

Political Ads and Citizen Communication

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This study explores the role that political advertising plays in the democratic process by examining whether and how political ads encourage citizens to engage in communication activities in the campaign process. To examine this question, political ad tracking data were combined with a national daily survey collected during the 2000 election campaign cycle. The resulting ad volume data and individual communication behavior by geographic location and date allowed examination of how political advertising contexts influenced citizen communication. Results show that, in response to an influx of local political advertising, people sought more political information through television news programs, the Internet, and social networks. Theoretical and methodological implications of these findings are discussed.

Keywords: *campaign media; political talk; political advertising; deliberation; voter mobilization*

Since its invention about a half century ago, political advertising on television has rapidly become a major communication vehicle in American elections. With this upswing in popularity, research has examined the role of political advertising in campaign processes and has observed a range of effects. Specifically, political advertising has been found to increase voters' campaign knowledge (Chaffee, Zhao, & Leshner, 1994; Meirick, 2005; Patterson & McClure, 1976) and shape political decision making and vote choice (Pinkleton, 1998; Valentino, Hutchings, & White, 2002). Furthermore, a sizable body of research has investigated political ad effects on voter turnout, generating mixed findings (see Lau, Sigelman, & Babbitt, 1999). On one side, some have found that political advertising, particularly negative tactics, fosters cynicism and further demobilizes the electorate (Ansolabehere & Iyengar, 1995; Ansolabehere, Iyengar, & Simon, 1999). Others, however, suggest that political advertising promotes participation (Freedman & Goldstein, 1999; Garramone, Atkin, Pinkleton, & Cole, 1990; Kahn & Kenney, 1999; Martin, 2004).

Despite the wealth of research in this area, little attention, aside from anecdotal discussion (McClurg, 2004; Popkin, 1994), has been paid to what role political advertising plays in citizen communication. Indeed, one generalization about extant research is that its main focus is the direct influence of campaign advertising on vote choice and voter turnout. The present study attempts to broaden this "political outcome-oriented" focus by considering citizens' everyday communication practices

(i.e., general news consumption and political conversation) as a criterion of political ad effects. This "communication-oriented" approach has at least two theoretical merits for the study of political advertising and election campaigns in general.

First, this shift of focus to communication behavior allows researchers to address the deliberative potential of political advertising, an issue that has been largely ignored in political advertising research. Although news consumption and informal conversation are not conceptually equated with deliberation itself, they have been considered integral to formal public deliberation (B. Barber, 1984; McLeod et al., 1999; Pan, Shen, Paek, & Sun, 2006; Wyatt, Katz, & Kim, 2000). Through news media, citizens increasingly tune into politics and inform themselves of campaign issues. In addition to the media, political discussion helps citizens develop their own reasoning and beliefs that lead in turn to informed decisions that reflect their needs and interests. If political advertising, therefore, stimulates information seeking and political conversation, it likely also offers an opportunity for citizen deliberation and promotes democracy.

Second, given the role citizens' everyday communication practices play in election campaigns, the communication-oriented approach may revise the view of elite-driven campaign effects, suggesting that citizens are not simply a passive public influenced by elite campaign messages (e.g., political ads) but instead are active political actors in campaign communication processes. Overall, this view of the deliberative potential of political advertising resonates with the current wave of political communication scholarship, which suggests there is a deliberative nature to election campaigns (Huckfeldt, Sprague, & Levine, 2000; Just et al., 1996; Page, 1996; Pan et al., 2006).

Within this theoretical context, the present study moves beyond political persuasion and voter turnout to examine the influence of campaign advertising on citizen communication. Specifically, this study examines the contextual influence of political advertising by modeling the relationship between the geographical information environment created by political advertising and the communication practices of individuals who reside in each of the local units. In the following section, I first specify the cross-level linkage between the political context and individual communication behavior, relying on the surveillance motivation literature. Because this motivation-based discussion serves as an auxiliary theory, it is not the focus of empirical examination in this study (see Pan & McLeod, 1991). Rather, this discussion of environmental contexts and individual motivation sets out to provide a multilevel theoretical framework connecting broader political contexts and individual behaviors. I will next turn to previous political mobilization literature to outline specific hypotheses about the operations and effects of campaign advertising on citizen communication. To test these hypotheses, political ad tracking data are combined with a national daily survey collected during the 2000 election campaign cycle. These data track ad volume and individual communication behavior by geographic location and date and, in so doing, provide a unique opportunity to examine the contextual influence of political advertising on citizen communication.

Literature Review

Motivation, Environment, and Political Communication

Communication research has long been concerned with the question of why and how people use mass media. In one such study, the uses and gratification approach suggests that motivation can largely explain individuals' patterns of media use (Katz, Gurevitch, & Haas, 1973; see Rubin, 1994, for a comprehensive overview). Specifically, studies of media uses and gratification identify surveillance motives as a factor driving audiences to choose news content over other types of content. Although this uses-and-gratification approach details how motivation influences which programs or content people choose rather than how much they use it, it is also likely that motivation encourages people to use certain types of content more frequently and attentively.

Surveillance motivation in information seeking has widely been recognized as playing a role in various theories of political communication. Tichenor, Donohue, and Olien (1970), for instance, assert that educated people gain more knowledge from public campaigns partly because, as formal education increases, people's motivation for seeking information increases, resulting in more active communication and, therefore, more total knowledge acquisition. Although not stated specifically in their model, Shah and Scheufele (2006) also implicate surveillance motivation in their study of personality strength. In this study, they reveal that personality strength elicits concerns about public issues, which in turn leads to news media use. Here, it is likely that surveillance motivation serves as a mediating factor when news consumption is activated by issue concerns.

This motivation-based explanation provides a useful framework for understanding how larger environmental contexts influence individuals' communication behavior. Clearly, individuals' communication activities are not isolated from their social and political environments. News media use and preferences, for instance, are shaped by community pluralism (Demers, 1994) and media market structures (Olien, Donohue, & Tichenor, 1978). Likewise, the likelihood of discussing politics with others is influenced by social and political contexts (Huckfeldt & Sprague, 1995). This cross-level theorization between contextual factors and individual communication behaviors is often facilitated by a motivation-based explanation. In other words, environmental factors create varied information and communication contexts that might influence individuals' motivation, and, subsequently, shape their communication behavior.

One piece of conventional wisdom, for instance, suggests that as election campaigns proceed, voters' communication patterns become increasingly intense. Also, the closer the race is, the more likely voters are to engage actively in communication (Danowski & Ruchinskas, 1983). The underlying idea behind these phenomena, according to Danowski and Ruchinskas (1983), is that changes in the political context, in this case the proximity and closeness of the election, lead voters to feel uncertain about the outcomes of the election. This uncertainty, in turn, triggers individual surveillance motivation, resulting in active communication.

In sum, the surveillance motivation triggered by campaign contexts provides a mechanism for the cross-level nexus between macrocontexts and micro-individual behavior. In the context of this study, individual surveillance motivation is expected to increase as the volume of local political ads increases. It is then expected that the heightened surveillance motivation will translate into an intensification of everyday communication activities. As a multilevel auxiliary theory, this motivation-based explanation is not directly tested. Instead, it serves as a cross-level link between local political contexts and individual communication behavior.

The Campaign as an Information Environment

Election campaigns, particularly high-ticket campaigns, create a rich information environment that citizens would not otherwise experience. At least two agents fuel this environment: the media and political advertisements. First, during campaigns, as a result of strategic interaction between the media and campaign strategists, the news media are saturated with political information (Jamieson, 1993). On one hand, candidates and parties struggle to set media agendas and gain free media coverage to increase their visibility to voters. Therefore, campaigns create many events that attract media attention. On the other hand, media consider campaign coverage as a means of securing high ratings because they are major political events that capture audience attention. This strategic relationship between candidates and the media translates into an inundation of political information.

Beyond media coverage, campaigns contribute to constructing a rich information context by distributing their message directly to voters in the form of political advertisements. This political advertising, while very expensive, has considerable advantages for the campaigns, when compared to media coverage, because candidates and parties have control of the production and dissemination of the information. In campaign 2000, for instance, more than 680,000 ads were aired in the Top 75 media markets from the end of the party conventions through Election Day. Thus, during this campaign period, popular television programs were saturated with political commercials.

The contribution of political advertising to the information context is, however, more relevant to the study of whether and how campaigns influence citizen political communication than is that of the news media. The reason for this is threefold. First, conceptually, news coverage of campaigns is not part of campaigning itself. Although news media do indeed facilitate campaign communication between candidates and voters, they do not run the campaign. Furthermore, even though the media respond to candidates and parties when deciding how to cover campaigns, journalistic norms and routines are the most fundamental factors guiding how media cover campaigns (Bennett, 2005; Gans, 1980). Thus, when studying campaign effects, the role of news media in the campaign process should be differentiated from that of the political elites who actually wage the campaigns.

Second, the two different forms of campaign communication, news coverage and political ads, translates very differently to the information environment. One difference, particularly relevant to this study, is that the information environment based on the news coverage of campaigns is nearly uniform across all electorates; regardless of region, the news media generally pay much attention to the campaigns. This pattern is particularly clear during presidential races. Thus, even though considerable variations may exist in the amount of campaign coverage across elections, with close races receiving more coverage than lopsided ones, in any given election cycle, all American voters who attend to the news media will have more or less similar amounts of campaign information.

The pattern in political ads, however, stands in stark contrast to that of news media election coverage. Candidates' decisions of where to air ads and how many ads to air are highly strategic in that they typically buy airtime for large media markets in battleground states to maximize effectiveness. Thus, these geographically bound ad airings shape the extant information environments, creating substantial variation from one location to the next. For instance, according to the Wisconsin Ad Project, during the 2000 campaign period, the Top 10 most heavily advertised media markets had more than 35% of the total number of political ads aired in the Top 75 media markets. In this campaign, Detroit had more than 24,000 campaign ad spots in the last 80 days of campaigns, but Baltimore and San Antonio had less than 1,000 ads. Given this geographic variability in the number of political ads, it appears reasonable to claim that although news media increase the overall political information base during campaigns, the real variance in the information environment across locations comes from political ads. Therefore, campaigns are thought to provide a natural experimental setting to test the contextual effects of political ads on communication behavior (see Johnston, Hagen, & Jamieson, 2004).

The final reason that this study focuses on the information environment driven by political ads is related to the way citizens encounter political information. Although not always intended, news media use is, as discussed earlier, driven by individual characteristics, one of which is surveillance motivation. Thus, political information in news media is largely available for those who opt for news content over other content. In contrast, voters encounter political ads inadvertently. Because campaign strategists place their ads between the most popular programs to reach a maximal number of voters, regardless of individuals' program preferences, there is a large chance of coming across political ads when watching television. Even when watching a game show, for instance, people are likely exposed to political messages, unless they intentionally avoid them by zapping. Thus, during the campaign period, even those not particularly interested in politics or the current race find it difficult to avoid exposure to campaign information. As Morley (1992) suggests, if media use, particularly television watching, is part of our routine activities, campaigns—that is, political advertising—also make exposure to political information routine in our everyday lives. In sum, the manner of encountering political ads suggests that the

information environment driven by political ads creates a less self-selective context than that driven by news media.

Political Ads and Citizen Communication Behavior

Rosenstone and Hansen's (1993) work on political mobilization sheds light on the process through which political ads stimulate citizens to engage in active communication activities. To mobilize citizens, political leaders inform citizens of the issues at stake and make these issues salient by generating widespread anxiety or anger over them (e.g., anxiety over proposed cuts in Social Security or anger over rising property taxes), thus providing causes for the citizens to rally around (Rosenstone & Hansen, 1993).

During election campaigns, this mobilization around issues is often accomplished via political advertising in which candidates strategically select and define issues beneficial to them. This political advertising prompts citizens to think about the consequences of the current race in their lives and connect themselves to politics in general. As a result, surveillance motivation is triggered and citizens more actively turn to news media and their social networks to follow and learn about the issues. In sum, citizens respond to the mobilization efforts of political leaders by paying more attention to politics, seeking information more actively, and ultimately engaging in the political process.

Mobilization around issues is not, however, all that campaigns aim to do. Campaigning, both political ads and candidate visits, often activates voters' psychological attachment to parties and organizes voters to rally along party lines. This partisan mobilization is particularly effective in two-party systems such as that present in American politics today. This effort to activate the partisan base may then stimulate concerns about the likelihood of a voter's preferred candidate winning, leading the voter to monitor their candidate's stand and performance via news media and political discussion. In a similar vein, it is also possible that this heightened partisan attachment increases the chances of citizens participating in the campaign process. This disposition to participation is motivated by a desire to be an agent helping his or her parties and candidates win the election rather than remaining a "bystander" or "spectator." This increased sense of efficacy can also promote active communication.

In addition, campaigns can also indirectly shape individuals' communication behavior by creating a social milieu that encourages social mobilization within interpersonal networks. One possible way that campaigns stimulate electoral involvement, as Rosenstone and Hansen (1993) suggest, is to activate community norms about participating in politics. Support for this indirect mobilization through social networks comes from McClurg (2004), who claims that a group of politically active people can influence friends and neighbors "by participating themselves and setting an example of good citizenship or signaling the importance of the campaign to friends and family." For instance, "the simple act of putting up a yard sign or working

on a campaign can still signal what is appropriate political behavior to one's family and friends" (p. 412).

It is not likely, however, that all citizens respond to the rich information environment shaped by political ads. Although some citizens are influenced by this rich information environment shaped by political ads, others who do not watch television or who deliberately zap political commercials are less likely to respond. Despite this, there is still the possibility of being indirectly influenced by political advertising through social mobilization. Thus, political mobilization by campaigns sets a social standard supporting campaign engagement and creates richer and more politically saturated social interactions. This indirect mobilization then motivates citizens to engage more actively in political communication activities.

The above reasoning suggests that political advertising stimulates citizen communication activities by keeping them informed of campaign issues and creating a mobilization friendly environment. More specifically, people in areas bombarded with political ads, as opposed to those in areas with relatively few political ads, likely exhibit stronger interests in campaigns and thus have stronger motivations to follow developments in the campaigns. This, in turn, results in active engagement in communication activities. Accordingly, this study offers the following hypotheses about the roles political advertising plays in citizen communication behavior:

Hypothesis 1: As the number of political ads increases in local media markets, people will watch television news more.

Hypothesis 2: As the number of political ads increases in local media markets, people will read newspapers more.

Hypothesis 3: As the number of political ads increases in local media markets, people will use the Internet more for political information.

Hypothesis 4: As the number of political ads increases in local media markets, people will talk more about politics.

Method

Data

To test these hypotheses, two types of data are needed: (a) a record of the number and location of campaign ad airings during the 2000 campaign and (b) survey data that measure the patterns of individual communication behavior during the same campaign.

Ad tracking data. Campaign advertising data are from the Wisconsin Advertising Project at the University of Wisconsin, which obtained and coded data from the Campaign Media Analysis Group (CMAG). Using a satellite tracking system, CMAG collected a set of broadcast data via "Ad Detectors" in each of the 75 largest media markets in the nation throughout the 2000 campaign year. This software automatically

recognizes and logs commercials whenever and wherever they air. In the final data set, for each ad, the date, time, and media market in which it aired were recorded. Through this process, 970,428 campaign ads were counted in the 75 media markets.

Of these ads, this study concentrates on ads airing during the period from the end of party conventions through Election Day (i.e., August 18 through November 6, 2000).² Even though scholars suggest that political advertising research must consider the extended campaign period which begins prior to the post-Labor Day campaigns to correctly gauge the volume of ads and their impact (Goldstein & Freedman, 2002; Iyengar & Petrocik, 2000), this study considers only the ad airings after the party conventions. This is done to avoid the conventions' potential confounding effects, which can influence citizen communication activities by attracting attention from the media and the public.

Another aspect to consider when analyzing the ads is the type of race for which the ad is campaigning. In fact, during the general election cycle, there can be multiple races, depending on the schedule of local elections. Thus, numerical descriptions of political ads for the presidential race do not capture the complex campaign information structure at the local level. For instance, after the Democratic convention in 2000, New York City had more than 14,000 spots, of which only 30 were presidential campaign ads. Indeed, most of the ads in New York City (about 72%) stemmed from the contest for the Senate between Clinton and Lazio. Overall, of the ads aired in the 75 media markets during the time period defined above, only 28% were from the presidential campaigns. This means that counting only presidential campaign ads, as has been done in much of the previous research, results in ignoring more than two thirds of political advertising activities. Therefore, because the focus of this study is on the impact political ads have on communication behavior rather than on electoral outcomes at a specific level, political commercials at all election levels are considered. In sum, between August 18 and November 6, 2000, the Wisconsin Ad Project data identified 681,037 political ad airings from all campaign levels in the 75 media markets.

Survey data. The political ad data are combined with daily survey data from the National Annenberg Election Survey (NAES) conducted by the University of Pennsylvania. These data were collected through a national telephone survey using a Rolling Cross Sectional Survey technique. That is, throughout the 2000 campaign, random daily sampling and daily interviewing occurred. For the purpose of this study, NAES data from September 1 through November 6, 2000, are used; the beginning date in the survey was set 2 weeks after that of the ad data because it is a necessary condition to have political ads precede the citizen response. With approximately 300 interviews each day, 19,507 respondent interviews were completed before Election Day. The overall cooperation rate was reported at 53%. In the process of merging these data with the political ad data, survey responses from outside the 75 media markets were excluded, resulting in a total sample size of 15,451.

Measures

The variables included in the analyses to test the relationships can be categorized into three groups: (a) the dependent variables of print and broadcast news media use, Internet use for campaign information, and political discussion; (b) the volume of campaign ads in the media market where each of the survey respondents lived; and (c) the control variables of demographic characteristics, political dispositions, and the presence of non-TV ad campaigning, such as candidate visits and party contact. Question wording and descriptive statistics of all variables are reported in Appendices A and B, respectively.

Citizen communication. Five categories of communication behavior were used as dependent variables: national television news use, local television news use, newspaper use, Internet use for political information, and political discussion. First, the national television news use index was created using measures of respondents' exposure and attention to news content. For exposure to national news, respondents were asked how many days in the past week they had watched national news programs. Their responses were recorded on an 8-point scale with 0 being *never* and 7 being *every day*. For attention to national news, respondents were asked to report how much attention they paid to national news content. Their responses were recorded on a 4-point scale that ranged from *very little* to *a great deal*. To create a single index of national television news use, these measures of exposure and attention were scaled to run from 0 to 1 and were averaged (reliability $\alpha = .72$, $r = .56$). Indices for local television news use and newspaper use were created in the same way (reliability $\alpha = .76$, $r = .62$, for local news use; reliability $\alpha = .55$, $r = .38$, for newspaper use).

Internet use for political information was measured using a single item. Respondents were asked how many days in the past week they had used the Internet for campaign information. Political discussion was also measured using a single item tapping discussion frequency; respondents were asked how many days in the past week they had engaged in political discussion with friends or family. These responses were recorded on an 8-point scale, which ranged from *never* (0) to *every day* (7). To be consistent with the broadcast and print news media use, these scores were scaled to run from 0 to 1.

Political advertising. The number of ads, the independent variable of interest, was measured by considering two dimensions in the data: the media market and the date. As discussed earlier, because of campaign camps' limited resources, decisions about where and how many ads to air are highly strategic. Cross-market comparison, for example, reveals that, of the total number of spots in the nation's Top 75 media markets during the last 80 days of the 2000 campaign, 72% were concentrated in 35 markets and the remaining 28% were aired in 40 markets. More specifically, people in Detroit, the most heavily advertised area, had 54 times more ads than San Antonio and 6 times more ads than Chicago.

Because they do not have enough resources to buy airtime consistently throughout the campaign period, it is also important for campaign strategists to decide on the timing of buying airwaves. Although early and late advertising both have their own merits (Goldstein & Freedman, 2002), advertising expenditures in 2000 indicate a general pattern of increased advertising volume as campaigns proceeded. For instance, during the final week of the campaign, 147,154 spots were aired in the Top 75 media markets, which is 4.6 times more than the number of ad airings in the 1st week of September and 2.6 times more than in the 1st week of October.

Given this temporal and geographic variability in the number of political ads, the two dimensions, media market and day, determine how many ads were introduced in each respondent's life. Thus, as noted earlier, respondents in Detroit had a substantially different political ad environment than did those in San Antonio. Also, even among those in Detroit, respondents interviewed early in September had a much lower ad exposure than did those interviewed in late October. Thus, the number of campaign ads was measured on the grounds of the geographical location of the respondent and the date the information was collected.

This advertising measure, however, requires more explanation. The day-by-day dynamics of political advertising imply that campaign ad effects can be cumulative. In other words, in a real situation, as opposed to a laboratory setting, individuals' behavior at one time is, if political ads have any impact, likely to be an outcome of the ad airings leading up to that point. At the same time, however, it is unlikely that these cumulative effects are indefinite; surely, not all ads ever aired count. Depending on the nature of outcome variables, the cumulative cycle might be long or short. Given that individuals' communication activities are part of their life routines, ads aired long ago might have lost their influence. Thus, this study sets a 2-week time period to capture the cumulative nature of campaign ad effects; the measure of campaign ads on any given day includes the sum of the ads during the preceding 2 weeks, as follows:

$$\text{Number of political } ad_{ij} = \sum_{i=t-14}^t Ad_{ij}$$

where Ad_{ij} represents the number of ads on a given day (i) in a market (j). For instance, if a respondent who lives in New York City was interviewed on September 1, the score of the volume of political ads is calculated by summing all ad airings counted in the New York City media market for the 2 weeks prior to the interview day. Then, the raw measure of political ads is natural log-transformed under the assumption that the effect of the number of ads on communication behavior is not linear; that is, an increase of ad airings from 1 to 500 is expected to generate stronger effects than is an increase from 3,001 to 3,500.

By considering location and time dynamics, two dimensions available in the day-by-day political ad tracking data, the measure of political ad volume in this study represents the total volume of political ads aired recently in local media markets. When merged with rolling cross-sectional national survey data tapping individual

communication behaviors, this measure of political ad volume makes it possible to examine the changing dynamics in the role of political ads in citizen communication.

Control variables. As research suggests, campaign strategists carefully allocate their limited resources by focusing on competitive areas. Thus, election competition invites intense campaign activities such as political ads, candidate visits, rallies, and interpersonal contact (i.e., canvassing). Because all of these activities are thought to have some mobilizing potential, disentangling the impact of political advertising from other campaign activities is necessary. To address this issue of potential confounds, the number of candidate visits in each media market and the party contact during the campaign period were introduced as control variables. Candidate visit data were compiled from public schedules and news accounts.³ Direct party contact was measured by two questions asking respondents about interpersonal contacts by political parties and other organizations during the campaign period.

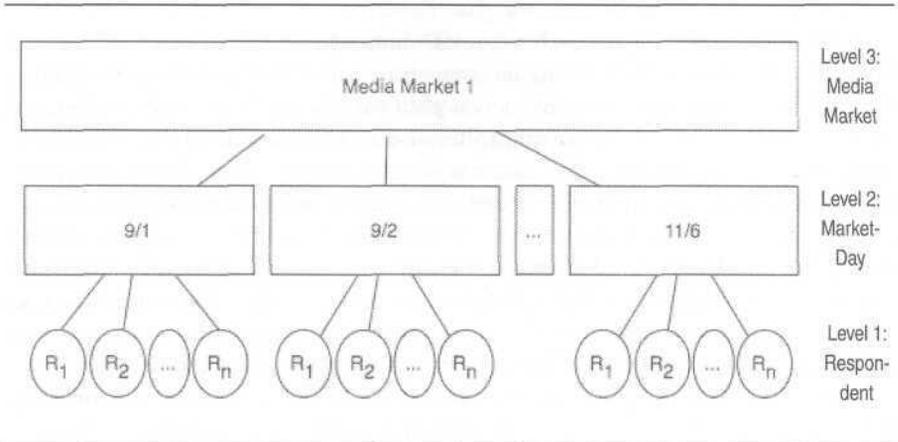
Beyond these campaign-specific characteristics, four demographic variables typically related to communication behavior were considered: age, income, education, and sex. The measurement scheme and demographic profile of the respondents are as follows: Sex and age are self-explanatory. Respondents' level of education was measured on a 9-point scale ranging from *elementary* to *postgraduate school*, with the sample mean being 5.23 (5 indicates attended college). Household income was measured on a 9-point scale. The median was the \$35,000 to \$50,000 bracket.

In addition to basic demographic variables, general political interest and strength of party identification were controlled because they are thought to be strong correlates of communication behavior. Political interest was measured using a single item that asked respondents how actively they followed current events in government and public affairs, regardless of whether there is an upcoming election. Their responses were recorded using a 4-point scale with 1 being *hardly at all* and 4 being *most of the time*. Party identification was initially measured using a 7-point scale with 1 being *strong Republican* and 7 being *strong Democrat*. Then, this measure was rescaled to run from 1 (*independent*) through 4 (*strong party identifier*). As a snapshot, the average respondent was somewhat interested in general politics and was a moderate party identifier.

Multilevel Model Specification

Adoption of multilevel modeling. This study models the contextual effects of political advertising on individual communication behaviors, examining whether individuals' news media use and political discussions are affected by the volume of political ads aired recently in local media markets. Accordingly, variables included in this study are measured at different levels; the dependent variables of communication behavior are measured at the individual level by observing patterns of individual communication activities, whereas the independent variable is measured at

Figure 1
Schematic Illustration of a Three-Level Hierarchical Data Structure



the media market level by counting the number of ads in each respondent's media market in the 2 weeks prior to the interview day. Thus, as illustrated in Figure 1, the data for this study represent each individual respondent as nested within one media market on one given day. This is then situated in higher units within the individual media market itself.

These observations at different levels call attention to the question of what the unit of analysis should be and how to deal with the hierarchical data. One approach to analyzing this sort of data is to disaggregate the higher-level variables down to the individual level; that is, assigning one media market-level characteristic (i.e., the number of ads) to all respondents who live in the corresponding media market and running the subsequent analysis at the individual level. The problem with this approach is that the disaggregating process violates the primary statistical assumption that the observations are independent. Indeed, it is likely that citizens interviewed in a particular media market are more similar to each other than to citizens randomly drawn from the national population. Also, given the longitudinal dynamics of campaigns, respondents interviewed in early September likely have more similar experiences with campaigns than do those interviewed in early November. Therefore, individuals who are sampled from one media market on any given day will have more homogeneity or nonindependence than will individuals randomly drawn from a larger population. The violation of the independence assumption in the presence of the clustered data, then, causes an underestimation of standard errors in ordinary least square (OLS) regressions, thus leading to a relatively higher rate of Type I error (Raudenbush & Bryk, 2002). This issue of statistical dependence in clustered data necessitates the use of multilevel models that can produce more precise estimations of standard errors than traditional regression techniques.

Moreover, multilevel models are pertinent to this study because they also provide a statistical modeling framework for assessing theoretical expectations that integrate macro- and microlevel concepts. Testing the cross-level relationships hypothesized in this study does require a model in which individual variance in communication outcome is accounted for by both the variation in the total volume of political ads recently aired in local media markets and the variations in other covariates measured at multiple levels. By partitioning the variation in the outcome variable, multilevel models can separately estimate the predictive effects of explanatory variables and disentangle the sources of variation at each level. In sum, a multilevel modeling approach not only provides more precise parameter estimates by properly handling the statistical dependence issue but also allows an empirical test of multilevel theorization by modeling variance and covariance in a nested structure across different levels. Given the proposed theoretical expectations and data structure in this study, multilevel models are certainly a more relevant and appropriate method than the traditional OLS regression models based on data aggregation and/or disaggregation.

Three-level hierarchical model specification. Because this study models the effects of time-varying context-level explanatory variables on individual-level outcome variables, a three-level model is specified with three submodels at Levels 1, 2, and 3, respectively (see J. S. Barber, Murphy, Axinn, & Maples, 2000, for multilevel event history analysis). In this three-level model, units at Level 1 are individual respondents, at Level 2 are media market day combinations, and at Level 3 are media markets.

In the Level 1 model, similar to the OLS regression, individual behavior (for instance, news media use) is regressed on control variables measured at the individual level, as follows:

$$\begin{aligned} \text{News media use}_{ijk} = & \pi_{0jk} + \pi_{1jk} * (\text{Age}) + \pi_{2jk} * (\text{Income}) + \pi_{3jk} * (\text{Education}) \\ & + \pi_{4jk} * (\text{Gender}) + \pi_{5jk} * (\text{Political interest}) \\ & + \pi_{6jk} * (\text{Party ID strength}) + \pi_{7jk} * (\text{Party contact}) + e_{ijk} \end{aligned} \quad (1)$$

where π_{pjk} ($p = 0, 1, \dots, 7$) are Level 1 coefficients and e_{ijk} is the Level 1 random effect (i.e., the residual for individual i in Level 2 unit j and Level 3 unit k).

The Level 2 model captures the influence of media market day-level factors (i.e., political ad volume and candidate visit frequency in local media markets during the preceding 2 weeks). In this Level 2 model, the Level 1 intercept (π_{0jk}) is predicted from Level 2 variables⁴:

$$\pi_{0jk} = \beta_{00k} + \beta_{01k} * (\text{Political ad volume}) + \beta_{02k} * (\text{Candidate visit frequency}) + r_{0jk} \quad (2)$$

In the Level 3 model, the mean news media use for a media market, adjusted for individual and market day characteristics, is represented as a function of a grand

mean news use for all markets (y_{000}), the effects of market ad volume and campaign visit frequency (y_{001} for the average number of political ads and y_{002} for campaign visits in a media market throughout the campaign), and a random error component (u_{00k}). Given the substantial variability in the political ad volume and campaign visit frequency across the 75 media markets in which the Level 2 units (i.e., market day combination) are nested, the market-level measures of ad volume and campaign visits were set as controls. Regardless of how these factors influence communication behavior, including these Level 3 variables representing characteristics of each media market into the model renders Level 2 political ad effects more interpretable. This model is defined as follows:

$$\beta_{00k} = \gamma_{000} + \gamma_{001} * (\text{Average political ad volume}) + \gamma_{002} * (\text{Average campaign visit frequency}) + u_{00k} \quad (3)$$

As expressed in the model equations, the linear model is assumed at all levels. It is also assumed that each of the residuals is normally distributed with a mean of 0 and is independent of the predictor variables at the same level (see Raudenbush & Bryk, 1986).

In sum, the three-level model specified in this example represents individual-level news media use as a function of a grand mean news use for all markets (y_{000}); the effect of individual, market day, and market-level characteristics; and random error components (the variability in mean news use among Level 2 and Level 3 units). Thus, the coefficient for political advertising in the Level 2 model indicates the effect on communication behavior of political ad volume in local media markets during the preceding 2 weeks, beyond the fixed effects of individual and media market characteristics, and the random effects.⁵ These multilevel models were implemented using HLM 5.

Results

Multiple Imputation for Missing Data

Before fitting these three-level models, a decision about how to deal with missing data had to be made. Although there is no Level 2 or Level 3 data missing, there is a considerable amount missing in the Level 1 data.⁵ Motivated by concern about the potential effects of missing data on the model estimates, this study imputed simulated values to replace missing values in Level 1 variables, using a multiple imputation technique based on the EMis (Expectation Maximization with Importance Sampling) algorithm (see King, Honaker, Joseph, & Scheve, 2001). The multiple imputation was implemented in three steps. First, multiple (typically five) imputed values were generated for each missing item, yielding multiple imputed replicate data sets. Then, the missing values were replaced with the five different imputed values, while the observed values remained the same. For this step, all of the Level 1 variables were included in the imputation model, along with some external variables

thought to be highly predictive of the Level 1 variables (see King et al., 2001, for a detailed discussion). These extra variables include cable subscription, Internet access, radio talk show use, political knowledge, campaign participation, voter registration, political efficacy, political trust, residency in battleground states, occupation, employment status, marital status, race, and religiosity. Second, the specified multilevel models were run for each of the imputed data sets with no missing data. Lastly, the results from each analysis were combined to calculate final estimates (i.e., coefficients, standard errors, and variances).⁶ These estimates are presented in Table 1.

Fixed Effects

Separate hierarchical linear modeling analyses with imputed data sets were conducted for the five communication behavior measures: national and local television news use, newspaper use, Internet use for campaign information, and political discussion. Table 1 shows the results of the estimated three-level model where both individual- and media market-level variables were specified to predict the patterns of individual communication behavior. Lending support to Hypotheses 1, 3, and 4, results reveal significant positive relationships between the number of political ads and communication activities.

Specifically, Hypothesis 1 predicted that the volume of political advertising would hold a positive relationship with television news use. To test this prediction, two separate analyses were conducted for national news use and local news use, respectively. Results show that, as summarized in Table 1, there are significant positive relationships between the number of political ads and individuals' television news use. That is, as the number of political ads aired in people's local media markets during the preceding 2 weeks increased, higher national news use ($b = .0104$, $SE = .0017$, $p < .001$) and local television news use ($b = .0078$, $SE = .0020$, $p < .001$) were reported. Taken as a whole, the data suggest that people use television news programs more in response to an increase in political advertising.

Similarly, results support Hypotheses 3 and 4, suggesting that the more political commercials are aired in local media markets, the more people use the Internet for campaign information ($b = .0140$, $SE = .0026$, $p < .001$) and engage in political discussion ($b = .0255$, $SE = .0035$, $p < .001$). Hypothesis 2, however, was not supported; results indicate that the number of political ads bears no statistically significant relationship with newspaper use.

These effects of political advertising on TV news use, Internet use for political information, and political discussion are beyond those of individual traits, other campaign activities, and media market characteristics. More specifically, to sort out the impact of political advertising from potential confounds, the models controlled for (a) the total number of political ads and candidate visits in media markets throughout the campaigns, (b) other campaign activities such as candidate visits and mobilization contacts, (c) individuals' partisan and motivational dispositions, and (d) demographic variables.

Table 1
Political Ad Impact on Communication Behaviors

Fixed Effects	National TV		Local TV		Newspaper Use		Web Use for		Political Talk	
	News Use		News Use		Newspaper Use		Political Info		Political Talk	
Age ^a	.0021 (.0001)***	.0021 (.0002)***	.0040 (.0002)***	-.0043 (.0002)***	-.0006 (.0002)***					
Education ^a	.0011 (.0013)	-.0101 (.0018)***	.0170 (.0019)***	.0139 (.0016)***	.0157 (.0013)***					
Income ^a	.0094 (.0013)***	.0017 (.0017)	.0196 (.0016)***	.0105 (.0019)***	.0160 (.0014)***					
Sex (<i>female</i> = 1) ^a	-.0052 (.0050)	.0330 (.0064)***	-.0460 (.0062)***	-.0724 (.0090)***	.0000 (.0048)					
Party identity strength ^a	.0025 (.0025)	.0084 (.0033)**	-.0042 (.0026)	-.0103 (.0039)**	-.0040 (.0025)					
Political interest ^a	.1554 (.0035)***	.1012 (.0048)***	.1280 (.0051)***	.0601 (.0050)***	.1843 (.0032)***					
Party contacts ^a	.0471 (.0147)***	.0130 (.0153)	.0797 (.0155)***	.1493 (.0160)***	.1632 (.0137)***					
Candidate visits ^b	-.0007 (.0017)	.0035 (.0016)*	.0003 (.0019)	.0020 (.0013)	.0019 (.0026)					
Political ads ^b	.0104 (.0017)***	.0078 (.0020)***	.0023 (.0020)	.0140 (.0026)***	.0255 (.0035)***					
Market average visits ^c	-.0004 (.0161)	-.0151 (.0181)	-.0018 (.0209)	.0007 (.0140)	.0076 (.0153)					
Market average ads ^c	.0030 (.0020)	.0027 (.0030)	.0045 (.0030)	-.0018 (.0021)	-.0018 (.0022)					
Random effects ^d										
Level 1 variance (δ^2) (SE)	.6998 (.0009)	.0956 (.0012)	.0990 (.0013)	.1285 (.0016)	.0812 (.0010)					
Level 2 variance (τ pi) (SE)	.0045 (.0005)	.0021 (.0006)	.0046 (.0007)	.0015 (.0007)	.0086 (.0007)					
Level 3 variance (τ beta) (SE)	.0007 (.0002)	.0007 (.0002)	.0013 (.0003)	.0004 (.0002)	.0004 (.0002)					

Note: Entries are unstandardized HLM coefficients with standard errors in parentheses. χ^2 tests are not available for Level 1 variance estimates.

a. Level 1 ($n = 15,451$).

b. Level 2 ($n = 3,936$).

c. Level 3 ($n = 75$).

d. All random effects at Levels 2 and 3 are statistically significant based on the χ^2 test.

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

Although not the focus of this study, some findings regarding the influence of these control variables are worth briefly noting. First, neither the total number of political ads nor the number of campaign visits in the media markets during the entire campaign period held meaningful relationships with citizen communication activities. This finding suggests that individual communication behavior was not influenced by the overall degree of campaign concentration in local media markets when the market day specific political ad volume and campaign visit frequency were considered simultaneously. The results of random effects in empty models may shed light on this null finding for the Level 3 variables. As shown in Table 2, when partitioned into different levels, individual communication behavior varies little across the media markets. That is, there is not much variability in individual communication behavior for which media market characteristics can account. This limited variability of communication behavior across media markets was consistent, even when media markets were considered as Level 2 units, with the market day combination being omitted in alternative empty models.

Nonetheless, interpretation of this result in the Level 3 model requires some caution. First, there might be an overlap in what is actually measured between Level 2 and Level 3 variables. Although the Level 3 variables were not measured by aggregating Level 2 variables, the overall amount of political ads, for example, is actually the sum of day-by-day ad airings in each media market. This, in turn, is the basis of the Level 2 political ad measure. Thus, Level 2 units nested into high ad volume markets likely have higher values, as compared to those in low ad volume markets. Second, the relatively small sample size in Level 3 ($N = 75$) also did not afford much statistical power, especially for the Level 3 models. Therefore, although the contextual measures of ad volume and visit frequency could be one indicator of how competitive the campaigns were across media markets, firm conclusions about campaign competitiveness and communication behavior need to be reserved for a study designed to gauge these specific issues.

Candidate visits measured at Level 2 exert a significant influence only on local television news use ($b = .0035$, $SE = .0016$, $p < .05$). This might be because local political dynamics associated with candidate visits and campaign rallies are often announced and covered by local news media. Excluding local news use, candidate visits measured at Level 2 had little influence on other types of individual communication behavior. It should be noted, however, that this is a contextual measure. Specifically, those who attended candidate visits were not differentiated from those who simply lived in towns where visits occurred during the preceding 2 weeks. If these were differentiated, it would be expected that those attending the visits would experience an increase in communication behaviors.

In addition, mobilization contacts play a meaningful role in citizen communication behavior; data indicate that the more people are contacted by political parties or organizations during campaigns, the more they engage in communication activities such as national news use, newspaper use, Internet use for campaign information,

Table 2
Random Components in Empty Models

Random Effects	National TV News Use	Local TV News Use	Newspaper Use	Web Use for Political Info	Political Talk
Level 1 variance (δ^2) (SE)	.0880 (.0009)	.1040 (.0012)	.1229 (.0013)	.1392 (.0016)	.1084 (.0010)
Level 2 variance (τ pi) (SE)	.0047 (.0005)	.0023 (.0006)	.0046 (.0007)	.0019 (.0007)	.0100 (.0007)
Level 3 variance (τ beta) (SE)	.0007 (.0002)	.0007 (.0002)	.0014 (.0003)	.0004 (.0002)	.0004 (.0002)

Note: All random effects at Levels 2 and 3 are statistically significant based on the χ^2 test. χ^2 tests are not available for Level 1 variance estimates.

and political discussion. Consistent with previous research (McClurg, 2004; Pan et al., 2006), the results thus suggest that campaign inputs through interpersonal channels play a significant role in promoting citizen communication.

To summarize, the multivariate analyses considering various individual characteristics, campaign factors, and market characteristics reveal a significant positive impact of political advertising on individual communication behavior. In response to the influx of political advertising in their local media markets, people seek more political information through television news programs, the Internet, and their social networks, a pattern that held true above and beyond the influence of control variables. However, newspaper use was not influenced by either political advertising or by other campaign activities such as mobilization contacts and candidate visits. This suggests that the pattern of newspaper use is relatively stable, responding little to situational changes caused by campaigns.

Random Effects and Deviance Tests

Random effects. As a random effect in the random intercept models, the residual variance at each level was estimated and reported in Table 1. These variance estimates provide information about the remaining variability in the outcome variables at each level, after adjustment for variations in the explanatory variables at the same level. Specifically, the Level 1 residual variance (δ^2) reflects unexplained variance between individuals. Similarly, the random components at Levels 2 (τ pi) and 3 (τ beta) indicate unexplained residual variations between Level 2 units and Level 3 units, respectively. Each of the Level 2 and Level 3 variance estimates can be statistically tested with the null hypothesis that the variance component equals zero. As seen in Table 1, all Level 2 variance components (τ pi), ranging from .0015 to .0086, are statistically different from 0. This suggests that although the Level 2 political ad variable was found to be a significant factor predicting all but the newspaper use in Level 1 communication behavior (see the fixed effects coefficients), there still remains significant variability between Level 2 units in the average scores of the different communication measures. There are also statistically significant variances in all communication variables, although small (from .0004 to .0013), that remain unexplained by Level 3 variables.

Variance explained. Random effect estimates provide a way to assess how much variance in an outcome variable is accounted for by each level's explanatory variables. Specifically, the explained variance can be calculated by comparing random effects in a final model with those in an empty model that only assesses group variability and individual variability within groups without any single explanatory variable. The assumption behind this is that if any reduction in residual variance is found in the final model, as compared to the empty model, the amount of residual variance reduction represents the portion of variance accounted for by the explanatory variables added to the initial empty model (see Hayes, 2006). To quantify the portion of the explained variance for the three-level models tested, a three-level empty model was first fitted for each of the communication outcome variables (see Table 2). The random effects from the empty model were then compared to those from the fully specified model.

The variance components in the empty models suggest that variances in communication outcomes are, to a large degree, rooted in individual differences. The greatest amount of variation in communication behavior, ranging from 91.2% to 98.3%, occurred between individuals. Yet statistically significant variability for the five communication outcomes also existed at Levels 2 and 3, with a range of 1.3% to 8.4% for Level 2 and 0.4% to 1.2% for Level 3. Although the variances partitioned into Levels 2 and 3 are small, the statistical tests of random effects point to a multi-level variance structure and thus to the importance of a multilevel analysis. This also implies that individual communication activities would not be fully accounted for by individual differences.

Next, to calculate the portion of variance explained by the variables in the specified model, the variance estimates in the fully specified model were subtracted from and then divided by those in the empty model (i.e., [empty model variances - full model variances] / empty model variances). Using this calculation, the specified three-level models accounted for 19.7% of the variance in national news use, 8% in local news use, 18.6% in newspaper use, 7.8% in Internet use of political information, and 24.1% in political talk. When partitioned into three levels, the major source of the explained variance in outcome variables was at Level 1. Only a small portion of the explained variance stemmed from Level 2 explanatory variables, and the contribution by Level 3 variables was close to 0. This is partly because small variances, which needed to be accounted for at Levels 2 and 3, initially existed.

Deviance tests. Aside from the calculation of the amount of explained variance, deviance tests were performed for statistical tests of the overall reduction of random effect variance. The deviance statistic, defined as minus twice the natural logarithm of the likelihood, is a measure of the overall model fit, with a large deviance indicating a lack of fit between the model and the data. To perform a deviance test, a reduced model, including only Level 1 explanatory variables, was first fitted (see Table 3), and its deviance statistic was compared to the deviance statistic from the

Table 3
Deviance Tests

	National TV News Use	Local TV News Use	Newspaper Use	Web Use for Political Info	Political Talk
Model with Level 1 predictors only ($df = 11$)	3,644	7,967	8,834	12,394	6,500
Fully specified model with predictors at all levels ($df = 15$)	3,611	7,946	8,830	12,352	6,364
Deviance test ($df = 4$)	33***	21***	4	42***	136***

Note: Entries in the first two rows are deviance statistics yielded by each model, and those in the last row are the differences between deviance scores in the first and second rows.

*** $p < .001$, based on chi-square distribution.

fully specified model. By examining the gap in the deviance statistics from these hierarchically related models, we can statistically test the contribution of Level 2 and Level 3 variables to the overall model fit.

In general, the fully specified final models yielded smaller deviance scores (3,611 for national news use, 7,946 for local news use, 8,830 for newspaper use, 12,352 for Internet use, and 6,364 for political talk) than the reduced models with only Level 1 predictors did (3,644 for national news, 7,967 for local news, 8,834 for newspaper, 12,394 for Internet use, and 6,500 for political talk). The reduction in the deviance statistic was statistically significant for all communication outcomes ($p < .001$, $df = 4$) except newspaper use. When interpreted along with the results of fixed effect coefficients, these results imply that higher level variables, particularly the Level 2 political ad volume, made significant contributions to the overall model fit.

Discussion

The primary aim of this study is to investigate whether political ads affect individual communication behavior patterns. More specifically, drawing primarily on political mobilization research, it was hypothesized that as campaign ad volume increases in local media markets, citizens will use news media more and discuss politics more. This was expected because it is through political ads that citizens are informed of campaign issues and become interested in the campaign process. Thus, they actively search for and exchange information via news media and social networks.

Lending support to Hypotheses 1, 3, and 4, the results reveal that political ads do indeed stimulate citizen communication activities. That is, as the number of ads increased, people used national and local television news more (Hypothesis 1), surfed the Internet more for campaign information (Hypothesis 3), and engaged in more political discussion (Hypothesis 4). Although such effects of political ads were

not detected for newspaper use (Hypothesis 2), the evidence from this study clearly suggests that political ads do promote citizen communication behavior.

These findings are consistent with previous research about the potential political campaigning has for vitalizing citizen communication. Popkin (1994), for instance, has speculated that contemporary campaign communication not only directly disseminates political information directly to voters but also stimulates political discussion. Furthermore, Pan et al. (2006) have empirically examined campaign effects on political discussion and found that exposure to both campaign messages through mass media and campaign contacts lead to political conversation in the 2000 campaign context. In a similar vein, McClurg (2004) also found that direct party contacts, as one type of campaign activity, serve to foster political discussion. Drawing on these results, McClurg points to the possibility that "notable campaign events like the Willie Horton ad in the 1988 election or the second presidential debate in 2000 might be more worthy of water cooler conversation than the messages conveyed in the traditional party canvass" (p. 414).

However, there are two ways in which the results of this study expand the previous research. First, moving beyond the interpersonal contact by political parties (McClurg, 2004; Pan et al., 2006) or exposure to general campaign messages such as campaign news and televised debates (Pan et al., 2006), this study specifically investigates the role that political advertising, a primary mode of campaigning in contemporary campaigns, plays in citizen communication. Second, this study includes not only political discussion, as in previous studies, but also various types of news media use as outcomes of campaign effects. The results of this study suggest that both mobilization contacts and political ads exert considerable influence on citizens' communication behavior.

From these results emerge clear implications for political communication research and policy. First, the findings provide additional evidence of the positive role political advertising plays in the democratic process. Indeed, the results suggest that the scope of political ads' impact is broader than previously studied. Specifically, previous research suggests that political ads provide campaign information, thus helping citizens learn about candidates and issues, make their choices, and turn out to vote. However, according to the results of this study, this is not all that political advertising does. Political ads also serve to encourage citizens to turn to and make greater use of news media and social networks.

Second, the findings of this study also suggest that, to better understand the role of political advertising in democracy, we should examine not only how this advertising makes unique contributions to democratic outcomes but also how it operates with other forms of communication. More specifically, such effects of political ads on citizen communication behavior suggest that political ads, by stimulating communication activities, can encourage internal and social deliberation, thus indirectly contributing to many prodemocratic outcomes. Given that news media use and political discussion are important sources of information and deliberation for ordinary citizens,

the observed relationship between political ads and communication activities speaks to the possibility that the role political advertising plays in the campaign process might be broader than previously theorized. For instance, if, as found in this study, citizens actively search for relevant information from news media in response to political ads and subsequently exchange their views through political discussion, political ads function to help citizens make better political choices based on their individual needs and preferences. These reasoned choices reflect not only the campaign information provided in the ads but also that developed through the communication behaviors stimulated by the ads. In sum, the results show that political advertising has the potential to promote public deliberation and thus to play a positive role in the democratic process.

The results also have implications for communication research. The data suggest that individual communication behavior does indeed respond to changes in the campaign environment (i.e., the variability in the volume of political ads in local media markets). This implies that individual communication behavior is not an isolated individual phenomenon; rather, it is an outcome of a more complex process in which both individual characteristics and environmental factors operate. Thus, the findings of this study speak to the benefits of a multilevel framework in communication research. By taking into account relevant environmental and structural factors, the multilevel approach better conceptualizes communication behavior.

To conclude, the boundaries and limitations of this study are discussed to provide some suggestions for future research. First, this study set out to examine the contextual effects of political ads on communication behavior, with the discussion of surveillance motivation serving as an auxiliary theory for the cross-level nexus. That is, the mechanism linking the volume of political ads in local media markets to individual communication behavior was discussed but not empirically tested. Although the results suggest positive relationships between political ads and communication activities, the mechanism behind the relationships is left unexamined. Thus, future study of the social and psychological processes underlying the contextual effects of political ads on communication would be helpful.

Second, with the main research question of whether political ads can promote citizen political communication, five different types of communication activities—that is, national news use, local news use, newspaper use, Internet use of political information, and political talk—were treated in a parallel manner in this study. That is, all were modeled as outcome variables predicted by the volume of political ads and other covariates. Yet although closely interrelated, they are certainly different communication behaviors, each of which may have different predictors (or differing degrees of predictors' explanatory power), different operating mechanisms, and different consequences. Recognizing these differences in communication behaviors may shed light on the interpretation of findings in this study and provide some suggestions for future research.

As discussed earlier, this study is based on the assumption that surveillance motivation is heightened by political ads and that this motivation encourages engagement in different communication activities. However, the extent to which surveillance motivation is related to actual communication behavior might vary depending on the type of communication activity. For example, given that television is a more engaging and more accessible medium than newspapers (Neuman, Just, & Crigler, 1992), it is likely that the motivation threshold for television news use is lower than that for newspaper use. Thus, once stimulated by political ads, citizens may turn to television news more easily than to newspapers. This may, in part, explain why Hypothesis 2 was not supported. Furthermore, future research should also pay attention to the relationship between informational and expressive communication behaviors. Indeed, it has been consistently suggested that political conversation is an outcome of informational media use, rather than simply being another source of information (Kim, Wyatt, & Katz, 1999; Pan et al., 2006; Shah, Cho, Eveland, & Kwak, 2005; Southwell & Yzer, 2007). Thus, it is important that the dynamic process involving different communication behaviors be incorporated into the study of political ads and communication.

Third, this study conceptualized political advertising as a contextual factor and, accordingly, operationalized it by counting the number of ads in local media markets. However, this measurement does not directly capture how much individual respondents actually encountered political ads. Even for those in the same media market, individual characteristics such as television viewing patterns may have made a difference in the actual ad exposure. Thus, to more fully understand the role of political ads in citizen communication, future studies should also attempt to measure ad exposure at the individual level and examine whether and how exposure to political ads is associated with communication behavior.

Last, as discussed earlier, this study was only interested in the contextual effects of political advertising on communication activities so that random intercept models were specified. However, this does not suggest that the contextual effects of political advertising are limited to directly intensifying citizens' communication behaviors. It is also plausible that the political ad context may amplify the influences of individual factors such as political interest and partisanship on communication behavior. For example, as shown in Table 1, political interest was found to be a strong positive predictor of communication activities. This influence of political interest will likely be greater, especially when politically interested people are in areas of high political mobilization that are saturated with political ads. This is because political ads can create a social milieu that easily translates citizens' political interests into political information search and political conversation. That is, it appears possible that political environments shape individual communication behavior not only by exerting direct influences but also by moderating the relationships between communication behavior and its correlates. Although interesting, because this possibility is beyond the boundary of this study, I will leave this idea of cross-level interaction for future research.

Appendix A

Question Wording

Gender: Sex of respondent (0 = male; 1 = female)

Age: Exact age (years)

Education: 1 = Grade 8 or lower; 2 = high school, no diploma; 3 = high school diploma or equivalent; 4 = technical or vocational school after high school; 5 = college, no degree; 6 = associate's or 2-year college degree; 7 = 4-year college degree; 8 = graduate or professional school after college, no degree; 9 = graduate or professional degree.

Income: Last year, what was your total household income before taxes? 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.

Newspaper Use: How many days in the past week did you read a daily newspaper? Range 0 (never) to 7 (every day)

During the past week, how much attention did you pay to newspaper articles about the campaign for president? *Great deal* (1), *some* (2), *not too much* (3), or *none* (4)?

Local 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 (never) to 7 (every day)

During the past week, how much attention did you pay to stories on local TV news about the campaign for president? *Great deal* (1), *some* (2), *not too much* (3), or *none* (4)?

National 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 (never) to 7 (every day).

During the past week, how much attention did you pay to stories on national TV news about the campaign for president? *Great deal* (1), *some* (2), *not too much* (3), or *none* (4)?

Internet Use: How many days in the past week did you see information about the campaign for president online? Range 0 (never) to 7 (every day).

Political Discussion: How many days in the past week did you discuss politics with your family or friends? Range 0 (never) to 7 (every day).

Party Identity: Generally speaking, do you usually think of yourself as a Republican, a Democrat, an independent, or something else?

Do you consider yourself a strong or not a very strong (Republican or Democrat)? [Asked if Republican or Democrat]

Do you think of yourself as closer to the Republican or Democratic Party? [Asked if not Republican or Democrat]

Political Interest: Some people seem to follow what is going on in government and public affairs most of the time, whether there is an election or not. Others are not that interested. Would you say you follow what is going on in government and public affairs *most of the time* (1), *some of the time* (2), *only now and then* (3), or *hardly at all* (4)?

Mobilization contacts: During the campaign this fall, did any of the campaigns contact you about the presidential election?

During the campaign this fall, did any other group contact you about the presidential election?

Appendix B Descriptive Statistics

Variables	<i>M</i>	<i>SD</i>	Minimum	Maximum
Level 1 (<i>N</i> = 15,451)				
National news use	0.45	0.30	0	1
Local news use	0.52	0.33	0	1
Newspaper use	0.48	0.35	0	1
Internet use of political info	0.22	0.37	0	1
Political talk	0.35	0.34	0	1
Sex (<i>female</i> = 1)	0.55	0.50	0	1
Age	45.83	16.46	18	96
Education	5.23	2.30	1	9
Income	5.04	2.08	1	9
Party identity strength	2.78	1.02	1	4
Political interest	2.02	0.75	1	4
Party contacts	0.11	0.20	0	1
Level 2 (<i>N</i> = 3,936)				
Candidate visits	1.33	2.07	0	14
Political ads (log-transformed)	6.48	2.12	0	8.95
Level 3 (<i>N</i> = 75)				
Market visits	7.25	8.17	0	37
Market ads (log-transformed)	8.86	0.81	6.14	10.11

Notes

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2. The DNC national convention was held in Los Angeles between August 11 and August 17, 2000. The GOP national convention was held in Philadelphia 2 weeks prior to the DNC convention (July 28 to August 3, 2000).

3. Candidate visit data were collected using multiple sources. First, major-party candidates' campaign travel information compiled by Democracy in Action (<http://www.gwu.edu/~action>) at George Washington University was used. These candidate visit data were supplemented in some instances by *The New York Times* daily campaign logs, which tracked local campaign events. Candidate visits were first recorded at the county level and then aggregated to the media market level to be consistent with political ad data.

4. When specifying multilevel models, each of the lower level coefficients, including the intercept and the slope(s), can be an outcome variable in the higher level model. Because, as hypothesized, the focus of this study is on the direct influence of the Level 2 factor, particularly political advertising, on the Level 1 communication behaviors, only the intercept (τ_{0jk}) in the Level 1 model was to be predicted in the Level 2 model. Specifying this random intercept model, however, does not theoretically suggest ignoring the possibility that the magnitudes of the Level 1 factors' effects on the Level 1 outcome variable change depending on Level 2 factors. For now, I will hold off on a discussion of how plausible this possibility is

within the context of the present study. However, I return to it later in the form of suggestions for future research. Instead, I will now focus on how to test this possibility. Testing can be done when the coefficients for Level 1 predictors are estimated as random effects at Level 2. For example, the slope for political interest is set to have a random part as follows: $(\pi_{5jk}) = \beta_{50k} + r_{5jk}$. In this example, the effect of political interest is still fixed as a constant (β_{50k}), but it also has a random component (r_{5jk}) that permits the effect of political interest to vary across Level 2 units. If the variance of this random component is statistically different from 0, it indicates significant variability in the effect of political interest across Level 2 units and points to the possibility of cross-level interactions with Level 2 variables. To formally test cross-level interactions then, the slope of the Level 1 variable should be set as an outcome variable at Level 2 instead of simply having a random component as in the above example. Again, with political interest as an example, this Level 2 model for cross-level interaction is as follows: $(\pi_{5jk}) = \beta_{50k} + \beta_{51k} * (\text{political ad volume}) + \beta_{52k} * (\text{candidate visit frequency}) + r_{5jk}$. If the coefficients for Level 2 predictors (β_{51k} for political ad volume and β_{52k} for candidate visit frequency) are statistically different from 0, these Level 2 predictors are related to the magnitude of the Level 1 predictor's effect on the criterion variable.

5. For the Level 2 coefficients, it should be noted that the way Level 2 variables are constructed raises a concern about identifying the role that political advertising plays in citizen communication. As noted earlier, Level 2 variables were calculated by cross-classification of market campaign input (i.e., ad volume and campaign visits) and interview day. With this calculation, the time units (i.e., the degree of temporal proximity to Election Day) are a possible confounding factor in modeling ad effects on communication because timing within the campaign period is associated with both political ad volume/campaign visits and individuals' communication behaviors. Indeed, the number of political advertisements, for example, increases as campaigns proceed (Goldstein & Freedman, 2002), and as Election Day nears, voters tend to become more interested in the campaign and thus become more active in their political communication practice. However, this concern can be eased substantially by the geographically bound ad airings and campaign visits incorporated into the current Level 2 measures. The survey data merged with ad tracking data include a total of 15,451 respondents, about 60% of whom were from non-battleground states where ad volume is relatively less a function of timing. It is also plausible to expect that battleground media markets in the early stages of a campaign have more political ads than nonbattleground media markets in the later stages of a campaign. Thus, when crossed by market variability, temporal variation can be balanced, albeit not perfectly, in the Level 2 measures.

6. Among the cases merged with political ad buy data, more than 10% had missing values for at least one or more variables used in the analysis. Little's MCAR (Missing Completely at Random) test for these missing cases suggested that the pattern of missing data was not random ($\chi^2 = 7,811$, $df = 2,041$, $p < .001$), pointing to the necessity of multiple imputation. Given the considerable amount and nonrandom pattern of the missing data, simply using listwise or pairwise deletion was not an optimal solution for handling the missing cases. After multiple imputation, the Level 1 sample size remained 15,451. There were 5,025 possible Level 2 units (75 media markets x 67 days). However, after merging the ad buy data with the survey data, the total number of units was reduced to 3,936 because, in some media markets, there were days on which no interviews were conducted. The Level 3 sample size is 75, which represents the 75 top media markets.

7. For coefficients and variances, the values of the estimates across the five imputed data sets were averaged to produce a single estimate. To calculate combined standard error, however, I employed a more complicated formula that considers variation within each data set as well as variation across the imputed data sets, as follows (see King et al., 2001, p. 53, for more detailed discussion about how to combine results from different imputed data sets):

$$SE(q)^2 = 1/m * \sum_{j=1}^m SE(q_j)^2 + S_q^2(1+1/m)$$

where m (number of imputed data sets) = 5, $SE(q_j)$ = standard error of q_j from data set j , and $S_q^2 = \sum_{j=1}^m [(q_j - q^*) / (m - 1)]$.

For the purpose of comparison, the same multilevel models were run again using the method of listwise deletion, with observations from any missing item being excluded from the analysis. Not much difference was found in the results of the two approaches (multiple imputation and listwise deletion), as both produced almost identical results for Level 2 and Level 3 variables. The most noticeable difference was that with multiple imputation, income emerged as a significant factor in predicting both national news use and political Internet use, whereas this was not the case for the models using listwise deletion.

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