news use, γ_{30}	-1.106	.477	-2.318	.025
Political discussion, γ_{40}	2.710	.272	9.953	.000
Random Effects	Variance	df	χ^2	p-value
	Component			
State mean, u_{0j} (τ_{00})	7.179	43	80.895	.001
Newspaper use, u_{1j} (τ_{10})	.062	43	29.403	>.500
Ne/Ca television news use, u_{2j} (τ_{20})	5.965	43	57.174	.072
Local television news use, u_{3j} (τ_{30})	.239	43	33.934	>.500
Political discussion, u_{4j} (τ_{40})	.483	43	52.181	.159
Level-1 residuals, r_{ij} (σ^2)	383.222			
Model Fit	Deviance Statistic		Parameters	
	20,085.101		25	
Level 2 variable: Candidate appearances				
Fixed Effect	Coefficient	SE	t-ratio	p-value
Intercept (average state mean), γ_{00}	54.913	.575	95.476	.000
Newspaper use, γ_{10}	3.259	.318	10.246	.000
Ne/Ca television news use, γ_{20}	4.294	.714	6.014	.000
Local television news use, γ_{30}	-1.074	.476	-2.256	.029
Political discussion, γ_{40}	2.767	.272	10.171	.000
Random Effects	Variance	df	χ^2	p-value
	Component			

Continued

Table 4.11: Results from the random-coefficients regression models.

Table 4.11 continued

State mean, u_{0j} (τ_{00})	6.927	45	81.021	.001
Newspaper use, u_{1j} (τ_{10})	.051	45	31.001	>.500
Ne/Ca television news use, u_{2j} (τ_{20})	5.922	45	58.819	.081
Local television news use, u_{3j} (τ_{30})	.301	45	34.251	>.500
Political discussion, u_{4j} (τ_{40})	.498	45	56.767	.112
Level-1 residuals, r_{ij} (σ^2)	383.824			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,451.325		25	
Level 2 variable: Campaign contacts				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.913	.575	95.476	.000
Newspaper use, γ_{10}	3.259	.318	10.246	.000
Ne/Ca television news use, γ_{20}	4.294	.714	6.014	.000
Local television news use, γ_{30}	-1.074	.476	-2.256	.029
Political discussion, γ_{40}	2.767	.272	10.171	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.927	45	81.021	.001
Newspaper use, u_{1j} (τ_{10})	.051	45	31.001	>.500
Ne/Ca television news use, u_{2j} (τ_{20})	5.922	45	58.819	.081
Local television news use, u_{3j} (τ_{30})	.301	45	34.251	>.500
Political discussion, u_{4j} (τ_{40})	.498	45	56.767	.112
Level-1 residuals, r_{ij} (σ^2)	383.824			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,451.325		25	
Level 2 variable: Political advertisements				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	55.486	.581	95.503	.000
Newspaper use, γ_{10}	3.323	.510	6.509	.000
Ne/Ca television news use, γ_{20}	4.284	.985	4.351	.000
Local television news use, γ_{30}	-1.206	.693	-1.740	.087
Political discussion, γ_{40}	2.950	.323	9.141	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
Media market mean, u_{0j} (τ_{00})	4.545	58	69.924	.136
Newspaper use, u_{1j} (τ_{10})	2.694	58	61.791	.342
Ne/Ca television news use, u_{2j} (τ_{20})	13.873	58	79.819	.030
Local television news use, u_{3j} (τ_{30})	3.005	58	49.614	>.500
Political discussion, u_{4j} (τ_{40})	1.001	58	59.714	.413
Level-1 residuals, r_{ij} (σ^2)	380.038			

Continued

Table 4.11 continued

<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	12,688.725		25	
Level 2 variable: Candidate appearances				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	54.834	.483	113.643	.000
Newspaper use, γ_{10}	3.398	.469	7.241	.000
Ne/Ca television news use, γ_{20}	4.360	.768	5.681	.000
Local television news use, γ_{30}	-.981	.570	-1.722	.087
Political discussion, γ_{40}	2.793	.274	10.183	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
Media market mean, u_{0j} (τ_{00})	4.058	102	115.491	.171
Newspaper use, u_{1j} (τ_{10})	2.250	102	98.655	>.500
Ne/Ca television news use, u_{2j} (τ_{20})	9.537	102	126.118	.053
Local television news use, u_{3j} (τ_{30})	1.631	102	87.160	>.500
Political discussion, u_{4j} (τ_{40})	.703	102	95.476	>.500
Level-1 residuals, r_{ij} (σ^2)	385.658			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	17,712.995		25	
Level 2 variables: Campaign contacts				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	54.579	.444	122.840	.000
Newspaper use, γ_{10}	3.213	.440	7.295	.000
Ne/Ca television news use, γ_{20}	4.638	.680	6.822	.000
Local television news use, γ_{30}	-1.063	.524	-2.030	.043
Political discussion, γ_{30}	2.774	.252	11.019	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
Media market mean, u_{0j} (τ_{00})	3.845	124	139.799	.158
Newspaper use, u_{1j} (τ_{10})	1.543	124	112.180	>.500
Ne/Ca television news use, u_{2j} (τ_{20})	7.631	124	148.964	.063
Local television news use, u_{3j} (τ_{30})	.946	124	102.330	>.500
Political discussion, u_{4j} (τ_{40})	.768	124	119.426	>.500
Level-1 residuals, r_{ij} (σ^2)	383.758			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,466.408		25	

(3) Means-as-outcomes Regression Model

The means-as-outcomes regression model helps investigate the effects of campaign-level variables on political knowledge. In this model, the state or media market

mean (intercept β_{0j}) was set to vary across states or media markets as a function of a grand mean, the campaign-level predictor and a random error. The statistical model is as follows:

Level 1 model: $Y_{ij} = \beta_{0j} + r_{ij}$

Level 2 model: $\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{CAMPAIGN})_j + u_{0j}$

Mixed-effects model: $Y_{ij} = \gamma_{00} + \gamma_{01}(\text{CAMPAIGN})_j + u_{0j} + r_{ij}$

where

Y_{ij} : political knowledge of individual i in state or media market j .

β_{0j} : the mean score of political knowledge for state or media market j .

r_{ij} : the residual variance (random effect or random error) for individual i in state or media market j , which is assumed to be normally distributed with a mean 0 and variance σ^2 .

γ_{00} : the grand mean of political knowledge, i.e. the average of the state or media market means, after controlling for the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts.

γ_{01} : the effect of the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts, on β_{0j} .

u_{0j} : the residual variance (random effect or random error) of state or media market j in the intercept β_{0j} after controlling for the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts; u_{0j} is assumed to have a mean of 0 and variance τ_{00} .

The results reported in Table 4.12 are the main effects of a specific predictor over all values of other predictors in the model. According to Table 4.12, advertising frequencies and expenditures were not significantly related to political knowledge in states and media markets. Thus, H3, which predicts that the increase in televised political advertisements will be positively associated with the increase in political knowledge, is not supported.

The results indicate that in the media markets with more presidential candidate appearances, the mean political knowledge score was higher, $t(140) = 2.28, p < .05$, though this relationship was not found in states. Thus, H4, which predicts that the

increase in presidential candidate appearances will be positively associated with the increase in political knowledge, is partially supported. As for campaign contacts, the results show that the mean political knowledge score was higher in the states with more campaign contacts, $t(46) = 2.70, p < .05$, and in the media markets with more campaign contacts, $t(183) = 2.10, p < .05$. Therefore, H5, which predicts that the increase in campaign contacts will be positively associated with the increase in political knowledge, is supported.

Moreover, the results also indicate that there remains statistically significant unexplained variance among the state means on political knowledge (variance of individual-level intercepts), $\chi^2(43) = 72.63, p < .01$; $\chi^2(43) = 73.33, p < .01$; $\chi^2(46) = 76.30, p < .01$; $\chi^2(46) = 69.92, p < .05$; and among the media market means on political knowledge (variance of individual-level intercepts), $\chi^2(59) = 83.72, p < .05$; $\chi^2(59) = 83.53, p < .05$; $\chi^2(140) = 180.26, p < .05$; $\chi^2(183) = 227.98, p < .05$.

The deviance statistics suggest that the means-as-outcomes regression model has a better fit to the data than the one-way random effects ANOVA model in the three data sets, $\chi^2(1) = 5.2, p < .05$ (state campaign contacts); $\chi^2(1) = 4.74, p < .05$ (media market candidate appearances); $\chi^2(1) = 3.95, p < .05$ (media market campaign contacts). This was not found in the other five data sets, $\chi^2(1) = 1.82, p > .05$ (state ad frequencies); $\chi^2(1) = 1.09, p > .05$ (state ad expenditures); $\chi^2(1) = 0.03, p > .05$ (state candidate appearances); $\chi^2(1) = 1.12, p > .05$ (media market ad frequencies); $\chi^2(1) = 1.29, p > .05$ (media market ad expenditures).

Level 2 variable: Ad frequencies				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.717	.677	80.822	.000
Ad frequencies, γ_{01}	.0004	.0003	1.544	.130
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.479	43	72.626	.003
Level-1 residuals, r_{ij} (σ^2)	564.179			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,940.986		4	
Level 2 variable: Ad expenditures				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.685	.695	78.628	.000
Ad expenditures, γ_{01}	.0003	.0002	1.414	.165
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.741	43	73.327	.003
Level-1 residuals, r_{ij} (σ^2)	564.224			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,941.720		4	
Level 2 variable: Candidate appearances				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.777	.700	78.221	.000
Candidate app., γ_{01}	.007	.045	.165	.870
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.704	46	76.299	.004
Level-1 residuals, r_{ij} (σ^2)	564.612			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	21,321.601		4	
Level 2 variable: Campaign contacts				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.658	.638	85.719	.000
Campaign con., γ_{01}	.444	.165	2.699	.010
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	5.284	46	69.918	.013
Level-1 residuals, r_{ij} (σ^2)	564.141			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	21,316.429		4	

Continued

Table 4.12: Results from the means-as-outcomes regression model.

Table 4.12 continued

Level 2 variable: Ad frequencies				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	55.226	.763	72.351	.000
Ad frequencies, γ_{01}	.0003	.0002	1.164	.249
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
Media market mean, u_{0j} (τ_{00})	7.577	59	83.716	.019
Level-1 residuals, r_{ij} (σ^2)	569.125			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	13,237.634		4	
Level 2 variable: Ad expenditures				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	55.039	.779	70.649	.000
Ad expenditures, γ_{01}	.0003	.0002	1.533	.130
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
Media market mean, u_{0j} (τ_{00})	7.579	59	83.530	.019
Level-1 residuals, r_{ij} (σ^2)	569.055			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	13,237.463		4	
Level 2 variable: Candidate appearances				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	53.967	.658	82.025	.000
Candidate app., γ_{01}	.277	.121	2.283	.024
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
Media market mean, u_{0j} (τ_{00})	9.039	140	180.258	.012
Level-1 residuals, r_{ij} (σ^2)	557.889			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	18,424.109		4	
Level 2 variables: Campaign contacts				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	54.148	.580	93.342	.000
Campaign con., γ_{01}	.241	.114	2.104	.036
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
Media market mean, u_{0j} (τ_{00})	8.476	183	227.978	.013
Level-1 residuals, r_{ij} (σ^2)	561.443			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	21,318.458		4	

(4) Intercepts-as-outcomes Model

The intercepts-as-outcomes model helps simultaneously investigate the effects of both the individual-level variables and the campaign-level variables on political knowledge. In this model, the state or media market mean (intercept β_{0j}) was set to vary across states or media markets as a function of a grand mean, the campaign-level predictor and a random error. The parameter of each individual-level predictor, including newspaper use (slope β_{1j}), network and cable TV news use (slope β_{2j}), local TV news use (slope β_{3j}), and political discussion (slope β_{4j}), was set to vary across states or media markets as a function of a grand mean and a random error. The individual-level control variables, including age, gender, education and income, were fixed to have a common effect for all states or media markets. The statistical model is as follows:

Level 1 model: $Y_{ij} = \beta_{0j} + \beta_{1j}(\text{NPUSE})_{ij} + \beta_{2j}(\text{NE/CATV})_{ij} + \beta_{3j}(\text{LOTV})_{ij} + \beta_{4j}(\text{DISCU})_{ij} + \beta_{5j}(\text{AGE})_{ij} + \beta_{6j}(\text{MALE})_{ij} + \beta_{7j}(\text{EDUCA})_{ij} + \beta_{8j}(\text{INCOME})_{ij} + r_{ij}$

Level 2 model:

$$\begin{aligned}\beta_{0j} &= \gamma_{00} + \gamma_{01}(\text{CAMPAIGN})_j + u_{0j} \\ \beta_{1j} &= \gamma_{10} + u_{1j} \\ \beta_{2j} &= \gamma_{20} + u_{2j} \\ \beta_{3j} &= \gamma_{30} + u_{3j} \\ \beta_{4j} &= \gamma_{40} + u_{4j} \\ \beta_{5j} &= \gamma_{50} \\ \beta_{6j} &= \gamma_{60} \\ \beta_{7j} &= \gamma_{70} \\ \beta_{8j} &= \gamma_{80}\end{aligned}$$

Mixed-effects model: $Y_{ij} = \gamma_{00} + \gamma_{01}(\text{CAMPAIGN})_j + \gamma_{10}(\text{NPUSE})_{ij} + \gamma_{20}(\text{NE/CATV})_{ij} + \gamma_{30}(\text{LOTV})_{ij} + \gamma_{40}(\text{DISCU})_{ij} + \gamma_{50}(\text{AGE})_{ij} + \gamma_{60}(\text{MALE})_{ij} + \gamma_{70}(\text{EDUCA})_{ij} + \gamma_{80}(\text{INCOME})_{ij} + u_{0j} + u_{1j}(\text{NPUSE})_{ij} + u_{2j}(\text{NE/CATV})_{ij} + u_{3j}(\text{LOTV})_{ij} + u_{4j}(\text{DISCU})_{ij} + r_{ij}$

Where

Y_{ij} : political knowledge of individual i in state or media market j .

β_{0j} : the mean score of political knowledge for state or media market j .

β_{1j} : the relationship between newspaper use and political knowledge for state or media market j .

β_{2j} : the relationship between network and cable television news use and political knowledge for state or media market j .

β_{3j} : the relationship between local television news use and political knowledge for state or media market j .

β_{4j} : the relationship between political discussion and political knowledge for state or media market j .

r_{ij} : the residual variance (random effect or random error) for individual i in state or media market j after controlling for the individual-level predictors; r_{ij} is assumed to be normally distributed with a mean 0 and variance σ^2 .

γ_{00} : the grand mean of political knowledge, i.e. the average of the state or media market means, after controlling for the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts.

γ_{01} : the effect of the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts, on β_{0j} .

γ_{10} : the average (mean value) newspaper use-political knowledge slope across states or media markets.

γ_{20} : the average (mean value) network and cable television news use-political knowledge slope across states or media markets.

γ_{30} : the average (mean value) local television news use-political knowledge slope across states or media markets.

γ_{40} : the average (mean value) political discussion-political knowledge slope across states or media markets.

u_{0j} : the residual variance (random effect or random error) of state or media market j in the intercept β_{0j} after controlling for the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts; u_{0j} is assumed to have a mean of 0 and variance τ_{00} .

u_{1j} : the residual variance (random effect or random error) of state or media market j in the slope β_{1j} .

u_{2j} : the residual variance (random effect or random error) of state or media market j in the slope β_{2j} .

u_{3j} : the residual variance (random effect or random error) of state or media market j in the slope β_{3j} .

u_{4j} : the residual variance (random effect or random error) of state or media market j in the slope β_{4j} .

The results reported in Table 4.13 are the main effects of a specific predictor over all values of the other predictors in the model. The results (see Table 4.13) indicate that people who read newspaper more frequently had more political knowledge across all eight data sets, $t(44) = 10.15, p < .001$; $t(44) = 10.14, p < .001$; $t(47) = 10.24, p < .001$; $t(47) = 10.13, p < .001$; $t(60) = 6.64, p < .001$; $t(60) = 6.49, p < .001$; $t(141) = 7.12, p < .001$.

.001; $t(184) = 7.25, p < .001$. Therefore, H1a, which predicts that people who have more newspaper use will have more political knowledge than people who have less newspaper use, is supported.

The results also show that people who watched network and cable television news more frequently had more political knowledge across all eight data sets, $t(44) = 6.02, p < .001$; $t(44) = 5.98, p < .001$; $t(47) = 6.03, p < .001$; $t(47) = 6.07, p < .001$; $t(60) = 4.36, p < .001$; $t(60) = 4.32, p < .001$; $t(141) = 5.72, p < .001$; $t(184) = 6.86, p < .001$.

Unexpectedly, people who watched local television news more frequently had less political knowledge in five data sets, $t(44) = -2.37, p < .05$; $t(44) = -2.35, p < .05$; $t(47) = -2.26, p < .05$; $t(47) = -2.25, p < .05$; $t(184) = -2.00, p < .05$. Therefore, H1b, which predicts that people who have more television news use will have more political knowledge than people who have less television news use, is partially supported.

Moreover, the results indicate that people who discussed politics more frequently had more political knowledge across all eight data sets, $t(44) = 9.96, p < .001$; $t(44) = 9.89, p < .001$; $t(47) = 10.14, p < .001$; $t(47) = 10.07, p < .001$; $t(60) = 9.17, p < .001$; $t(60) = 9.23, p < .001$; $t(141) = 10.24, p < .001$; $t(184) = 11.00, p < .001$. Therefore, H2, which predicts that people who have more political discussion will have more political knowledge than people who have less political discussion, is supported.

Regarding the main effects of the campaign-level variables, Table 4.13 shows that there was a marginally significant relationship between advertising frequencies and political knowledge in states, $t(43) = 2.00, p = .051$, and in media markets, $t(59) = 1.68, p = .098$. There was a significant relationship between advertising expenditures and political knowledge in media markets, $t(59) = 2.88, p < .01$. Thus, H3, which predicts that

the increase in televised political advertisements will be positively associated with the increase in political knowledge, is partially supported.

The results indicate that in the media markets with more presidential candidate appearances, the mean political knowledge score was higher, $t(140) = 2.33, p < .05$, but this relationship was not found in states. Thus, H4, which predicts that the increase in presidential candidate appearances will be positively associated with the increase in political knowledge, is partially supported. As for campaign contacts, the results show that the mean political knowledge score was higher in the states with more campaign contacts, $t(46) = 2.07, p < .05$, but this relationship was not found in media markets. Therefore, H5, which predicts that the increase in campaign contacts will be positively associated with the increase in political knowledge, is partially supported.

Moreover, the results also indicate that there remains statistically significant unexplained variance among the state means on political knowledge (variance of individual-level intercepts), $\chi^2(42) = 76.98, p < .01$; $\chi^2(42) = 79.72, p < .01$; $\chi^2(44) = 81.16, p < .01$; $\chi^2(44) = 79.38, p < .01$. The deviance statistics suggest that the intercepts-as-outcomes model has a better fit to the data than the random-coefficients regression model in one data set, $\chi^2(1) = 3.89, p < .05$ (media market candidate appearances). This was not found in other data sets, $\chi^2(1) = 2.34, p > .05$ (state ad frequencies); $\chi^2(1) = .58, p > .05$ (state ad expenditures); $\chi^2(1) = .03, p > .05$ (state candidate appearances); $\chi^2(1) = 2.19, p > .05$ (state campaign contacts); $\chi^2(1) = 1.73, p > .05$ (media market ad frequencies); $\chi^2(1) = 2.62, p > .05$ (media market ad expenditures); $\chi^2(1) = .74, p > .05$ (media market campaign contacts).

Level 2 variable: Ad frequencies				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.824	.574	95.482	.000
Ad frequencies, γ_{01}	.0003	.0002	2.003	.051
Newspaper use, γ_{10}	3.251	.320	10.147	.000
Ne/Ca television news use, γ_{20}	4.365	.725	6.021	.000
Local television news use, γ_{30}	-1.118	.472	-2.367	.023
Political discussion, γ_{40}	2.711	.272	9.960	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.470	42	76.981	.001
Newspaper use, u_{1j} (τ_{10})	.078	43	29.401	>.500
Ne/Ca television news use, u_{2j} (τ_{20})	5.436	43	57.139	.073
Local television news use, u_{3j} (τ_{30})	.242	43	33.958	>.500
Political discussion, u_{4j} (τ_{40})	.445	43	52.147	.160
Level-1 residuals, r_{ij} (σ^2)	383.241			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,082.761		26	
Level 2 variable: Ad expenditures				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.842	.592	92.704	.000
Ad expenditures, γ_{01}	.0002	.0001	1.201	.237
Newspaper use, γ_{10}	3.248	.320	10.141	.000
Ne/Ca television news use, γ_{20}	4.341	.726	5.982	.000
Local television news use, γ_{30}	-1.114	.474	-2.348	.023
Political discussion, γ_{40}	2.702	.273	9.888	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.976	42	79.718	.001
Newspaper use, u_{1j} (τ_{10})	.080	43	29.398	>.500
Ne/Ca television news use, u_{2j} (τ_{20})	5.733	43	57.176	.072
Local television news use, u_{3j} (τ_{30})	.218	43	33.959	>.500
Political discussion, u_{4j} (τ_{40})	.490	43	52.196	.159
Level-1 residuals, r_{ij} (σ^2)	383.201			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,084.519		26	
Level 2 variable: Candidate appearances				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.890	.585	93.807	.000
Candidate app., γ_{01}	.006	.028	.223	.824

Continued

Table 4.13: Results from the intercepts-as-outcomes model.

Table 4.13 continued

Newspaper use, γ_{10}	3.256	.318	10.235	.000
Ne/Ca television news use, γ_{20}	4.288	.711	6.029	.000
Local television news use, γ_{30}	-1.076	.476	-2.260	.028
Political discussion, γ_{40}	2.765	.273	10.143	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.925	44	81.158	.001
Newspaper use, u_{1j} (τ_{10})	.053	45	30.999	>.500
Ne/Ca television news use, u_{2j} (τ_{20})	5.856	45	58.818	.081
Local television news use, u_{3j} (τ_{30})	.293	45	34.255	>.500
Political discussion, u_{4j} (τ_{40})	.500	45	56.770	.112
Level-1 residuals, r_{ij} (σ^2)	383.829			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,451.293		26	
Level 2 variable: Campaign contacts				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.853	.565	97.067	.000
Campaign con., γ_{01}	.243	.118	2.068	.044
Newspaper use, γ_{10}	3.225	.318	10.133	.000
Ne/Ca television news use, γ_{20}	4.333	.714	6.071	.000
Local television news use, γ_{30}	-1.066	.473	-2.254	.029
Political discussion, γ_{40}	2.743	.272	10.068	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.683	44	79.383	.001
Newspaper use, u_{1j} (τ_{10})	.072	45	31.001	>.500
Ne/Ca television news use, u_{2j} (τ_{20})	5.460	45	58.864	.080
Local television news use, u_{3j} (τ_{30})	.268	45	34.281	>.500
Political discussion, u_{4j} (τ_{40})	.525	45	56.896	.110
Level-1 residuals, r_{ij} (σ^2)	383.557			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,449.131		26	
Level 2 variable: Ad frequencies				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	55.564	.573	96.915	.000
Ad frequencies, γ_{01}	.0003	.0002	1.678	.098
Newspaper use, γ_{10}	3.347	.504	6.636	.000
Ne/Ca television news use, γ_{20}	4.278	.980	4.364	.000
Local television news use, γ_{30}	-1.226	.689	-1.779	.080

Continued

Table 4.13 continued

Political discussion, γ_{40}	2.952	.322	9.169	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
Media market mean, u_{0j} (τ_{00})	4.081	57	69.344	.127
Newspaper use, u_{1j} (τ_{10})	2.605	58	61.682	.346
Ne/Ca television news use, u_{2j} (τ_{20})	13.410	58	79.731	.031
Local television news use, u_{3j} (τ_{30})	2.781	58	49.649	>.500
Political discussion, u_{4j} (τ_{40})	.958	58	59.702	.414
Level-1 residuals, r_{ij} (σ^2)	380.013			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	12,686.999		26	
Level 2 variable: Ad expenditures				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	55.360	.583	94.888	.000
Ad expenditures, γ_{01}	.0003	.0001	2.879	.006
Newspaper use, γ_{10}	3.279	.505	6.494	.000
Ne/Ca television news use, γ_{20}	4.264	.987	4.322	.000
Local television news use, γ_{30}	-1.219	.683	-1.785	.079
Political discussion, γ_{40}	2.951	.320	9.231	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
Media market mean, u_{0j} (τ_{00})	5.148	57	71.582	.093
Newspaper use, u_{1j} (τ_{10})	2.805	58	61.845	.340
Ne/Ca television news use, u_{2j} (τ_{20})	14.015	58	79.996	.029
Local television news use, u_{3j} (τ_{30})	3.049	58	49.769	>.500
Political discussion, u_{4j} (τ_{40})	.938	58	59.821	.409
Level-1 residuals, r_{ij} (σ^2)	379.087			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	12,686.107		26	
Level 2 variable: Candidate appearances				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	54.517	.524	104.047	.000
Candidate app., γ_{01}	.202	.086	2.334	.021
Newspaper use, γ_{10}	3.343	.469	7.123	.000
Ne/Ca television news use, γ_{20}	4.351	.761	5.720	.000
Local television news use, γ_{30}	-1.008	.562	-1.793	.075
Political discussion, γ_{40}	2.791	.272	10.243	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
Media market mean, u_{0j} (τ_{00})	4.394	101	117.308	.128

Continued

Table 4.13 continued

Newspaper use, u_{1j} (τ_{10})	2.347	102	98.835	>.500
Ne/Ca television news use, u_{2j} (τ_{20})	8.793	102	126.400	.051
Local television news use, u_{3j} (τ_{30})	1.665	102	87.349	>.500
Political discussion, u_{4j} (τ_{40})	.728	102	95.612	>.500
Level-1 residuals, r_{ij} (σ^2)	384.840			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	17,709.108		26	
Level 2 variables: Campaign contacts				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	54.535	.445	122.506	.000
Campaign con., γ_{01}	.083	.087	.953	.342
Newspaper use, γ_{10}	3.187	.440	7.247	.000
Ne/Ca television news use, γ_{20}	4.647	.678	6.857	.000
Local television news use, γ_{30}	-1.049	.525	-1.999	.047
Political discussion, γ_{40}	2.768	.252	11.003	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
Media market mean, u_{0j} (τ_{00})	3.836	123	139.904	.142
Newspaper use, u_{1j} (τ_{10})	1.569	124	112.186	>.500
Ne/Ca television news use, u_{2j} (τ_{20})	7.516	124	148.956	.063
Local television news use, u_{3j} (τ_{30})	.893	124	102.356	>.500
Political discussion, u_{4j} (τ_{40})	.743	124	119.419	>.500
Level-1 residuals, r_{ij} (σ^2)	383.740			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,465.665		26	

(5) Intercepts-and-slopes-as-outcomes Model

In the intercepts-and-slopes-as-outcomes model, the interaction terms were added to the intercepts-as-outcomes model. The intercepts-and-slopes-as-outcomes model helps simultaneously investigate the main effects of both the individual-level variables and the campaign-level variables on political knowledge as well as the cross-level interaction effects between them. In this model, the state or media market mean (intercept β_{0j}) and the parameter of each individual-level predictor (slope β_{1j} , β_{2j} , β_{3j} , and β_{4j}) were set to vary across states or media markets as a function of a grand mean, a campaign-level

predictor and a random error. The individual-level control variables, including age, gender, education and income were fixed to have a common effect for all states or media markets. The statistical model is as follows:

Level 1 model: $Y_{ij} = \beta_{0j} + \beta_{1j} (\text{NPUSE})_{ij} + \beta_{2j} (\text{NE/CATV})_{ij} + \beta_{3j} (\text{LOTV})_{ij} + \beta_{4j} (\text{DISCU})_{ij} + \beta_{5j} (\text{AGE})_{ij} + \beta_{6j} (\text{MALE})_{ij} + \beta_{7j} (\text{EDUCA})_{ij} + \beta_{8j} (\text{INCOME})_{ij} + r_{ij}$

Level 2 model:

$$\begin{aligned}\beta_{0j} &= \gamma_{00} + \gamma_{01} (\text{CAMPAIGN})_j + u_{0j} \\ \beta_{1j} &= \gamma_{10} + \gamma_{11} (\text{CAMPAIGN})_j + u_{1j} \\ \beta_{2j} &= \gamma_{20} + \gamma_{21} (\text{CAMPAIGN})_j + u_{2j} \\ \beta_{3j} &= \gamma_{30} + \gamma_{31} (\text{CAMPAIGN})_j + u_{3j} \\ \beta_{4j} &= \gamma_{40} + \gamma_{41} (\text{CAMPAIGN})_j + u_{4j} \\ \beta_{5j} &= \gamma_{50} \\ \beta_{6j} &= \gamma_{60} \\ \beta_{7j} &= \gamma_{70} \\ \beta_{8j} &= \gamma_{80}\end{aligned}$$

Mixed-effects model: $Y_{ij} = \gamma_{00} + \gamma_{01} (\text{CAMPAIGN})_j + \gamma_{10} (\text{NPUSE})_{ij} + \gamma_{11} (\text{CAMPAIGN})_j (\text{NPUSE})_{ij} + \gamma_{20} (\text{NE/CATV})_{ij} + \gamma_{21} (\text{CAMPAIGN})_j (\text{NE/CATV})_{ij} + \gamma_{30} (\text{LOTV})_{ij} + \gamma_{31} (\text{CAMPAIGN})_j (\text{LOTV})_{ij} + \gamma_{40} (\text{DISCU})_{ij} + \gamma_{41} (\text{CAMPAIGN})_j (\text{DISCU})_{ij} + \gamma_{50} (\text{AGE})_{ij} + \gamma_{60} (\text{MALE})_{ij} + \gamma_{70} (\text{EDUCA})_{ij} + \gamma_{80} (\text{INCOME})_{ij} + u_{0j} + u_{1j} (\text{NPUSE})_{ij} + u_{2j} (\text{NE/CATV})_{ij} + u_{3j} (\text{LOTV})_{ij} + u_{4j} (\text{DISCU})_{ij} + r_{ij}$

Where

Y_{ij} : political knowledge of individual i in state or media market j .

β_{0j} : the mean score of political knowledge for state or media market j .

β_{1j} : the relationship between newspaper use and political knowledge for state or media market j .

β_{2j} : the relationship between network and cable television news use and political knowledge for state or media market j .

β_{3j} : the relationship between local television news use and political knowledge for state or media market j .

β_{4j} : the relationship between political discussion and political knowledge for state or media market j .

r_{ij} : the residual variance (random effect or random error) for individual i in state or media market j after controlling for the individual-level predictors; r_{ij} is assumed to be normally distributed with a mean 0 and variance σ^2 .

γ_{00} : the grand mean of political knowledge, i.e. the average of the state or media market means, after controlling for the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts.

γ_{01} : the effect of the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts, on β_{0j} .

γ_{10} : the average (mean value) newspaper use-political knowledge slope across states or media markets after controlling for the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts.

γ_{11} : the effect of the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts, on β_{1j} ; also an indicator of cross-level interactions.

γ_{20} : the average (mean value) network and cable television news use-political knowledge slope across states or media markets after controlling for the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts.

γ_{21} : the effect of the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts, on β_{2j} ; also an indicator of cross-level interactions.

γ_{30} : the average (mean value) local television news use-political knowledge slope across states or media markets after controlling for the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts.

γ_{31} : the effect of the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts, on β_{3j} ; also an indicator of cross-level interactions.

γ_{40} : the average (mean value) political discussion-political knowledge slope across states or media markets after controlling for the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts.

γ_{41} : the effect of the campaign-level predictor, i.e., political ads, candidate appearances or campaign contacts, on β_{4j} ; also an indicator of cross-level interactions.

u_{0j} : the residual variance (random effect or random error) of state or media market j in the intercept β_{0j} after controlling for the campaign-level predictor; u_{0j} is assumed to have a mean of 0 and variance τ_{00} .

u_{1j} : the residual variance (random effect or random error) of state or media market j in the slope β_{1j} after controlling for the campaign-level predictor.

u_{2j} : the residual variance (random effect or random error) of state or media market j in the slope β_{2j} after controlling for the campaign-level predictor.

u_{3j} : the residual variance (random effect or random error) of state or media market j in the slope β_{3j} after controlling for the campaign-level predictor.

u_{4j} : the residual variance (random effect or random error) of state or media market j in the slope β_{4j} after controlling for the campaign-level predictor.

Table 4.14 presents the main effects of a specific individual-level predictor, including newspaper use, network and cable TV news use, local TV news use, and political discussion, at the mean (due to grand-mean centering) of the campaign-level variable, and over all values of the other variables in the model. It also indicates the main effects of a specific campaign-level predictor, including advertising frequencies, advertising expenditures, candidate appearances, and campaign contacts, at the mean (due to grand-mean centering) of all the individual-level primary predictors, i.e.,

newspaper use, network and cable TV news use, local TV news use, and political discussion, and over all values of the other variables in the model. These main effects are conditional because interaction terms are included in the model. Table 4.14 also presents the interaction effects between the individual-level variables and the campaign-level variables.

The results indicate that people who read newspaper more frequently had more political knowledge across all eight data sets, $t(43) = 9.69, p < .001$; $t(43) = 8.36, p < .001$; $t(46) = 7.53, p < .001$; $t(46) = 9.39, p < .001$; $t(59) = 6.80, p < .001$; $t(59) = 6.23, p < .001$; $t(140) = 6.36, p < .001$; $t(183) = 6.97, p < .001$. The results also show that people who watched network and cable television news more frequently had more political knowledge across all eight data sets, $t(43) = 6.27, p < .001$; $t(43) = 6.49, p < .001$; $t(46) = 6.73, p < .001$; $t(46) = 6.40, p < .001$; $t(59) = 4.49, p < .001$; $t(59) = 4.43, p < .001$; $t(140) = 6.11, p < .001$; $t(183) = 6.80, p < .001$. People who watched local television news more frequently had less political knowledge in the first four data sets, $t(43) = -2.32, p < .05$; $t(43) = -2.20, p < .05$; $t(46) = -2.03, p < .05$; $t(46) = -2.12, p < .05$. Moreover, the results indicate that people who discussed politics more frequently had more political knowledge across all eight data sets, $t(43) = 10.11, p < .001$; $t(43) = 10.19, p < .001$; $t(46) = 9.99, p < .001$; $t(46) = 10.44, p < .001$; $t(59) = 9.04, p < .001$; $t(59) = 9.67, p < .001$; $t(140) = 9.40, p < .001$; $t(183) = 10.61, p < .001$. These results are consistent with the results from the random-coefficients regression model and the intercepts-as-outcomes model.

Regarding the campaign-level variables, Table 4.14 shows that there was a marginally significant relationship between advertising frequencies and political knowledge in states, $t(43) = 1.95, p = .057$, and in media markets, $t(59) = 1.76, p = .083$.

There was a marginally significant relationship between candidate appearances and political knowledge in media markets, $t(140) = 1.96, p = .051$, but this relationship was not found in states. There was a marginally significant relationship between campaign contacts and political knowledge in states, $t(46) = 1.68, p = .099$, but this relationship was not found in media markets. Like the results from the means-as-outcomes regression model and the intercepts-as-outcomes model, the results from this model also indicate that campaign practices are positively related to people's political knowledge to some extent.

Regarding the interaction effects, it is found that newspaper use interacted with state advertising spending, $t(43) = 2.77, p < .01$, newspaper use interacted with state candidate appearances, $t(46) = 2.03, p < .05$, and newspaper use interacted with state campaign contacts, $t(46) = 2.37, p < .05$, in predicting political knowledge. These findings support H6a, H6b and H6c, which predict that the relationship between newspaper use and political knowledge will be stronger in the places with more political ads, candidate appearances, or campaign contacts than in the places with fewer of these campaign practices. This suggests that the relationship between newspaper use and political knowledge “within” states varied significantly “between” states due to some campaign-level factors. The difference between people with more newspaper use and less newspaper use was greater in the states with more advertising spending, candidate appearances or campaign contacts than in the states with less advertising spending, candidate appearances or less campaign contacts. Figure 4.1 shows that the difference increased about 63% from 4.25 to 6.92. Figure 4.2 shows that the difference increased about 37% from 4.61 to 6.32. Figure 4.3 shows that the difference increased about 78%

from 4.08 to 7.24. This means that newspaper use had a greater impact on political knowledge in the places with more advertising spending, candidate appearance, or campaign contacts than in the places with fewer of these.

Figure 4.1: Interaction of newspaper use and advertising spending predicting political knowledge (state).

Figure 4.2: Interaction of newspaper use and candidate appearances predicting political knowledge (state).

Figure 4.3: Interaction of newspaper use and campaign contacts predicting political knowledge (state).

Moreover, there are marginally significant interaction effects between network and cable TV news use and state advertising spending, $t(43) = -1.73, p = .09$, and between local TV news use and media market advertising frequencies, $t(59) = 1.67, p = 1.00$. These findings provide some evidence for H7a, which predicts that the relationship between TV news use and political knowledge will be stronger in the places with more political ads than in the places with fewer political ads.

Finally, it is also found that political discussion interacted with advertising spending in media markets, $t(59) = 3.01, p < .01$, and that political discussion interacted with candidate appearances in media markets, $t(140) = 2.48, p < .05$, in predicting political knowledge. These findings support H8a, which predicts that the relationship between political discussion and political knowledge will be stronger in the places with more political ads than in the places with less political ads; and H8b, which predicts that the relationship between political discussion and political knowledge will be stronger in the places with more candidate appearances than in the places with less candidate appearances. This suggests that the relationship between political discussion and political knowledge “within” media markets varied significantly “between” media markets due to some campaign-level factors. The difference between people with more political discussion and less political discussion was greater in the media markets with more advertising spending or candidate appearances than in the media markets with less advertising spending or candidate appearances. Figure 4.4 shows that the difference increased about 50% from 8.69 to 13.00. Figure 4.5 shows that the difference increased about 43% from 8.02 to 11.50. This means that political discussion had a greater impact

on political knowledge in the places with more advertising spending or candidate appearances than the places with fewer of these.

Figure 4.4: Interaction of political discussion and advertising spending predicting political knowledge (media market).

Figure 4.5: Interaction of political discussion and candidate appearances predicting political knowledge (media market).

The results also indicate that there remains statistically significant unexplained variability among the state means on political knowledge (variance of individual-level intercepts), $\chi^2(42) = 77.19, p < .01$; $\chi^2(42) = 79.84, p < .01$; $\chi^2(44) = 81.76, p < .01$; $\chi^2(44) = 79.34, p < .01$. The deviance statistics suggest that the intercepts-and-slopes-as-outcomes model did not have a better fit to the data than the intercepts-as-outcomes model, $\chi^2(4) = 3.08, p > .05$; $\chi^2(4) = 4.07, p > .05$; $\chi^2(4) = 2.91, p > .05$; $\chi^2(4) = 3.85, p > .05$; $\chi^2(4) = 2.57, p > .05$; $\chi^2(4) = 4.21, p > .05$; $\chi^2(4) = 5.43, p > .05$; $\chi^2(4) = 3.11, p > .05$.

Level 2 variable: Ad frequencies				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Model for state means</i>				
Intercept (average state mean), γ_{00}	54.802	.570	96.128	.000
Ad frequencies, γ_{01}	.0004	.0002	1.952	.057
<i>Model for newspaper use slopes</i>				
Intercept, γ_{10}	3.243	.335	9.687	.000
Ad frequencies, γ_{11}	.0002	.0001	1.414	.165
<i>Model for ne/ca TV news use slopes</i>				
Intercept, γ_{20}	4.388	.700	6.269	.000
Ad frequencies, γ_{21}	-.0003	.0003	-1.169	.249
<i>Model for local TV news use slopes</i>				
Intercept, γ_{30}	-1.128	.486	-2.323	.025
Ad frequencies, γ_{31}	.0002	.0002	.961	.342
<i>Model for political discussion slopes</i>				
Intercept, γ_{40}	2.730	.270	10.107	.000
Ad frequencies, γ_{41}	-.0001	.0001	-.984	.331
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.439	42	77.194	.001
Newspaper use, u_{1j} (τ_{10})	.081	42	28.604	>.500
Ne/ca TV news use, u_{2j} (τ_{20})	5.123	42	55.564	.078
Local TV news use, u_{3j} (τ_{30})	.305	42	33.187	>.500
Political discussion, u_{4j} (τ_{40})	.392	42	51.442	.151
Level-1 residuals, r_{ij} (σ^2)	382.872			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,079.684		30	
Level 2 variable: Ad expenditures				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Model for state means</i>				
Intercept (average state mean), γ_{00}	54.818	.592	92.555	.000
Ad expenditures, γ_{01}	.0002	.0002	1.265	.213
<i>Model for newspaper use slopes</i>				
Intercept, γ_{10}	3.102	.371	8.359	.000
Ad expenditures, γ_{11}	.0003	.0001	2.768	.009
<i>Model for ne/ca TV news use slopes</i>				
Intercept, γ_{20}	4.428	.683	6.486	.000
Ad expenditures, γ_{21}	-.0004	.0002	-1.731	.090
<i>Model for local TV news use slopes</i>				
Intercept, γ_{30}	-1.077	.490	-2.196	.033
Ad expenditures, γ_{31}	.00004	.0002	.157	.876

Continued

Table 4.14: Results from the intercepts-and-slopes-as-outcomes model.

Table 4.14 continued

<i>Model for political discussion slopes</i>				
Intercept, γ_{40}	2.694	.264	10.186	.000
Ad expenditures, γ_{41}	.00009	.0001	.827	.413
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
State mean, u_{0j} (τ_{00})	7.031	42	79.839	.001
Newspaper use, u_{1j} (τ_{10})	.058	42	27.018	>.500
Ne/ca TV news use, u_{2j} (τ_{20})	5.011	42	54.086	.100
Local TV news use, u_{3j} (τ_{30})	.246	42	33.921	>.500
Political discussion, u_{4j} (τ_{40})	.430	42	51.603	.147
Level-1 residuals, r_{ij} (σ^2)	382.756			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,080.449		30	
Level 2 variable: Candidate appearances				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Model for state means</i>				
Intercept (average state mean), γ_{00}	54.858	.580	94.504	.000
Candidate app., γ_{01}	.017	.045	.379	.706
<i>Model for newspaper use slopes</i>				
Intercept, γ_{10}	3.029	.402	7.529	.000
Candidate app., γ_{11}	.037	.018	2.030	.048
<i>Model for ne/ca TV news use slopes</i>				
Intercept, γ_{20}	4.508	.670	6.732	.000
Candidate app., γ_{21}	-.052	.048	-1.066	.292
<i>Model for local TV news use slopes</i>				
Intercept, γ_{30}	-1.044	.513	-2.034	.047
Candidate app., γ_{31}	-.002	.031	-.050	.961
<i>Model for political discussion slopes</i>				
Intercept, γ_{40}	2.713	.272	9.994	.000
Candidate app., γ_{41}	.014	.017	.791	.433
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
State mean, u_{0j} (τ_{00})	6.970	44	81.756	.001
Newspaper use, u_{1j} (τ_{10})	.034	44	29.229	>.500
Ne/ca TV news use, u_{2j} (τ_{20})	5.318	44	57.990	.077
Local TV news use, u_{3j} (τ_{30})	.312	44	34.218	>.500
Political discussion, u_{4j} (τ_{40})	.391	44	56.111	.104
Level-1 residuals, r_{ij} (σ^2)	383.671			

Continued

Table 4.14 continued

<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,448.382		30	
Level 2 variable: Campaign contacts				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Model for state means</i>				
Intercept (average state mean), γ_{00}	54.797	.564	97.137	.000
Campaign con., γ_{01}	.264	.157	1.682	.099
<i>Model for newspaper use slopes</i>				
Intercept, γ_{10}	3.136	.334	9.393	.000
Campaign con., γ_{11}	.240	.101	2.371	.022
<i>Model for ne/ca TV news use slopes</i>				
Intercept, γ_{20}	4.325	.676	6.395	.000
Campaign con., γ_{21}	-.257	.205	-1.249	.218
<i>Model for local TV news use slopes</i>				
Intercept, γ_{30}	-1.004	.474	-2.116	.040
Campaign con., γ_{31}	-.003	.145	-.020	.985
<i>Model for political discussion slopes</i>				
Intercept, γ_{40}	2.739	.262	10.443	.000
Campaign con., γ_{41}	.066	.080	.825	.414
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
State mean, u_{0j} (τ_{00})	6.785	44	79.339	.001
Newspaper use, u_{1j} (τ_{10})	.041	44	27.941	>.500
Ne/ca TV news use, u_{2j} (τ_{20})	5.014	44	57.773	.080
Local TV news use, u_{3j} (τ_{30})	.277	44	34.210	>.500
Political discussion, u_{4j} (τ_{40})	.397	44	56.415	.099
Level-1 residuals, r_{ij} (σ^2)	383.251			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,445.280		30	
Level 2 variable: Ad frequencies				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Model for media market means</i>				
Intercept (average market mean), γ_{00}	55.534	.572	97.157	.000
Ad frequencies, γ_{01}	.0003	.0002	1.763	.083
<i>Model for newspaper use slopes</i>				
Intercept, γ_{10}	3.422	.503	6.798	.000
Ad frequencies, γ_{11}	.000001	.0002	.006	.995

Continued

Table 4.14 continued

<i>Model for ne/ca TV news use slopes</i>				
Intercept, γ_{20}	4.239	.944	4.489	.000
Ad frequencies, γ_{21}	-.0003	.0003	-1.154	.254
<i>Model for local TV news use slopes</i>				
Intercept, γ_{30}	-1.125	.672	-1.674	.099
Ad frequencies, γ_{31}	.0004	.0002	1.670	.100
<i>Model for political discussion slopes</i>				
Intercept, γ_{40}	2.938	.325	9.039	.000
Ad frequencies, γ_{41}	.00001	.0001	.097	.924
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
Media market mean, $u_{0j} (\tau_{00})$	3.975	57	69.692	.121
Newspaper use, $u_{1j} (\tau_{10})$	2.673	57	61.781	.309
Ne/ca TV news use, $u_{2j} (\tau_{20})$	11.439	57	78.003	.034
Local TV news use, $u_{3j} (\tau_{30})$	2.369	57	49.416	>.500
Political discussion, $u_{4j} (\tau_{40})$	.948	57	59.666	.379
Level-1 residuals, $r_{ij} (\sigma^2)$	379.735			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	12,684.431		30	
Level 2 variable: Ad expenditures				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Model for media market means</i>				
Intercept (average market mean), γ_{00}	55.389	.576	96.233	.000
Ad expenditures, γ_{01}	.0002	.0001	1.657	.102
<i>Model for newspaper use slopes</i>				
Intercept, γ_{10}	3.184	.511	6.226	.000
Ad expenditures, γ_{11}	.0002	.0001	1.320	.192
<i>Model for ne/ca TV news use slopes</i>				
Intercept, γ_{20}	4.373	.988	4.425	.000
Ad expenditures, γ_{21}	-.0002	.0002	-1.078	.286
<i>Model for local TV news use slopes</i>				
Intercept, γ_{30}	-1.190	.686	-1.734	.088
Ad expenditures, γ_{31}	-.00005	.0002	-.266	.791
<i>Model for political discussion slopes</i>				
Intercept, γ_{40}	2.883	.298	9.668	.000
Ad expenditures, γ_{41}	.0002	.00006	3.014	.004

Continued

Table 4.14 continued

<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
Media market mean, u_{0j} (τ_{00})	4.967	57	70.407	.109
Newspaper use, u_{1j} (τ_{10})	2.443	57	60.723	.343
Ne/ca TV news use, u_{2j} (τ_{20})	13.454	57	78.463	.031
Local TV news use, u_{3j} (τ_{30})	2.893	57	49.393	>.500
Political discussion, u_{4j} (τ_{40})	.466	57	53.878	>.500
Level-1 residuals, r_{ij} (σ^2)	379.408			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	12,681.895		30	
Level 2 variable: Candidate appearances				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Model for media market means</i>				
Intercept (average market mean), γ_{00}	54.528	.521	104.670	.000
Candidate app., γ_{01}	.180	.092	1.964	.051
<i>Model for newspaper use slopes</i>				
Intercept, γ_{10}	3.212	.505	6.357	.000
Candidate app., γ_{11}	.082	.091	.903	.368
<i>Model for ne/ca TV news use slopes</i>				
Intercept, γ_{20}	4.639	.759	6.111	.000
Candidate app., γ_{21}	-.173	.173	-.997	.321
<i>Model for local TV news use slopes</i>				
Intercept, γ_{30}	-.939	.589	-1.594	.113
Candidate app., γ_{31}	-.056	.111	-.501	.616
<i>Model for political discussion slopes</i>				
Intercept, γ_{40}	2.613	.278	9.396	.000
Candidate app., γ_{41}	.115	.046	2.481	.015
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
Media market mean, u_{0j} (τ_{00})	4.248	101	116.509	.139
Newspaper use, u_{1j} (τ_{10})	1.968	101	98.161	>.500
Ne/ca TV news use, u_{2j} (τ_{20})	7.060	101	124.333	.057
Local TV news use, u_{3j} (τ_{30})	1.376	101	87.313	>.500
Political discussion, u_{4j} (τ_{40})	.362	101	90.146	>.500
Level-1 residuals, r_{ij} (σ^2)	385.579			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	17,703.678		30	
Level 2 variables: Campaign contacts				

Continued

Table 4.14 continued

<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
<i>Model for media market means</i>				
Intercept (average market mean), γ_{00}	54.482	.451	120.890	.000
Campaign con., γ_{01}	.065	.093	.698	.486
<i>Model for newspaper use slopes</i>				
Intercept, γ_{10}	3.075	.441	6.972	.000
Campaign con., γ_{11}	.162	.107	1.516	.131
<i>Model for ne/ca TV news use slopes</i>				
Intercept, γ_{20}	4.637	.682	6.796	.000
Campaign con., γ_{21}	-.006	.128	-.048	.963
<i>Model for local TV news use slopes</i>				
Intercept, γ_{30}	-1.045	.535	-1.952	.052
Campaign con., γ_{31}	.008	.095	.079	.937
<i>Model for political discussion slopes</i>				
Intercept, γ_{40}	2.752	.259	10.610	.000
Campaign con., γ_{41}	.028	.043	.649	.517
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
	<i>Component</i>			
Media market mean, u_{0j} (τ_{00})	4.057	123	140.106	.139
Newspaper use, u_{1j} (τ_{10})	1.339	123	109.490	>.500
Ne/ca TV news use, u_{2j} (τ_{20})	7.669	123	149.069	.055
Local TV news use, u_{3j} (τ_{30})	.958	123	102.403	>.500
Political discussion, u_{4j} (τ_{40})	.695	123	119.109	>.500
Level-1 residuals, r_{ij} (σ^2)	383.348			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,462.556		30	

In order to address the concern of multicollinearity in the above models, interaction terms were entered into the models one at a time. The same five interaction effects, which are found based on the above statistical model, and a marginally significant interaction effect between newspaper use and media market campaign contacts were found based on the following statistical model. The following statistical model provides an example of one of these models.

Level 1 model: $Y_{ij} = \beta_{0j} + \beta_{1j} (\text{NPUSE})_{ij} + \beta_{2j} (\text{NE/CATV})_{ij} + \beta_{3j} (\text{LOTV})_{ij} + \beta_{4j} (\text{DISCU})_{ij} + \beta_{5j} (\text{AGE})_{ij} + \beta_{6j} (\text{MALE})_{ij} + \beta_{7j} (\text{EDUCA})_{ij} + \beta_{8j} (\text{INCOME})_{ij} + r_{ij}$

Level 2 model:

$$\begin{aligned}\beta_{0j} &= \gamma_{00} + \gamma_{01} (\text{CAMPAIGN})_j + u_{0j} \\ \beta_{1j} &= \gamma_{10} + \gamma_{11} (\text{CAMPAIGN})_j + u_{1j} \\ \beta_{2j} &= \gamma_{20} + u_{2j} \\ \beta_{3j} &= \gamma_{30} + u_{3j} \\ \beta_{4j} &= \gamma_{40} + u_{4j} \\ \beta_{5j} &= \gamma_{50} \\ \beta_{6j} &= \gamma_{60} \\ \beta_{7j} &= \gamma_{70} \\ \beta_{8j} &= \gamma_{80}\end{aligned}$$

Mixed-effects model: $Y_{ij} = \gamma_{00} + \gamma_{01} (\text{CAMPAIGN})_j + \gamma_{10} (\text{NPUSE})_{ij} + \gamma_{11} (\text{CAMPAIGN})_j (\text{NPUSE})_{ij} + \gamma_{20} (\text{NE/CATV})_{ij} + \gamma_{30} (\text{LOTV})_{ij} + \gamma_{40} (\text{DISCU})_{ij} + \gamma_{50} (\text{AGE})_{ij} + \gamma_{60} (\text{MALE})_{ij} + \gamma_{70} (\text{EDUCA})_{ij} + \gamma_{80} (\text{INCOME})_{ij} + u_{0j} + u_{1j} (\text{NPUSE})_{ij} + u_{2j} (\text{NE/CATV})_{ij} + u_{3j} (\text{LOTV})_{ij} + u_{4j} (\text{DISCU})_{ij} + r_{ij}$

Table 4.15 shows that newspaper use interacted with state advertising spending, $t(43) = 2.71, p = .01$, in predicting political knowledge. Thus, H6a is supported. Figure 4.6 shows that the difference increased about 62% from 4.27 to 6.93. This means that the difference between people with more newspaper use and less newspaper use was greater in the states with more advertising spending than in the states with less advertising spending. In other words, newspaper use had a greater impact on political knowledge in the places with more advertising spending.

Level 2 variable: Ad expenditures				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.834	.595	92.091	.000
Ad expenditures, γ_{01}	.0001	.0002	.733	.467
<i>Model for newspaper use slope</i>				
Intercept, γ_{10}	3.110	.352	8.836	.000
Ad expenditures, γ_{11}	.0003	.0001	2.712	.010
Ne/Ca television news use, γ_{20}	4.317	.718	6.009	.000
Local television news use, γ_{30}	-1.070	.480	-2.228	.031
Political discussion, γ_{40}	2.713	.273	9.940	.000
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
State mean, u_{0j} (τ_{00})	7.088	42	79.867	.001
Newspaper use, u_{1j} (τ_{10})	.055	42	27.063	>.500
Ne/ca TV news use, u_{2j} (τ_{20})	5.627	43	57.206	.072
Local TV news use, u_{3j} (τ_{30})	.212	43	33.887	>.500
Political discussion, u_{4j} (τ_{40})	.450	43	52.209	.159
Level-1 residuals, r_{ij} (σ^2)	382.941			
<i>Model Fit</i>	<i>Deviance Statistic</i>	<i>Parameters</i>		
	20,082.587	27		

Table 4.15: Interaction of newspaper use and advertising spending predicting political knowledge (state).

Figure 4.6: Interaction of newspaper use and advertising spending predicting political knowledge (state).

Table 4.16 shows that newspaper use interacted with state candidate appearances, $t(46) = 2.01, p = .05$, in predicting political knowledge. Thus, H6b is supported. Figure 4.7 shows that the difference increased about 32% from 4.74 to 6.27. This means that the difference between people with more newspaper use and less newspaper use was greater in the states with more candidate appearances than in the states with less candidate appearances. In other words, newspaper use had a greater impact on political knowledge in the places with more candidate appearances.

Level 2 variable: Candidate appearances				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.894	.590	93.083	.000
Candidate app., γ_{01}	-.002	.029	-.079	.937
<i>Model for newspaper use slope</i>				
Intercept, γ_{10}	3.053	.392	7.797	.000
Candidate app., γ_{11}	.033	.016	2.014	.050
Ne/Ca television news use, γ_{20}	4.303	.706	6.099	.000
Local television news use, γ_{30}	-1.054	.479	-2.201	.033
Political discussion, γ_{40}	2.777	.274	10.143	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
<i>Component</i>				
State mean, $u_{0j} (\tau_{00})$	7.062	44	80.915	.001
Newspaper use, $u_{1j} (\tau_{10})$	.033	44	29.295	>.500
Ne/ca TV news use, $u_{2j} (\tau_{20})$	5.688	45	58.831	.081
Local TV news use, $u_{3j} (\tau_{30})$	.308	45	34.233	>.500
Political discussion, $u_{4j} (\tau_{40})$	.476	45	56.764	.112
Level-1 residuals, $r_{ij} (\sigma^2)$	383.672			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,450.052		27	

Table 4.16: Interaction of newspaper use and candidate appearances predicting political knowledge (state).

Figure 4.7: Interaction of newspaper use and candidate appearances predicting political knowledge (state).

Table 4.17 shows that newspaper use interacted with state campaign contacts, $t(46) = 2.09, p < .05$, in predicting political knowledge. Thus, H6c is supported. Figure 4.8 shows that the difference increased about 69% from 4.21 to 7.12. This means that the difference between people with more newspaper use and less newspaper use was greater in the states with more campaign contacts than in the states with less campaign contacts. In other words, newspaper use had a greater impact on political knowledge in the places with more campaign contacts.

Level 2 variable: Campaign contacts				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average state mean), γ_{00}	54.830	.572	95.890	.000
Campaign con., γ_{01}	.205	.130	1.576	.122
<i>Model for newspaper use slopes</i>				
Intercept, γ_{10}	3.139	.325	9.656	.000
Campaign con., γ_{11}	.221	.106	2.091	.042
Ne/Ca television news use, γ_{20}	4.316	.705	6.123	.000
Local television news use, γ_{30}	-1.028	.477	-2.153	.036
Political discussion, γ_{40}	2.748	.275	9.981	.000
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
State mean, u_{0j} (τ_{00})	6.859	44	79.132	.001
Newspaper use, u_{1j} (τ_{10})	.038	44	28.026	>.500
Ne/ca TV news use, u_{2j} (τ_{20})	5.373	45	58.931	.079
Local TV news use, u_{3j} (τ_{30})	.299	45	34.260	>.500
Political discussion, u_{4j} (τ_{40})	.524	45	56.957	.109
Level-1 residuals, r_{ij} (σ^2)	383.188			
<i>Model Fit</i>	<i>Deviance Statistic</i>	<i>Parameters</i>		
	20,446.975	27		

Table 4.17: Interaction of newspaper use and campaign contacts predicting political knowledge (state).

Figure 4.8: Interaction of newspaper use and campaign contacts predicting political knowledge (state).

Table 4.18 shows that political discussion interacted with media market advertising expenditures, $t(59) = 3.18, p < .01$, in predicting political knowledge. Thus, H8a is supported. Figure 4.9 shows that the difference increased about 22% from 9.80 to 11.95. The difference between people with more political discussion and less political discussion was greater in the media markets with more advertising spending than in the media markets with less advertising spending. In other words, political discussion had a greater impact on political knowledge in the places with more advertising spending.

Level 2 variable: Ad expenditures				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	55.376	.580	95.470	.000
Ad expenditures, γ_{01}	.0002	.0001	2.102	.040
Newspaper use, γ_{10}	3.286	.507	6.484	.000
Ne/Ca television news use, γ_{20}	4.267	.991	4.306	.000
Local television news use, γ_{30}	-1.238	.686	-1.805	.076
<i>Model for political discussion slopes</i>				
Intercept, γ_{40}	2.891	.300	9.640	.000
Ad expenditures, γ_{41}	.0001	.00005	3.180	.003
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
<i>Component</i>				
Media market mean, $u_{0j} (\tau_{00})$	5.028	57	70.472	.108
Newspaper use, $u_{1j} (\tau_{10})$	2.678	58	61.722	.344
Ne/ca TV news use, $u_{2j} (\tau_{20})$	14.397	58	79.866	.030
Local TV news use, $u_{3j} (\tau_{30})$	2.940	58	49.711	>.500
Political discussion, $u_{4j} (\tau_{40})$	.514	57	54.432	>.500
Level-1 residuals, $r_{ij} (\sigma^2)$	379.285			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	12,683.518		27	

Table 4.18: Interaction of political discussion and advertising spending predicting political knowledge (media market).

Figure 4.9: Interaction of political discussion and advertising spending predicting political knowledge (media market).

Table 4.19 shows that political discussion interacted with media market candidate appearances, $t(140) = 2.15, p < .05$, in predicting political knowledge. Thus, H8b is supported. Figure 4.10 shows that the difference increased about 31% from 8.57 to 11.21. The difference between people with more political discussion and less political discussion was greater in the media markets with more candidate appearances than in the media markets with less candidate appearances. In other words, political discussion had a greater impact on political knowledge in the places with more candidate appearances.

Level 2 variable: Candidate appearances				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	54.526	.522	104.555	.000
Candidate app., γ_{01}	.175	.088	1.996	.048
Newspaper use, γ_{10}	3.369	.471	7.150	.000
Ne/Ca television news use, γ_{20}	4.386	.762	5.756	.000
Local television news use, γ_{30}	-1.062	.569	-1.865	.064
<i>Model for political discussion slopes</i>				
Intercept, γ_{40}	2.647	.277	9.544	.000
Candidate app., γ_{41}	.087	.040	2.149	.033
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p-value</i>
Media market mean, u_{0j} (τ_{00})	4.221	101	116.510	.139
Newspaper use, u_{1j} (τ_{10})	2.228	102	98.755	>.500
Ne/ca TV news use, u_{2j} (τ_{20})	8.765	102	126.332	.051
Local TV news use, u_{3j} (τ_{30})	1.476	102	87.173	>.500
Political discussion, u_{4j} (τ_{40})	.441	101	90.787	>.500
Level-1 residuals, r_{ij} (σ^2)	385.065			
<i>Model Fit</i>	<i>Deviance Statistic</i>	<i>Parameters</i>		
	17,706.402	27		

Table 4.19: Interaction of political discussion and candidate appearances predicting political knowledge (media market).

Figure 4.10: Interaction of political discussion and candidate appearances predicting political knowledge (media market).

Table 4.20 shows that there was a marginally significant interaction effect between newspaper use and media market campaign contacts, $t(183) = 1.87, p = .063$, in predicting political knowledge. This provides further evidence for H6c. Figure 4.11 shows that the difference increased about 102% from 3.66 to 7.39. The difference between people with more newspaper use and less newspaper use was greater in the media markets with more campaign contacts than in the media markets with less campaign contacts. In other words, newspaper use had a greater impact on political knowledge in the places with more campaign contacts.

Level 2 variables: Campaign contacts				
<i>Fixed Effect</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>	<i>p-value</i>
Intercept (average market mean), γ_{00}	54.487	.449	121.433	.000
Campaign con., γ_{01}	.066	.090	.737	.462
<i>Model for newspaper use slopes</i>				
Intercept, γ_{10}	3.062	.436	7.015	.000
Campaign con., γ_{11}	.177	.095	1.867	.063
Ne/Ca television news use, γ_{20}	4.632	.678	6.833	.000
Local television news use, γ_{30}	-1.030	.527	-1.954	.052
Political discussion, γ_{40}	2.774	.253	10.956	.000
<i>Random Effects</i>	<i>Variance</i>	<i>df</i>	χ^2	<i>p-value</i>
<i>Component</i>				
Media market mean, $u_{0j} (\tau_{00})$	3.987	123	140.106	.139
Newspaper use, $u_{1j} (\tau_{10})$	1.345	123	109.398	>.500
Ne/ca TV news use, $u_{2j} (\tau_{20})$	7.798	124	149.129	.062
Local TV news use, $u_{3j} (\tau_{30})$	.950	124	102.482	>.500
Political discussion, $u_{4j} (\tau_{40})$	.729	124	119.576	>.500
Level-1 residuals, $r_{ij} (\sigma^2)$	383.320			
<i>Model Fit</i>	<i>Deviance Statistic</i>		<i>Parameters</i>	
	20,462.848		27	

Table 4.20: Interaction of newspaper use and campaign contacts predicting political knowledge (media market).

Figure 4.11: Interaction of newspaper use and campaign contacts predicting political knowledge (media market).

Summary of Major Findings

In conclusion, a positive relationship was found between newspaper use and political knowledge across all the data files whether campaign-level variables were controlled in the model. This supports H1a, which predicts people who have more newspaper use will have more political knowledge than people who have less newspaper use. A positive relationship was found between network and cable TV news use and political knowledge across all the data files whether campaign-level variables were controlled in the model. But, a negative relationship between local TV news use and political knowledge was found among the majority of the data files whether campaign-level variables were controlled in the model. Therefore, H1b, which predicts that people who have more television news use will have more political knowledge than people who have less television news use, is partially supported. A positive relationship was found

between political discussion and political knowledge across all the data files whether campaign-level variables were controlled in the model. This supports H2, which predicts that people who have more political discussion will have more political knowledge than people who have less political discussion. Table 4.21 presents a summary of the data analysis results.

	Main effects	Ad frequencies	Ad expenditures	Candidate appearances	Campaign contacts
Main effects		H3: 2/4	H3: 1/4	H4: 2/4	H5: 3/4
Newspaper use	H1a: 14/14	H6a: NS	H6a**	H6b*	H6c*
Network & cable TV use	H1b: 14/14	H7a: NS	H7a#	H7b: NS	H7c: NS
Local TV news use	H1b: 9/14	H7a#	H7a: NS	H7b: NS	H7c: NS
Political discussion	H2: 14/14	H8a: NS	H8a**	H8b*	H8c: NS

Table 4.21: Summary of the data analysis results.

Note: (1) The findings of the main effects are from the random-coefficients regression model, means-as-outcomes regression model, and intercepts-as-outcomes model. The denominator means the number of all the models analyzed. The numerator means the number of the models that produce statistically significant relationships. (2) Interaction effects are from the intercepts-and-slopes-as-outcomes model. # $p < .10$; * $p < .05$; ** $p < .01$

Regarding the campaign-level variables, when the individual-level variables were not controlled in the model, no significant relationship was found between the two political advertising measures, i.e., advertising frequencies and expenditures, and political knowledge in either states or media markets. However, when the individual-level variables were controlled in the model, there was some evidence that political advertising

and political knowledge are positively associated. More specifically, a marginally significant relationship was found between advertising frequencies and political knowledge in both states and media markets, and a significant relationship was found between advertising expenditures and political knowledge in media markets. Therefore, H3, which predicts that the increase in televised political advertisements will be positively associated with the increase in political knowledge, is partially supported. Moreover, a positive relationship was found between candidate appearances and political knowledge in media markets whether the individual-level variables were controlled in the model. This provides some evidence for H4, which predicts the increase in presidential candidate appearances will be positively associated with the increase in political knowledge. A positive relationship was found between campaign contacts and political knowledge in both states and media markets when the individual-level variables were not controlled in the model. But, when the individual-level variables were controlled in the model, this relationship existed only in states. This generally supports H5, which predicts that the increase in campaign contacts will be positively associated with the increase in political knowledge.

Finally, the findings of interaction effects are mixed. Whether all the interaction terms between the major individual-level and campaign-level predictors were in the model at the same time or the interaction terms between the major individual-level and campaign-level predictors were in the model one at a time, the same five interaction effects were found. More specifically, interaction effects were found between newspaper use and advertising spending (state), between newspaper use and candidate appearances (state), and between newspaper use and campaign contacts (state) in predicting political

knowledge. These findings support H6a, which predicts that the relationship between newspaper use and political knowledge will be stronger in the places with more political ads than in the places with less political ads; H6b, which predicts that the relationship between newspaper use and political knowledge will be stronger in the places with more candidate appearances than in the places with less candidate appearances; and H6c, which predicts that the relationship between newspaper use and political knowledge will be stronger in the places with more campaign contacts than in the places with less campaign contacts.

Moreover, interaction effects were found between political discussion and advertising spending (media market), and between political discussion and candidate appearances (media market) in predicting political knowledge. These findings support H8a, which predicts that the relationship between political discussion and political knowledge will be stronger in the places with more political ads than in the places with less political ads; and H8b, which predicts that the relationship between political discussion and political knowledge will be stronger in the places with more candidate appearances than in the places with less candidate appearances.

Finally, when the interaction terms between the major individual-level and campaign-level predictors were in the model one at a time, a marginally significant interaction effect was found between newspaper use and campaign contacts (media market). This provides further evidence to support H6c. When all the interaction terms between the major individual-level and campaign-level predictors were in the model at the same time, marginally significant interaction effects were found between network and cable TV news use and advertising spending (state), and between local TV news use and

advertising frequencies (media market). These findings provide some evidence for H7a, which predicts that the relationship between TV news use and political knowledge will be stronger in the places with more political ads than in the places with less political ads. H7b (TV news use x candidate appearances), H7c (TV news x campaign contacts) and H8c (political discussion x campaign contacts) are not supported.

CHAPTER 5

DISCUSSION AND CONCLUSION

This chapter discusses the major findings of the study as well as their theoretical and practical implications. It also discusses some limitations of the study and proposes the directions for future research.

Goal of Study and Major Findings

The present study is a multilevel study of strategic communication in the 2000 presidential campaign. It takes a multidimensional and multilevel perspective to look at the communication function in today's increasingly sophisticated and multifaceted political campaigns. The purpose of the study is to investigate how people's surrounding communication contexts that are defined by some geospatial characteristics created by campaign strategies could influence their political cognition in political campaigns. The core idea behind this study is that political campaigns could shape a person's communication context in which this person is conditioned or nested, and accordingly both individual-level and contextual-level factors within this context could form synergistic influences on this person's responses with respect to the election. That is, it attempts to understand how differential allocation of campaign resources would result in differential communication effects in different geospaces, and thereby, influence people's learning about the election.

According to the data analysis results, people who read newspaper, watch network and cable TV news, and engage in political discussion more frequently have more political knowledge. But, people who watch local TV news more frequently have less political knowledge. There is some evidence that the three campaign intensity indicators – televised political ads, candidate appearances, and campaign-related contacts -- have positive relationships with political knowledge. More importantly, there are contextual effects in the relationship between newspaper use and political knowledge when it is conditioned on macro-level political ads, candidate appearances, and campaign contacts; and in the relationship between political discussion and political knowledge when it is conditioned on macro-level political ads and candidate appearances. This means that people's newspaper use and political discussion have greater impacts on their political knowledge in the places with more campaign intensity than in the places with less campaign intensity. There is also some relatively weak evidence for the contextual effects in the relationship between TV news use and political knowledge when it is conditioned on macro-level political ads.

The Importance of Geospatial Dimension in Campaigns

The present study expands existing literature and research with its innovative research findings about geospatial, contextual effects in political campaigns. It employs a somewhat different set of theoretical models and research methods to assess informing effects of communication in political campaigns from a macro-contextual perspective and focuses on cross-level connections. It contributes to the development and advancement of cross-level theorizing in communication science, and also provides a good understanding of the role that communication would play in a larger social, economic and political

setting. Although the O-S-O-R communication effects model suggests a macro-level component in its first “O,” it is not quite clear how to accommodate contextual influences in this model. Based on the O-S-O-R paradigm, the present study not only demonstrates that conditional communication effects – the essence of the O-S-O-R model – also hinge on geospatial, contextual factors but also helps to develop contextual theories of communication that specifically take into account contextual factors and address cross-level inference.

The findings of the study suggest that geography matters in political communication. The three campaign intensity indicators -- televised political advertising, candidate appearances, and campaign contacts – do create geospatially varying communication contexts, which accordingly result in differential informing effects. Overall, campaign contacts in a person’s context is the strongest predictor of his or her political knowledge. Candidate appearances is the second strongest predictor, and political advertising is the weakest predictor. But, the difference among the main effects of these three campaign-level variables is moderate. There are two possible explanations for the relatively weaker main effect of political ads. The first explanation is about the data, which has only 61 media markets available for the data analysis, and for constructing the state political advertising variable. The other two campaign-level variables have more individual-level cases and campaign-level units. The second explanation is about the method of assessing advertising effects. Research (Ridout, Shah, Goldstein, & Franz, 2004) argued that total number of ads aired in a person’s media market is a poor predictor of political knowledge. Generally speaking, the results of the

study provide evidence that political campaign practices do promote some learning about politics.

These macro-level campaign practices are not the sole determinant of communication effects. They provide contexts. The results of the present study show that political learning is conditioned on many factors -- media, people, stimuli, and place, all of which lead to different results. Different geospatial parameters created by campaign strategies result in different informing effects of communication.

The present study provides evidence to support the information flow approach to contextual effects. The information flow approach argued that contextual effects occur when the nature of information flow structured by the context influences how people react to this locally varying information (see Books & Prysby, 1988; Books & Prysby, 1991; Books & Prysby, 1995; Burbank, 1997; Erbring & Young, 1979; Huckfeldt & Sprague, 1995; McLeod, 2001; Prysby & Books, 1987). It is found that the geospatial variation of political ads, candidate appearances, and campaign contacts influences the relationship between newspaper use and political knowledge, and that the geospatial variation of political ads and candidate appearances influences the relationship between political discussion and political knowledge.

People who are in the environment full of campaign messages are more likely to build their knowledge base of these messages because they have more chance to encounter these messages and practice making sense of them in that kind of environment. In a political campaign, campaign messages are related to each other and conveyed through various channels. Repetition of message exposure makes people easier to learn the message. Accordingly, when they encounter the same or relevant information when

they read newspaper, their memory of the information is reinforced and they are more likely to understand, retain and recall the information than those without this prior knowledge base. This can explain why people in the places with more political ads and campaign contacts in the context are more likely to gain political knowledge from reading newspaper than those in the places with less this information in the ambient environment. The relationship between people's newspaper use and political knowledge is strengthened in those places.

Candidate appearances from the campaign can also imbue a place with campaign messages. Residing in an environment full of campaign messages can help build a knowledge base of these messages, which can assist learning about relevant information. In addition, candidates' travel would be covered by newspapers. Particularly, if the visit is local, the visit and its relevant information would definitely be reported by local newspapers. This can explain why people in the places visited by candidates more frequently are more likely to gain political knowledge from reading newspaper than those in the places visited less frequently. The relationship between newspaper use and political knowledge is strengthened in the places with more information of candidate appearances and relevant campaign messages in the environment.

The nature of information linking newspaper use and the three types of campaign practices is a little different, though the mechanism that produces contextual effects is the same. The linkage between newspaper use and either political ads or campaign contacts is mainly about general campaign information. The linkage between newspaper use and candidate appearances is both direct, specific messages about candidate visits and general campaign information.

During a political campaign, interpersonal political discussion is also an important information source of campaign messages. According to the theory of two-step flow of communication (Katz & Lazarsfeld, 2006) and the news diffusion research (Larsen & Hill, 1954; Rogers, 2000), talking with other people is an important information source for some segments of the general public. From the information flow perspective (see Books & Prysby, 1991 etc.), the frequency and content of political talk should reflect local campaign situations. Political ads and candidate appearances conveyed from mass media in the local context can become people's discussion topics and content. Thus, people in the places with more political ads and candidate appearances are more likely to discuss election-relevant topics with other people, and build their knowledge base. Accordingly, they are more likely to gain political knowledge from exchanging second-hand campaign information with other people. This is why the relationship between political discussion and political knowledge is strengthened in the place with more televised ads and candidate visits than in the places with fewer ads and visits.

From the pattern of the above findings, generally speaking, people's newspaper use and political discussion are influenced by the geospatial variation of campaign practices, but their television news use is almost not influenced by the campaign's geospatial variation. In other words, the relationships between TV news use, including network, cable and local TV, and political knowledge are almost not influenced by where people reside or what kinds of communication contexts they are conditioned.

There are weak interaction effects between televised political ads and network and cable TV news use, and between televised political ads and local TV news use in predicting political knowledge. Inconsistent with the hypothesis, the interaction effect

between political ads and network and cable TV news use in predicting political knowledge is negative. The interaction effect between local TV news use and political ads is positive as hypothesized. These findings suggest that geospatial variation of political ads does have some influence on the relationship between TV news use and political knowledge.

There are several explanations for the weak interaction effects between people's TV news use and campaign-level televised political ads in predicting political knowledge. First, as discussed previously, compared with candidate appearances and campaign contacts, political advertising in a person's context is a weak predictor of his or her political knowledge. Second, TV news use is used as a proxy measure of advertising effects. Although a lot of ads are aired during news programs, a lot more ads are aired in other parts of the day. Based on the 226,864 ads from the Wisconsin Advertising Project analyzed in the present study, only about 24.1% of the ads were run during the 4:00 - 7:30 p.m. time slot, including 17% of them run during the news. About 23.2 % of the ads were run during the early news (4:00-7:30 p.m.) and the late news (10:00 or 11:00 p.m.). This means that about 80% of the ads appeared during non-news programs and in other parts of the day. This means that advertising exposure is something broader than just TV news use exposure. So, if the proxy measure is not adequate in capturing real effects of advertising, it would not be a surprising finding. These findings are consistent with previous research (Ridout, Shah, Goldstein, & Franz, 2004) that found that the hours of TV watching per day, total number of ads aired in a person's media market, and the combination of the former two measures are all poor predictors of political knowledge.

This study found that the relationships between TV news use and political knowledge and between TV news use, including both network and cable TV news, and local TV news, do not vary across communication contexts constituted by candidate appearances. In other words, the relationship between TV news use and political knowledge is not stronger in the places with more candidate appearances than in the places with fewer candidate appearances. People in the places with more candidate appearances do not gain more political knowledge from watching TV news.

In the case of network and cable TV news, the coverage of candidate appearances should be the same across the nation. However, the heavily visited places should be the frequently mentioned places in the news. The explanation for no interaction effect between network and cable TV news use and candidate appearances may be that campaign information in the context and in the news due to candidate visits does not become people's political knowledge through being more attentive to their own places mentioned in the news. Compared with newspaper and discussion as people's information sources, network and cable TV news tend to be less locally and contextually bound. Being attentive to news coverage of a person's own town seems hard to reflect contextual differences of candidate appearances as an information source.

In the case of local TV news, its relationship with political knowledge is found not to be influenced by the geospatial variation of candidates' visits, either. There's no interaction effect between local TV new use and candidate appearances. This may suggest that when people in the places with more candidate appearances-related campaign information in the news and in the ambient environment watch local TV news, they do not benefit from residing in such a kind of environment. As indicated previously,

candidate appearances have some positive effects on political knowledge, whereas local TV news use has negative effects on knowledge. So, that no interaction effect is found should not be attributed to that candidate appearances do not have something to do with political knowledge; rather, it should be attributed to that local TV news is not a good medium for political learning.

The results of the study also show that campaign contacts do not interact with network and cable TV news, local TV news, and political discussion in predicting political knowledge. This means that the relationships between either TV news use or political discussion and political knowledge are not strengthened due to more campaign information resulted from campaign contacts in the context. People in the places with more campaign-related contacts do not benefit from having higher chance of encountering campaign messages in the ambient environment to build their knowledge base, and thereby, being more likely to gain political knowledge when they watch TV news or engage in political discussion. There are some explanations.

First, research indicates that most people in the U.S. read local newspapers (44%) on a daily basis, as opposed to national newspapers (7%) (Saad, 2007). As discussed previously, the geospatial variation of political ads and campaign contacts has effects on the relationship between newspaper use and political knowledge because newspaper more or less reflects the contextual differences of these information sources. Therefore, unlike newspaper, it could be that network and cable TV news does not well reflect the contextual variation of an information source like campaign contacts. Furthermore, like local newspaper, local TV news should reflect the geospatial variation of information sources. Local TV news would more or less carry the messages from the momentum built

by campaign contacts in the ambient environment. However, like the case of the relationship between local TV news and candidate appearances, that no interaction effect is found between local TV news use and campaign contacts could be attributed to that local TV news is inherently not a strong and stable predictor of political knowledge.

Finally, why are there interaction effects between political discussion and political ads, and political discussion and candidate appearances, but not between political discussion and campaign contacts? According to the relevant theories, i.e., the theory of two-step flow of communication and the news diffusion research, political discussion is an information source for some people because those people rely on others for transmitting information from mass media. Thus, a possible explanation is that unlike the other two campaign-level information sources – political ads and candidate appearances, which are mainly broadcast on mass media, campaign contact is more like mediated and unmediated interpersonal communication. Because they are not mass communication, they are less likely to be faded. The campaign messages conveyed through campaign contacts or general campaign information in the ambient environment due to campaign contacts are less likely to become a handy topic and materials for discussion. In other words, discussion content does not well reflect differential availability of campaign messages constructed by campaign contacts in the context. In other words, people's political discussion is not influenced by campaign contacts in the context. This may explain why people in the places with more campaign contacts do not learn more from discussing politics with other people.

Based on the above findings, this study helps build contextual theories of communication by modeling effects of contextual factors and cross-level interactions.

Macro-level research is so underthought in communication science, though the advocacy for developing contextual theories is not something new. Particularly, context or geospace is an important, yet under-explored dimension in research on communication effects in political campaigns. The findings of the present study suggest that political campaigning is about geospace. In the communication field, the majority of studies are concerned with individual-level variables and micro psychological processes. However, many social, political and economic implications should not be reduced to psychology. They should not be touched only by research with psychological views and methods. McLeod and Blumler (1987) argued that “communication science without a macro component would be impoverished and seriously incomplete” (p. 277). McLeod, Kosicki, and McLeod (2008) also argued that “If our explanations remain solely at the individual level, we are guilty of disciplinary reductionism and risk missing important social influences, implicitly blaming individuals for problems whose remedies would be better sought through institutions” (p. 16). Reducing broader social, economic, and political problems into psychology is definitely not right for the advancement of the field.

The value of macro-level studies, such as the present study, is that they help build theories at different levels, which can help really understand broader social, political and economic problems that are not answered by psychology. McLeod and Blumler (1987) argued that the macrosocial level research in communication science examines communication systems or communication signification of social systems.

Acknowledging the importance of a macro perspective, the present study is designed based on the idea that media work and people learn about political campaigns in the real-world setting. It is a misconception that people would share the same information

baseline across the whole country. For example, there would be a very big difference between the information environment in Ohio and that in Wyoming. That is to say, the present study assesses how the population learns about politics, and looks at campaign and communication effects from a larger real world viewpoint.

Particularly, the present study takes a geospatial approach to examine communication effects in political campaigns. McLeod and Blumler (1987) argued that the appropriate approach to macrosocial-level communication research is comparative research, which is “based on the presumption that different system parameters (i.e., different manners in which systems are structured) will differentially encourage or constrain communication roles and behaviors belonging to, organized by, or exposed to them” (p. 308), because a system can only be understood by comparing with other systems. The findings of the present study suggest that people in different geospatial units are not in a uniform communication environment, and that immersing in different communication environments produces different informing effects in political campaigns.

Finally, consistent with most literature, the results of the present study generally suggest that news media, including newspapers and network and cable television news, and political discussion, contribute to people’s political knowledge gain. Therefore, in addition to help building contextual theories in communication science, this study also demonstrate that communication, including both mass media use and interpersonal communication, does play a significant role in informing people in political campaigns.

Inconsistent with the hypothesis that TV news use should be positively related to political knowledge, the findings of local TV news use indicate that people who watch local television news more frequently have less political knowledge. Unlike newspaper,

network and cable TV news, and political discussion, which are predictors of political knowledge across all the data files tested in the present study, local TV news is either negatively associated with political knowledge or not associated with political knowledge at all. So, like existing studies, which reach different conclusions on the relationship between local TV news and political knowledge, the finding of local TV news in the present study is also somewhat mixed. Overall, this study suggests that informing effects of local TV news is limited as far as national politics is concerned.

Content analyzed 8,095 stories of local TV news in 15 cities in 2000, Rosenstiel, Gottlieb, and Brady (2000) found that “politics/government” is second to “crime/law” as the most popular topic. The volume of “crime/law” coverage (18%) almost doubled that of “politics/government” coverage (10%) in the study. This may help explain why the present study found a negative relationship between local TV news use and political knowledge. With respect to demographic characteristics of the audience of local TV news, according to a recent Gallup Poll research, women, those 50 and older, and Democrats are the major viewers (Saad, 2007). In sum, more studies should be conducted to investigate whether local TV news does not have much to do with people’s political knowledge. Future research would also investigate whether it is the content of local news that does not help people gain political knowledge or the viewers of local TV news who are less knowledgeable on average.

Campaign’s Role in Democracy

In addition to helping understand the latest trends and processes of political campaigns, the findings of the study have implications for relevant public policies. They suggest that there is a serious problem in current political campaign practices that may

impede civic engagement efforts. That is, although this study demonstrates that communication is able to influence people, it also provides evidence that in political campaigns not every citizen has an equal opportunity to learn about campaign messages, to be influenced by campaigns, and to play a role in the political processes.

The use of targeting strategies is not wrong. However, targeting people in democracy -- what does this imply? Does this kind of democratic system engage people or foster apathy about politics? Is there equality of every vote? What efforts do candidates put into those places that are already ahead or hopeless? Winning the presidency in the United States is decided by winning the majority of the electoral vote. Candidates' focusing only on campaigning in the battleground states in order to win the electoral vote has serious consequences.

First, as in the 2000 race, if a candidate wins the race because he or she wins the electoral vote, but not the popular vote, does the candidate have any political legitimacy? A successful president and government should have political legitimacy, which is endowed by winning the popular vote, not the electoral vote. The electoral vote, which is the aggregate of, not proportional to, the popular vote within a state, reflects only the simple sum of people's preference. If campaigns focus on winning the electoral vote only, and do not care much about the popular vote, the elected officials does not truly reflect citizen's will. A president without legitimacy is very hard to govern the constituencies.

Moreover, democracy is organized under the notion of equality of every vote. Everybody's vote should count the same. When candidates pick some states to campaign while ignoring others, this democratic ideal is compromised. Equality and freedom are

the two fundamental principles of democracy. According to Dahl (1989), there are two essential assumptions of a democratic process – “the Principle of Equal Consideration of Interests,” which suggests that the interests of every person should be equally considered, and “the Presumption of Personal Autonomy,” which means that each person has the right to judge a policy on the basis of his or her own best interest because no one else knows what the best interest is better than the person himself or herself. According to Dahl (1989), both assumptions serve as the premises of “the Strong Principle of Equality,” meaning that “if the good or interests of everyone should be weighed equally, and if each adult person is in general the best judge of his or her good or interests, then *every adult member* of an association is sufficiently well qualified, taken all around, to participate in making binding collective decisions that affect his or her good or interests, that is, to be a *full citizen* of the demos” (p. 105). These assumptions of democracy are labeled differently by different people, though the essence is the same. Simply put, equality allows each citizen an equal opportunity to have some influence in the democratic decision-making process, whereas autonomy (or freedom) allows citizens the freedom and independence to express their own judgments in the process (Perez, 2004).

The findings of the present study suggest that citizens are in vastly different information environment in current political campaigns. Campaigns do not treat every citizen equally. Voice of each person is disparate. This conflicts with the distinctive feature of democracy -- the democratic ideal “equality.” Although distribution of media messages is not uniform because media resources are unevenly distributed across the country, campaigns’ targeting strategies would exacerbate the inequalities in access to campaign messages. Owing to the campaign’s targeting strategies, not every citizen is

worth the same amount of campaigning. People in some places are left out from the campaigns. They may never be exposed to campaigns at all and asked for their vote. This certainly is not healthy for a democratic system in the long term because it may lead to marginalization of people in some parts of the country. People are not engaged and would continue to be apathetic about politics.

These phenomena raise significant questions about the nature of American democracy, and the meaning of campaigns for democracy. Campaigning in some specific geospatial areas may be a very effective strategy to deliver an Electoral College majority. However, the role and the function of communication campaigns in an election should not be just for that purpose. Candidates have a mandate from citizens for some kind of change. If just tiny portion of the population has been consulted, the usefulness of campaigns in a democracy is doubtful.

However, when criticizing fairness of the current voting system from a person's standpoint, it should be noted that United States is a federal nation composed of independent states and fairness should also be examined from the perspective of a state. The presidential election in the U.S. is to elect somebody to be the head of the federal government's executive branch. The Electoral College system, which is a unique history of American democracy, is rooted in the concept of federalism. Given this federal nature of the U.S. voting system, big or small states should be represented at the federal level. Under the current system, less populous states are overrepresented in the federal election relative to their populations. More specifically, people in states with small populations have a larger share of the electoral vote than those in states with big populations. For example, in 2000, Wyoming, which has the population (493,782, *Polidata Demographic*

and Political Guides) and three electoral votes, has about 0.000006 Electoral College representation per person. Ohio, which has the population (11,353,140, *Polidata Demographic and Political Guides*) and 21 electoral votes, has less than 0.000002 Electoral College representation per person. This means that from this perspective, each person's vote in Wyoming has more power to influence the election than that in Ohio.

This suggests that the Electoral College system encourages candidates to pay attention to small states in order to win as many electoral votes as possible. If candidates just need to win popular votes to obtain the presidency, they would campaign mainly in big cities, big markets, and big states that have a large population, and concentrate particularly on mobilizing their base supporters. On the contrary, the Electoral College system urges candidates to campaign more widely and broadly throughout the whole nation. As the findings of the present study show, the major problem with the Electoral College system is that candidates tend to focus on swing states.

Therefore, current system has its own merits, but owing to these serious implications regarding the inequalities in political life, political campaigns shouldn't focus only on putting a lot of effort into those highly contested battlegrounds and just want to win 270 Electoral College votes without caring much about winning the popular vote. Without a doubt, like product campaigns, political campaigns also strive to reach target audiences. However, unlike product campaigns, political campaigns, which bear the responsibility for fulfilling democratic ideals, shouldn't completely ignore those people who are not part of the target audiences. An ideal and healthy democratic system should be to engage as many people as possible in political processes and treat everyone equally.

Study Limitations and Future Research

The present study is secondary research that analyzes existing data which are collected for multiple purposes. The question items are certainly not the most ideal ones for the present study. There are several limitations of the present study, and relevant recommendations can be made.

First, the present study uses individuals' TV news use as a proxy measure of their exposure to televised political ads. This was done because the NAES data file used in the present study doesn't contain a direct measure of people's exposure to advertising. That is, in terms of the primary campaign practices – political advertising, the present study only has macro-level advertising data, but no measure of advertising exposure at the individual level. So, TV news use serves as a link with the macro-level televised ads variable. Although this proxy measure is limited, it's better than nothing because individual differences should never be ignored. Some people do not care about elections at all no matter how intense the campaign is. This is why the findings of the present study indicate not only that variations of individuals' news media use and interpersonal communication significantly predict political knowledge but also that these variations at the individual level interact with some campaign intensity variables in predicting political knowledge. That is, individual differences can be amplified by some contextual factors. This means that individual differences should always be taken into account. That said, the effects could be more accurately assessed if the direct measure of people's advertising exposure is available in the individual-level data file, in this case, the NAES data. Future research should use people's exposure to televised political ads instead of their television news use.

Some may be concerned about the alphas for the measures of communication variables, including both news media use and political discussion. Some may think that this means that the measures are not very reliable, and so do not really measure the concepts as intended. However, alpha is in part a function of the number of items included in the index, assuming they are equally reliable. When studying real populations in field research and not experimental subjects in a laboratory, additional survey items are very expensive. Survey designers, faced with the dilemma of whether to add largely redundant items in the questionnaire to gain enhanced reliability or adding questions tapping other subject areas often choose the latter. This reduces the number of similar items that can be added together to form reliable multi-item indices. High reliability does not imply validity so this not necessarily hurts the quality of the remaining items.

Another recommendation for the individual-level data could be to provide more details of individual respondents' TV watching information. For example, studies (Freedman & Goldstein, 1999; Goldstein & Freedman, 2002b; Ridout, Shah, Goldstein, & Franz, 2004) matched individual respondents' television viewing information, such as programs and dayparts, with advertising broadcast data in the respondents' media market to capture the effects of advertising. This approach seems to be a better and more refined approach to assess effects of advertising, especially effects of specific types of ads on individuals.

Another limitation of the present study is that the data file from Wisconsin Advertising Project contains only 75 media markets, though they claimed that more than 80 percent of the U. S. population lives in these media markets. Although some places in the country may not even have any campaigning, this information is still important.

Future research should include as many media markets as possible in order to cover more of the country. Therefore, research findings could better reflect what's going on in the whole country. Moreover, in addition to information of the number of spots aired and the estimated cost of each ad, researchers would hope that the data from the Wisconsin Advertising Project also contain GRPs as another measure of advertising strength.

Several research topics can be extended from the present study. First, future research could test other dependent variables such as political participation, likelihood to vote, and vote choice to understand political campaigns' mobilizing and persuasive effects in addition to informing effects tested in the present study. Moreover, future research could assess geospatial variations of these communication effects in other more recent presidential campaigns, such as the 2004 and the 2008 elections.

In addition to understanding geospatial variations of communication effects by examining cross-level interactions, future research can investigate the movements in communication processes. From the geospatial perspective, it is not that some places have campaigns and some places have no campaigns. It is that some places have high campaign intensity, whereas other places have low campaign intensity. The influence of communication in political campaigns on people in a specific context is like a natural experiment because it provides people something in the beginning to get people involve in the election. Thus, future research could test mediation in a multilevel context by using multilevel structural equation modeling to understand whether campaign practices promote news media use and political discussion, which will then lead to more political knowledge and participation. It would also be interesting to investigate whether a candidate's campaign intensity influence people's mass media use and political

discussion, which will then lead to discrepancies in issue positions between this candidate and respondents as well as evaluations of this candidate's traits, and finally, influence vote choice. Testing mediation can help understand directions of causality among variables at both levels. Multi-group multilevel SEM could also be conducted to understand whether the flow of the effects vary across geospatial units.

Moreover, people's mass media use and political discussion behaviors are likely to correlate with or reciprocally reinforce each other more strongly in a communication environment with more campaigning than they do in a one with less campaigning. Thus, in addition to the effects of campaign practices on people's communication behaviors, future research could also investigate the relationship between people's mass media use and interpersonal political discussion. Is this relationship unidirectional, reverse or reciprocal? Does it vary under different communication contexts?

Although the present study does not hypothesize causality and test causal effects, it is based on the causal logic that it is the news content that leads to political knowledge. It's conventional and preponderant in communication science that testing the effects of communication on knowledge. Future research could test reverse causality that knowledge causes communication or media use. It is possible that people who have more political knowledge or other characteristics, such as interest in politics, select certain types of communication vehicles, not the content of communication that leads to differential levels of political knowledge.

Finally, as the campaign progresses, communication effects could fluctuate, diffuse, and cumulate. Future research could employ a longitudinal research design to

capture the dynamic nature of communication effects engendered over the course of a campaign.

APPENDIX

QUESTION WORDING

Political Knowledge:

[1] To the best of your knowledge, who {through 6 Nov 00: favors | starting 8 Nov 00: favored} the biggest tax cut, George W. Bush or Al Gore?

- (1) Bush
- (2) Gore
- (3) No difference
- 998 Don't know
- 999 No answer

[2] To the best of your knowledge, who {through 6 Nov 00: favors | starting 8 Nov 00: favored} using some of the Medicare surplus to cut taxes, George W. Bush or Al Gore?

- (1) Bush
- (2) Gore
- (3) No difference
- 998 Don't know
- 999 No answer

[3] To the best of your knowledge, who {through 6 Nov 00: favors | starting 8 Nov 00: favored} paying down the national debt the most, George W. Bush or Al Gore?

- (1) Bush
- (2) Gore
- (3) No difference
- 998 Don't know
- 999 No answer

[4] To the best of your knowledge, who {through 6 Nov 00: favors | starting 8 Nov 00: favored} the biggest increase in spending for Social Security, George W. Bush or Al

Gore?

- (1) Bush
- (2) Gore
- (3) No difference
- 998 Don't know
- 999 No answer

[5] George W. Bush—do you think he {through 6 Nov 00: favors or opposes | starting 8 Nov 00: favored or opposed} allowing workers to invest some of their Social Security contributions in the stock market?

- (1) Favor
- (2) Oppose
- 998 Don't know
- 999 No answer

[5] Al Gore—do you think he {through 6 Nov 00: favors or opposes | starting 8 Nov 00: favored or opposed} allowing workers to invest some of their Social Security contributions in the stock market?

- (1) Favor
- (2) Oppose
- 998 Don't know
- 999 No answer

[6] On the issue of prescription drugs for senior citizens, to the best of your knowledge, what {through 6 Nov 00: does | starting 8 Nov 00: did} George W. Bush think? {Does | Did} George W. Bush think the federal government should not pay for senior citizens' prescription drugs; the government should offer senior citizens a voucher to cover some of the cost of prescription drugs; or the federal government should cover prescription drugs through Medicare?

- (1) Should not pay
- (2) Offer voucher to cover some costs
- (3) Cover through Medicare
- 998 Don't know
- 999 No answer

[6] On the issue of prescription drugs for senior citizens, to the best of your knowledge, what {through 6 Nov 00: does | starting 8 Nov 00: did} Al Gore think? {Does | Did} Al Gore think the federal government should not pay for senior citizens' prescription drugs; the government should offer senior citizens a voucher to cover some of the cost of prescription drugs; or the federal government should cover prescription drugs through Medicare?

- (1) Should not pay

(2) Offer voucher to cover some costs

(3) Cover through Medicare

998 Don't know

999 No answer

[7] George W. Bush—do you think he {through 6 Nov 00: favors or opposes | starting 8 Nov 00: favored or opposed} using government funds to make sure that every child in the US is covered by health insurance?

(1) Favor

(2) Oppose

998 Don't know

999 No answer

[7] Al Gore—do you think he {through 6 Nov 00: favors or opposes | starting 8 Nov 00: favored or opposed} using government funds to make sure that every child in the US is covered by health insurance?

(1) Favor

(2) Oppose

998 Don't know

999 No answer

[8] George W. Bush—do you think he {through 6 Nov 00: favors or opposes | starting 8 Nov 00: favored or opposed} giving patients the right to sue their health maintenance organization or HMO?

(1) Favor

(2) Oppose

998 Don't know

999 No answer

[8] Al Gore—do you think he {through 6 Nov 00: favors or opposes | starting 8 Nov 00: favored or opposed} giving patients the right to sue their health maintenance organization or HMO?

(1) Favor

(2) Oppose

998 Don't know

999 No answer

[9] George W. Bush—do you think he {through 6 Nov 00: favors or opposes | starting 8 Nov 00: favored or opposed} making it harder for a woman to get an abortion?

(1) Favor

(2) Oppose

998 Don't know

999 No answer

[9] Al Gore—do you think he {through 6 Nov 00: favors or opposes | starting 8 Nov 00: favored or opposed} making it harder for a woman to get an abortion?

(1) Favor

(2) Oppose

998 Don't know

999 No answer

[10] To the best of your knowledge, who {through 6 Nov 00: opposes | starting 8 Nov 00: opposed} the sale of RU-486? George W. Bush, Al Gore, both or neither?

(1) Bush

(2) Gore

(3) Both

(4) Neither

998 Don't know

999 No answer

[11] George W. Bush—do you think he {through 6 Nov 00: favors or opposes | starting 8 Nov 00: favored or opposed} requiring a license for a person to buy a handgun?

- (1) Favor
- (2) Oppose
- 998 Don't know
- 999 No answer

[11] Al Gore—do you think he {through 6 Nov 00: favors or opposes | starting 8 Nov 00: favored or opposed} requiring a license for a person to buy a handgun?

- (1) Favor
- (2) Oppose
- 998 Don't know
- 999 No answer

[12] To the best of your knowledge, who supported legislation allowing people to carry concealed handguns? George W. Bush, Al Gore, both or neither?

- (1) Bush
- (2) Gore
- (3) Both
- (4) Neither
- 998 Don't know
- 999 No answer

[13] To the best of your knowledge, {through 6 Nov 00: does | starting 8 Nov 00: did} George W. Bush favor or oppose selling some of the oil reserve to increase the winter heating oil supply?

- (1) Favor
- (2) Oppose
- 998 Don't know
- 999 No answer

[13] To the best of your knowledge, {through 6 Nov 00: does | starting 8 Nov 00: did} Al Gore favor or oppose selling some of the oil reserve to increase the winter heating oil supply?

- (1) Favor
- (2) Oppose
- 998 Don't know
- 999 No answer

Newspaper Use:

How many days in the past week did you read a daily newspaper?

- Range 0-7
- 998 Don't know
- 999 No answer

During the past week, how much attention did you pay to newspaper articles about the campaign for president? A great deal of attention, some, not too much or no attention at all?

- (1) Great deal
- (2) Some
- (3) Not too much
- (4) None
- 998 Don't know
- 999 No answer

Network and Cable Television News Use:

How many days in the past week did you watch the national network news on TV—by national network news, I mean Peter Jennings on ABC, Dan Rather on CBS, Tom Brokaw on NBC, Fox News or UPN News?

- Range 0-7
- 998 Don't know
- 999 No answer

How many days in the past week did you watch cable news, such as CNN or MSNBC?

- Range 0-7
- 998 Don't know
- 999 No answer

During the past week, how much attention did you pay to stories on national network or cable TV news about the campaign for president? A great deal of attention, some, not too much or no attention at all?

- (1) Great deal
- (2) Some
- (3) Not too much
- (4) None
- 998 Don't know
- 999 No answer

Local Television News Use:

How many days in the past week did you watch the local TV news—for example, “Eyewitness News” or “Action News”?

- Range 0-7
- 998 Don't know
- 999 No answer

During the past week, how much attention did you pay to stories on local TV news about the campaign for president? A great deal of attention, some, not too much or no attention at all?

- (1) Great deal
- (2) Some
- (3) Not too much
- (4) None
- 998 Don't know
- 999 No answer

Political Discussion:

How many days in the past week did you discuss politics with your family or friends?

- Range 0-7
- 998 Don't know
- 999 No answer

How many days in the past week did you discuss politics with people at work or on the Internet?

- Range 0-7
- 998 Don't know
- 999 No answer

State:

49 states (except Alaska)

Media Market:

Nielsen media market (estimated from phone)

Age:

What is your age?

- Range 18-97
- 998 Don't know
- 999 No answer

Gender:

Sex

- (1) Male
- (2) Female
- 999 No answer

Education:

What is the last grade or class you completed in school?

- (1) Grade eight or lower
- (2) Some high school, no diploma
- (3) High school diploma or equivalent
- (4) Technical or vocational school after high school
- (5) Some college, no degree
- (6) Associate's or two-year college degree
- (7) Four-year college degree
- (8) Graduate or professional school after college, no degree
- (9) Graduate or professional degree
- 998 Don't know
- 999 No answer

Income:

Last year, what was your total household income before taxes? Just stop me when I get to the right category. Less than \$10,000; \$10,000 to less than \$15,000; \$15,000 to less than \$25,000; \$25,000 to less than \$35,000; \$35,000 to less than \$50,000; \$50,000 to less than \$75,000; \$75,000 to less than \$100,000; \$100,000 to less than \$150,000; or \$150,000 or more?

- (1) Less than \$10,000
- (2) \$10,000 to less than \$15,000
- (3) \$15,000 to less than \$25,000
- (4) \$25,000 to less than \$35,000
- (5) \$35,000 to less than \$50,000
- (6) \$50,000 to less than \$75,000
- (7) \$75,000 to less than \$100,000
- (8) \$100,000 to less than \$150,000
- (9) \$150,000 or more
- 998 Don't know
- 999 No answer

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