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Presidential Campaigns and the Knowledge Gap

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The knowledge gap hypothesis holds that when new information enters a social system via a mass media campaign, it is likely to exacerbate underlying inequalities in previously held information. Specifically, while people from all strata may learn new information as a result of a mass media campaign, those with higher levels of education are likely to learn more than those with low levels of education, and the informational gap between the two groups will expand. Though this hypothesis has received widespread attention in other disciplines, it has attracted relatively little attention in political science. Using data from the National Election Studies, this article investigates how well the knowledge gap hypothesis describes information acquisition in presidential campaigns from 1976 to 1996. The results of the analysis show that knowledge gaps do not always grow over the course of presidential campaigns and that some events, such as debates, may actually reduce the level of information inequality in the electorate.

Keywords campaigns, debates, knowledge gap

The knowledge gap hypothesis focuses on the differential impact of streams of information flowing from mass media campaigns and is one of the more persistent and well documented hypotheses from the field of mass communications. As defined in the early work of Tichenor, Donohue, and Olien (1970), the crux of this hypothesis is that "as the infusion of mass media information into a social system increases, segments of the population with higher socioeconomic status tend to acquire this information at a faster rate than lower status segments, so that the gap in knowledge between these segments tends to increase rather than decrease" (pp. 159–160). In other words, efforts to increase public awareness about issues may well increase overall levels of knowledge, but they may also increase the level of information inequality that already exists in society.

The knowledge gap hypothesis has potentially important implications for the study of presidential campaigns, given that campaigns are nothing if not large-scale efforts to communicate information to the voters and that this information may be responsible for structuring election outcomes (Alvarez, 1997; Gelman & King, 1993; Holbrook, 1996; Joslyn, 1990; Popkin, 1991). Indeed, most models of voting behavior recognize the importance of a capable and informed voter and place some, though varying, emphasis on the role of information in the voting calculus. Whether it is assumed that voters are

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motivated by a desire to reward or to punish elected officials for past performance (Key, 1966; Fiorina, 1981), or that voters seek to somehow match their own ideological preferences with the ideological programs offered by parties (Downs, 1957; Rabinowitz & MacDonald, 1989), or that voters are driven by their sense of identification with a political party (Campbell, Converse, Miller, & Stokes, 1960), to varying degrees all of these models place an emphasis on the importance of voter access to information about the parties and candidates. But while campaigns generate information, the knowledge gap hypothesis suggests that this information may not find its way to where it can do the most good: to low information voters.

It is important to understand that the knowledge gap hypothesis stems from concerns about social hierarchy and the distribution of resources (information) in society (Gaziano & Gaziano, 1999). So the implications for the study of campaigns and elections are clear: If campaigns are seen as a vehicle for voter education, then it is important to understand whether inequalities in levels of candidate information are reduced or exacerbated by the campaign. In order to explore this question, the remainder of this article focuses on how the knowledge gap hypothesis might be adapted to presidential campaigns and tests the validity of that hypothesis for all presidential campaigns from 1976 to 1996.

Knowledge Gaps

In operational terms, most knowledge gap research has explored the relationship between information acquisition and socioeconomic status (SES), most often using educational attainment as a measure of SES (Gaziano, 1983, 1997; Tichenor et al., 1970; Tichenor, Rodenkirchen, Olien, & Donohue, 1973; Moore, 1987; Viswanath & Finnegan, 1996). Generally speaking, this literature has focused on two ways of evaluating knowledge gaps. The first simply relies on establishing that levels of information about public issues vary with educational attainment. The second is more dynamic and demonstrates that as a stream of information about a particular topic increases, people with higher levels of education gain more information than people with lower levels of education. So even if people with lower levels of education gain some information, they may not gain as much as people with high levels of education, and the knowledge gap between the two groups widens. Tichenor et al. (1970) offered a number of explanations for this pattern, explanations that are generally supported by subsequent research (Gaziano, 1997; Viswanath & Finnegan, 1996): differences in cognitive skills, differences in prior information, discussant effects, and selective exposure to information.

While there is widespread support for the general thrust of the knowledge gap hypothesis, it was never intended to describe all situations in which the public is exposed to new information and, in fact, there is considerable evidence that knowledge gaps may not always emerge and grow in the manner suggested by the original hypothesis (Gaziano, 1983, 1997; Viswanath & Finnegan, 1996). For instance, Donohue, Tichenor, and Olien (1975) revisited the knowledge gap hypothesis and found that SES-based gaps that emerge around local issues frequently declined in magnitude over time. One explanation offered for this phenomenon was that many local issues involve social conflict and are more likely to be of interest to all members of the community, not just those with higher levels of education.

Another explanation for findings of weak or nonexistent knowledge gap effects that is particularly relevant to the study of campaigns has to do with the role of publicity. Some issues receive heightened and widespread attention and become more salient to

people across socioeconomic strata, frequently because they are issues of national importance (Viswanath & Finnegan, 1996). As this occurs, information becomes more accessible, either because it is relatively abundant or because of increased interest, even among lower SES groups. In a similar vein, Moore (1987) suggests that because campaigns generate extensive media coverage over a long period of time, whatever gaps might exist early on may decline as high-information voters become sated and low-information voters have a chance to "catch up." Some evidence of this type of publicity effect is found in recent work on educational differences in knowledge about the Bosnian civil war. Rhine, Bennett, and Flickinger (2001) studied changes in the public's knowledge of the Bosnian civil war from 1992 to 1995 and found that while there were important SES-based differences in knowledge, these differences diminished over time as media coverage went from sporadic to virtually constant.

The underlying nature of the relationship between education and increasing knowledge gaps has also been challenged. Whereas it might be assumed that cognitive resources or social ties lie at the heart of the educational gap in knowledge, others have argued that a plausible basis for the knowledge gap lies in the relevance of information. Ettema and Kline (1977); Ettema, Brown, and Luepker (1983); Chew and Palmer (1994); Viswanath, Kahn, Finnegan, Hertog, and Potter (1993); and Kwak (1999) assert that the key to the knowledge gap is found in differences in interests and motivation. People with higher levels of education are more likely to be interested in a greater number of issues and are more likely to recognize potential threats associated with public issues (Ettema & Kline, 1977).[1] In addition, Ettema and Kline (1977) and Clarke and Kline (1974) have argued that people with lower levels of education might also use different kinds of information than people with higher levels of education, and that these differences may not be captured in many knowledge gap studies.

While political scientists have given a great deal of attention to explaining differences in political knowledge among the mass public (Bennett, 1988; Bennett & Bennett, 1989; Delli Carpini & Keeter, 1996; Luskin, 1987, 1990) and over time (Bennett, 1989; Delli Carpini & Keeter, 1996; Smith, 1989), very little attention has been paid to the knowledge gap hypothesis, at least as it is developed in the mass communications literature (but see Rhine et al., 2001). To be sure, Delli Carpini and Keeter (1996) do a thorough job of identifying group differences in political knowledge, and even illustrate the stability of those gaps across the years, but they do not focus on the impact of streams of information on those gaps. Some work, however, is more directly relevant to the knowledge gap hypothesis. For instance, Zaller (1992) and Price and Zaller (1993) find that people with high levels of preexisting information are much more likely to be exposed to and to retain information provided by media and political elites. As a consequence, attitude change is more likely to occur among those individuals with higher levels of political expertise than among those with low levels of expertise. These patterns of information acquisition are certainly in keeping with the knowledge gap hypothesis.

And while a number of scholars have addressed the impact of political campaigns on voter knowledge (Alvarez, 1997; Brady & Johnston, 1987; Chaffee & Dennis, 1979; Holbrook, 1999; Miller & MacKuen, 1979; Bishop, Oldendick, & Tuchfarber, 1978; Eveland & Scheufele, 2000; Lemert, 1993; Miyo, 1983; Moore, 1987; Popkin, 1991), only a few have addressed the impact of campaigns on the knowledge gap. Moore (1987) examined the knowledge gap in the 1978 New Hampshire gubernatorial race and focused on the ability of survey respondents to identify which candidates were closest to themselves on two issues. Moore found an increasing information gap between high and

low education voters over the course of the campaign on one issue and a constant gap on another issue. One of the most interesting findings in Moore's study was that the issue on which there was an increasing gap was new and relatively complex, whereas the other issue was longer standing and much less complex. These findings imply that a knowledge gap is likely to increase when the subject of the information is relatively complex and new. Miyo (1983) was the first to analyze the impact of presidential campaigns on the knowledge gap. Using a panel study of Wisconsin voters, Miyo found an education-based gap in voter information about political parties but found that the gap did not widen during the 1980 presidential campaign or shrink in the year following the campaign.[2] Miyo offered ceiling effects as a plausible explanation for the static nature of the knowledge gap.

Lemert's (1993) analysis focused on the impact of the 1988 presidential debates on respondents' ability to identify the most important issues in the campaign and the geographic location of the debates. Lemert relied on a number of gap indicators (education, interest, and sex) and found that these variables were generally more important determinants of knowledge after the debates than before, indicating that there were widening gaps across the categories of these variables. These findings led Lemert to conclude that while debates may have increased knowledge levels in general, they also widened the knowledge gap. Kwak's (1999) study of Dane County, Wisconsin, voters during the 1992 presidential campaign found clear education-based differences in knowledge of the candidates' issue positions, but those differences were significantly reduced when motivational variables were controlled. Although not directly testing the knowledge gap hypothesis, Holbrook (1999) demonstrated significant gains in candidate information following presidential debates from 1976 to 1996 and also found a slight tendency for the information gains to go to those already politically engaged. And, finally, Eveland and Scheufele (2000) analyzed data from the 1996 presidential election and found that education-based differences in candidate information were somewhat reduced by increased exposure to television and newspaper news, although the impact of television news was greater than that of newspaper news.

Presidential Campaigns and the Knowledge Gap

According to the knowledge gap hypothesis, the flow of campaign information may not be accessible to all and may increase underlying inequalities in levels of candidate information. Therefore, it might be expected that as campaigns progress people will learn about the candidates but at different rates, depending upon their level of sophistication. As a result, the gap in candidate information between low and high sophistication voters can be expected to expand as more information is provided.

However, presidential campaigns are quite unlike most other mass media campaigns in ways that may make widening knowledge gaps less likely. First, campaign information is available from a variety of different sources: paid advertising (radio, television, print), daily coverage via news programming (radio, television, print), and special coverage of high visibility events such as conventions and debates. Second, presidential campaigns are inherently conflictual and command more media attention over a period of several months than almost anything else that might be happening at the time. What is most important about this is that media coverage of campaigns, especially in the late summer and through the fall, is virtually unrelenting and increases in volume up to the day of the election (Holbrook, 1996). So it might be the case that the general level of interest and exposure is such that campaigns do not widen the disparities in candidate information.

This line of thought must be tempered, however, by the recognition that there is a clear stratification in exposure to information via the mass media, with those who are chronically informed being the most likely to be exposed and those who are chronically ill informed being the least likely to expose themselves to information (Zaller, 1992; Price & Zaller, 1993). Likewise, Joslyn (1990) questions whether the quality of campaign advertising and of the day-to-day coverage of the campaign is hospitable to political learning. At the same time, though, Joslyn does extol the virtues of presidential debates (high visibility, substantive content) as a mechanism for civic education.

Measuring the Knowledge Gap

In this analysis, the knowledge gap hypothesis is tested with data from the 1976–1996 National Election Study (NES) surveys.[3] The measure of voter information used here is the amount of candidate information held by voters, as articulated through open-ended candidate evaluation questions asked in the biennial NES. The specific items used to measure candidate information are derived from the candidate "likes" and "dislikes" questions from the NES preelection surveys, the text of which is as follows:

> Now I'd like to ask you about the good and bad points about the major candidates for president. Is there anything in particular about <candidate name> that might make you want to vote for him?

If respondents answer in the affirmative, they are then probed further and allowed to list up to five reasons why they might want to vote for the candidate. Following this, they are given an opportunity to list up to five reasons why they might want to vote against the same candidate. In total, these questions allow respondents to articulate up to ten reasons why they would vote for or against a candidate. For this analysis, the indicator of candidate information is the total number of major-party candidate articulations (positive and negative) provided by respondents. The potential range of this variable is from zero to twenty candidate articulations, though the mean from year to year is closer to five. Although this may not be a perfect measure of candidate information, it clearly captures the amount of information respondents are able to access and articulate when making judgments about the candidates. This measure of candidate information has a rich research tradition and has been used to measure the structure of political information (Lau, 1986; DeSart, 1995), as well as levels of political sophistication (Smith, 1989; Zaller, 1992; but see also Rahn, Krosnick, & Breuning, 1994).

An additional benefit of open-ended questions such as the ones used here is that they allow the respondents to define relevant information in their own terms, thereby minimizing investigator-driven bias that may be found in closed-ended items (Clarke & Kline, 1974; Edelstein, 1973; Ettema & Kline, 1977; Gaziano, 1983). For instance, while one might assume that voters are (or should be) interested in candidate issue positions, it is likely that many voters are just as interested in, and campaigns provide just as much information about, many other candidate characteristics (party, ideology, affability, integrity, honesty, leadership, etc.). Using open-ended candidate evaluation questions allows the respondents to articulate those pieces of candidate information that they find most relevant to their vote choice, whether issue based or not.[4]

The measure of social stratification and preexisting sophistication used here is the respondent's level of education, measured as the number of years of formal education completed. While others have made a strong case for using more direct measures of

political knowledge as surrogates for sophistication (Price & Zaller, 1993; Zaller, 1992), education is used in this analysis for a number of reasons. First, the original knowledge gap hypothesis and much (though not all) of the subsequent literature is based on gaps in knowledge that emerge along educational lines. This is important not just because education is a proxy for cognitive skills and resources but also because it is an indicator of socioeconomic status, which is a key element of the knowledge gap literature. Second, the number and type of other indicators that might be used to measure sophistication vary somewhat across surveys, thus presenting some potential cross-survey comparability problems. Finally, education represents one of the only available measures of *preexisting* sophistication that cannot be contaminated by the campaign or by the interview process. This is not to say that education is a perfect measure, or that it is without detractors,[5] only that it is the most appropriate measure available for this analysis.

The Knowledge Gap Model

There are two keys to evaluating the knowledge gap hypothesis in the context of a presidential campaign. The first lies in discerning whether there is a relationship between level of education and the amount of candidate information held by respondents, and the second lies in assessing how (or whether) that relationship changes over time as more information becomes available. Fortunately, the sampling procedures used by the NES are well suited to testing these two research questions. Specifically, the preelection component of the NES goes into the field in early September and continues until just before the election. So some respondents are interviewed up to 8 or 9 weeks before the election, and others are interviewed just days before the election. Given that there is an increasing amount of campaign information generated over the course of the fall campaign, the amount of information available to survey respondents can be expected to increase from the time the survey is put into the field to the time the preelection wave is complete.

In order to gauge the existence and growth of a knowledge gap, it is necessary, first, to control for respondent education level and, then, to model the changing impact of education over time. This is accomplished by including an additive term for education, an additive term for the date of interview (1 = first day, highest value = last day), and a term for the interaction between respondent education and day of interview (Education × Day). A positive coefficient for the interaction term indicates a growing gap in candidate information over time, and a negative coefficient indicates a gap that narrows over time.

This combination of variables should be adequate for measuring the impact of day-to-day campaigning on the knowledge gap. However, certain events, such as presidential debates, generate enough information and interest that they may have an independent impact on the knowledge gap. In other words, the trend in the knowledge gap over time might not be perfectly linear and monotonic. Instead, high profile, high stimulus, information-rich events such as presidential debates may interrupt the trend in the knowledge gap. Therefore, the model also includes dummy variables for each of the presidential debates, scored 0 for all respondents interviewed up to the date of the debates and 1 for all respondents interviewed following the debates, as well as interaction terms (Education × Debate) to capture the differential impact of education following the debates.[6] Once again, positive interaction coefficients indicate a widening gap in response to the debates, and negative interaction coefficients indicate a narrowing gap.

Of course, there are a number of other factors that might contribute to the amount

of candidate information held by respondents. First, since the ability to articulate reasons for supporting or opposing a candidate can also be considered a measure of political sophistication (Smith, 1989), it is necessary to control for additional factors typically associated with political sophistication. To this end, a number of "usual suspect" control variables are included in the model: the interviewer's estimate of the respondent's level of intelligence[7] (*intelligence*), a dichotomous variable for race (*White*), and a dichotomous variable for sex (*female*). Second, since some research indicates that education-based knowledge gaps are in part due to educational differences in motivation and media exposure (Ettema & Kline, 1977; Eveland & Scheufele, 2000; Kwak, 1999; Viswanath & Finnegan, 1996), the model also includes measures of political interest (*interest*), whether respondents care about the election outcome (*care*), and exposure to newspaper (*newspaper*) and television (*television*) coverage of the campaign.[8] In addition, one could argue that the ability to articulate candidate likes and dislikes could be driven by personality; that is, some people are much chattier than others and will provide more responses to any kind of open-ended question simply due to loquaciousness. In an effort to control for this influence, a variable measuring the length of the interview in minutes (*verbosity*) is included in the model (see the Appendix for a complete description of how the variables are coded and their anticipated relationship with the dependent variable).

Severe multicollinearity is one problem inherent in any analysis in which several variables are entered additively and in interaction with each other, as the knowledge gap variables are here. A major consequence of multicollinearity is that it becomes difficult to evaluate statistical significance because the standard errors of the coefficients are inflated (severely in this case), and significance is harder to achieve. The problem of collinearity is no stranger to the ensuing analysis: Many of the interaction terms in the model have tolerances of .02 or smaller, making it very difficult to achieve significance at conventional levels (although Friedrich, 1982, makes a strong case for not applying conventional tests to interaction terms). Because of the high level of collinearity in the model, and because it is the combined impact of all of the additive and interaction variables that describes the knowledge gap, a joint chi-square test is used to evaluate the combined impact of the interaction terms, the day-of-interview variable, and the debate variables.

Evidence of Knowledge Gaps

The analysis of knowledge gaps in presidential elections from 1976 to 1996 begins in Figure 1, which presents the average level of candidate information in each of the 6 election years for three different educational groups: those with 0 to 8 years of education, those with 9 to 15 years of education, and those with 16 or more years of education. The pattern in this figure makes it quite clear that there are important education-based differences in candidate information in all 6 years. In fact, with the exception of 1976, respondents in the highest education group were, on average, able to provide more than twice as many comments about candidates as could people in the low education group (all group differences were statistically significant in all years). This finding is not surprising and is in keeping with most of the knowledge gap literature (Gaziano, 1997; Viswanath & Finnegan, 1996) as well as the general literature on political knowledge (Delli Carpini & Keeter, 1996).

But the evidence presented in Figure 1 only tells part of the story. A full examination of the knowledge gap hypothesis requires an analysis of the relationship between education and candidate information over time and in the context of a fully specified

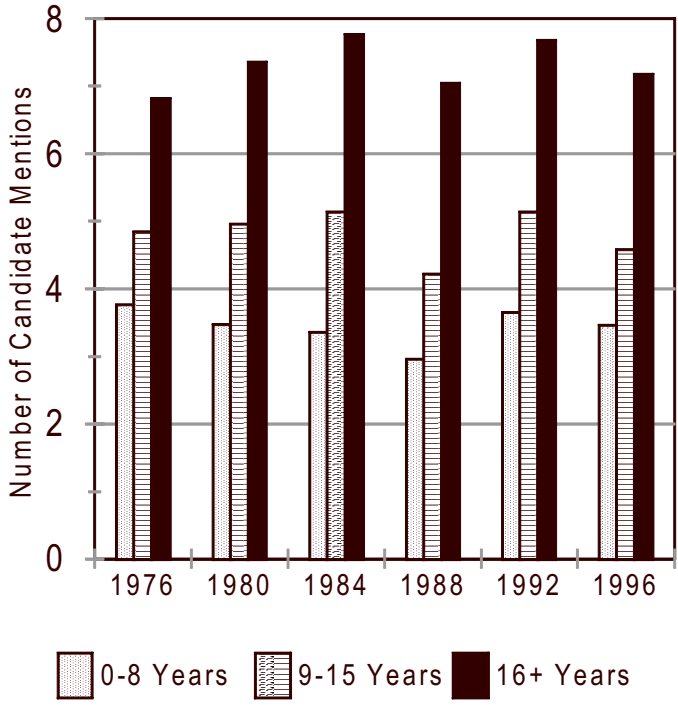

Figure 1. Level of education and candidate information in presidential campaigns, 1976–1996.

model. This is provided in Table 1.[9] First, it is important to note that the additive term for education is significant and positive in four of the six elections. This, along with the significant influences of interest, caring about the election, media exposure, and intelligence, points to a number of cognitive and motivational gaps in candidate information. In addition, the demographic variables point to gaps along race and sex lines. But the existence of these gaps does not speak directly to the validity of the knowledge gap hypothesis, the crux of which is that the impact of education on candidate information increases over time.

The validity of the knowledge gap hypothesis can best be appreciated by assessing the joint impact of the education interaction terms and the day-of-interview and debate variables. While this can be gleaned from Table 1, it is perhaps easier to summarize the impact of the knowledge gap variables in a set of graphs found in Figure 2. The information in Figure 2 was generated from the coefficients in Table 1 and illustrates the size of the candidate information gap between low and high education respondents over time. The gap estimates were derived by setting all other individual-level attributes to their sample medians and then estimating the amount of candidate information held by respondents with 8 years of education and by respondents with 16 years of education over the course of the fall campaign (utilizing the day-of-interview, debate, and interaction coefficients to estimate the change in information over time). The amount of candidate information held by low education (8 years of education) respondents was subtracted from that held by high education (16 years of education) respondents to obtain the size of the gap. The line in the graph, then, shows how this education-driven gap changes in response to the day-to-day campaign and the debates.

Table 1
Estimates of the "knowledge gap" in candidate information during presidential campaigns, 1976–1996 (negative binomial regression estimates)

	1976	1980	1984	1988	1992	1996
Constant	1.05 (.209)*	.965 (.207)*[a]	.829 (.206)*	1.09 (.252)*	.766 (.218)*	.449 (.227)*
Day of interview	–.020 (.014)[a]	–.010 (.007)b	.011 (.007)	–.013 (.012)[a]	–.003 (.007)	–.018 (.008)*[a]
First debate	–.144 (.230)[a]	.324 (.277)[b]	–.425 (.244)**	.356 (.336)[a]	–.292 (.292)	.717 (.248)*[a]
Second debate	.382 (.258)[a]	.409 (.303)[b]	.073 (.224)	.678 (.321)*[a]		–.428 (.208)*[a]
Third debate	.392 (.270)[a]				–.516 (.279)**	
Education × Day	.0016 (.001)[a]	.0009 (.0006)[b]	–.0008 (.0006)	.001 (.0009)[a]	.0004 (.0005)	.005 (.002)*[a]
Education × 1st Debate	–.005 (.018)[a]	–.033 (.021)[b]	.034 (.018)**	–.018 (.025)[a]	.015 (.020)	–.172 (.067)*[a]
Education × 2nd Debate	–.026 (.019)[a]	–.026 (.023)b	.006 (.017)	–.047 (.024)*[a]		–.129 (.056)*[a]
Education × 3rd Debate	–.032 (.021)[a]				–.039 (–.020)*	
Education	.021 (.013)	.046 (.012)*	.059 (.013)*	.042 (.014)*	.037 (.012)*	.033 (.021)
Intelligence	–.116 (.020)*	–.113 (.024)*	–.146 (.021)*	–.172 (.026)*	–.123 (.023)*	–.149 (.026)*
Interest	–.070 (.012)*	–.077 (.012)*	–.080 (.011)*	–.133 (.013)*	–.067 (.014)*	–.048 (.016)*
Care	.067 (.031)*	.078 (.031)*	.116 (.031)*	.201 (.037)*	.270 (.051)*	.277 (.060)*
Newspaper	.041 (.011)*	.033 (.015)*	.043 (.015)*	.040 (.013)*	.022 (.011)*	.038 (.014)*
Television	.046 (.017)*	.020 (.017)	.059 (.016)*	.056 (.038)	.063 (.019)*	.051 (.016)*
Verbosity	.006 (.001)*	.006 (.001)*	.006 (.001)*	.005 (.001)*	.007 (.001)*	.007 (.001)*
White	.052 (.047)	.133 (.049)*	.103 (.031)*	.227 (.049)*	.070 (.048)	.178 (.058)*

(*Table continues on next page*)

Table 1
Estimates of the "knowledge gap" in candidate information during presidential campaigns, 1976–1996 (negative binomial regression estimates) (*Continued*)

	1976	1980	1984	1988	1992	1996
Female	–.064	–.045	–.083	–.133	.007	.0002
	(.027)*	(.029)	(.026)*	(.033)*	(.028)	(.035)
Dispersion	.071	.050	.109	.197	.099	.171
	(.010)*	(.010)*	(.011)*	(.016)*	(.013)*	(.017)
Model χ^2	602.27	436.55	688.46	652.03	525.77	504.17
ML R^2	.311	.304	.326	.331	.311	.290
N	1,607	1,203	1,745	1,621	1,498	1,458

Note. Cell entries are maximum likelihood coefficients, with standard errors in parentheses. The dependent variable is total number of likes and dislikes the respondent was able to articulate for the major party candidates.

[a]Joint significance of "knowledge gap" variables (χ^2) < .05.

[b]Joint significance of "knowledge gap" variables (χ^2) < .15.

*p < .05; **p < .10.

The knowledge gap patterns found in Figure 2 are quite enlightening. First, as in Table 1, there is clear evidence that campaigns sometimes influence the size of the knowledge gap and sometimes they do not. As a group, the variables used to estimate the knowledge gap had a significant and illuminating influence on candidate information in 1976, 1988, and 1996; a marginally significant effect in 1980; and no significant impact in 1984 and 1992. Although it is difficult to speak definitively about why there are significant knowledge gap patterns in some years but not in others, at least part of the answer may have to do with the amount of information voters already had at the beginning of the fall campaigns. The fall campaigns are really capturing the end of the longer presidential campaign season, and voters will already have learned much about the candidates through the primaries and the convention period. In fact, focusing on the fall campaigns probably provides a fairly tough test of the knowledge gap hypothesis because we are not initiating our measurement at the beginning of the campaign, when information is first made available. It is possible that, by early September, whatever gaps there are have widened to their maximum and that very little is left to be learned, especially by high-information voters. If this is the case, we might still find a gap, but not one that widens throughout the fall campaign. This is similar to the type of ceiling effect described by Ettema and Kline (1977), Miyo (1983), and Moore (1987).

One way of assessing such ceiling effects is by focusing on the size of the gap at the beginning of the fall campaign. If the gap in knowledge is relatively wide at the beginning of the fall campaign, then it has less room to grow than if it is relatively narrow at the beginning of the fall campaign. Thus, it is possible that the knowledge gap variables exhibit weaker effects in some years simply because the gap is so big to begin with that it is unlikely to grow much wider. Evidence in support of this assertion is found in Figure 3, where the impact of the knowledge gap variables is plotted against

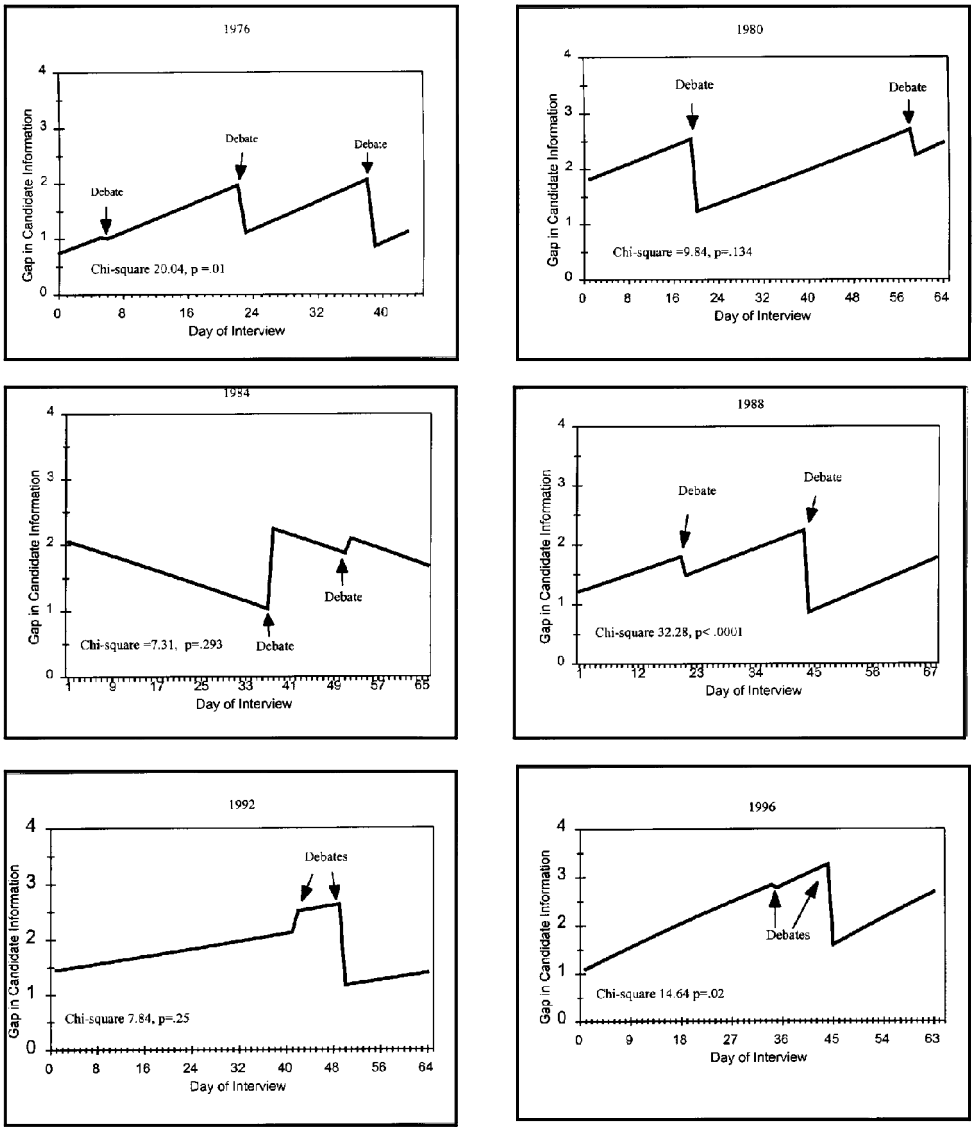

Figure 2. Trends in the knowledge gap in presidential campaigns, 1976–1996. All gap estimates are deived from Table 1 and reflect the difference in the number of major party candidate likes/dislikes articulations made by low (8 years completed) and high (16 years completed) education respondents. Positive trends indicate a widening gap, and negative trends indicate a narrowing gap.

the estimated size of the gap at the beginning of the campaign. Here, the impact of the gap variables is measured by transforming the chi-square statistic for the subset of variables into phi, a chi-square based measure of association ($[\chi^2/N]^{1/2}$), and the size of the gap between low and high education voters is estimated by setting the gap variables equal to their value on the first day of the fall interview period while all other variables are set to their medians. What we see in Figure 3 is that, in general, the knowledge gap variables had the greatest impact in years in which the gap was relatively small at the

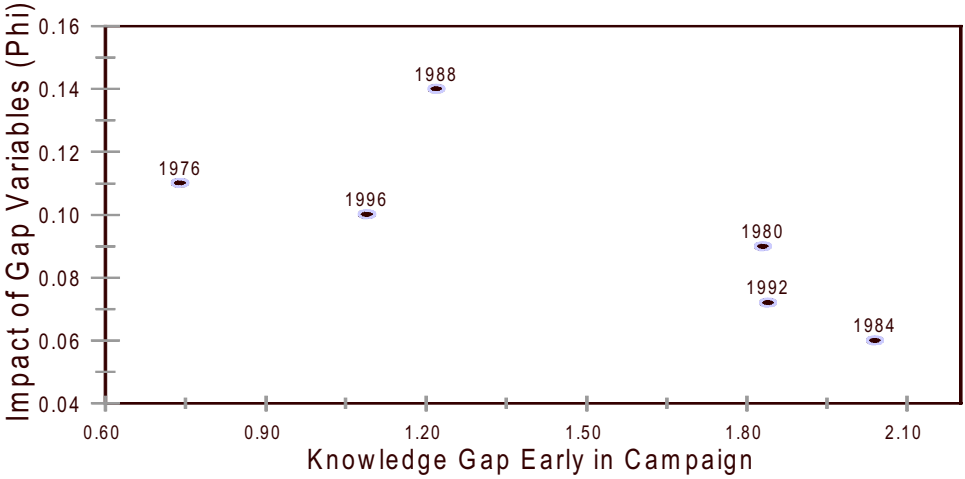

Figure 3. Analysis of "ceiling" effects for knowledge gaps in presidential campaigns, 1976–1996.

beginning of the fall campaign and had the weakest impact in years in which the gap was relatively large early in the fall campaign.[10] All of this is suggestive of the reasons for the year-to-year variation in the magnitude of the gap effects, but is not meant to be conclusive. Indeed, there are enough other ways in which these campaigns differed that it is impossible to rule out alternative explanations.

Perhaps more important are the findings regarding the direction and the contours of the knowledge gap during the years in which there was a significant relationship. In 1976, 1980, 1988, and 1996, the knowledge gap trended upward over time, indicating increasing inequality as the campaigns unfolded. This is exactly the type of trend predicted by the original knowledge gap hypothesis. This trend, however, was interrupted by the presidential debates, which had a different sort of impact. Presidential debates in these years had the effect of reducing the size of the knowledge gap, and this effect is sometimes quite dramatic. In addition, while the set of knowledge gap variables was not significant in 1992, the third debate in that year did lead to a significant reduction in the size of the gap ($t = -1.99$). This finding lends support to the claim that presidential debates offer a good opportunity for political learning during campaigns (Holbrook, 1999; Joslyn, 1990). The only contrary piece of evidence regarding the ameliorative effect of debates comes from the first debate of 1984, which led to a marginally significant increase in the size of the knowledge gap ($t = 1.83$).

The impact of debates is particularly important given the general trend in the knowledge gap over time. Without the interruption of the debates, the knowledge gap would have increased continually over time and would have been much greater at the end of the campaign than it turned out to be. In the absence of debates, the gap in candidate information at the end of the campaign would have been 2.02 units higher in 1976, 2.07 units higher in 1980, 1.47 units higher in 1988, 1.2 units higher in 1992, and 1.42 units higher in 1996. Again, only in 1984 do we see the debates actually increasing the knowledge gap, although ever so slightly (.74 units).

That debates serve to shrink knowledge gaps is somewhat inconsistent with previous findings, especially those of Lemert (1993), whose analysis of the 1988 presidential campaign found that indicators of a knowledge gap became more important predictors of voter knowledge after the debates began, thus indicating a widening postdebate knowledge

gap. But Lemert's design and his measure of voter knowledge are different enough from those used here that the findings are difficult to compare. Specifically, Lemert compared the impact of gap indicators before and after the 1988 debates, without separating debate-induced changes from changes that might have been due to the day-to-day campaign. In other words, Lemert's design makes it difficult to separate the impact of debates from that of other forms of campaign communication that voters are exposed to via the day-to-day campaign. In addition, Lemert's analysis focuses on respondents' ability to correctly identify where the debates took place and to identify what they see as the most important issues in the campaign. Both of these measures are significantly different from the candidate-oriented measure of information used here.

The finding that debates reduce knowledge gaps is still a bit at odds with the thrust of the knowledge gap hypothesis. The most likely explanation for this lies in how debates differ from the rest of the campaign. Debates are high-profile, high stimulus campaign events that can only be rivaled by the party conventions in terms of the amount of interest and media attention they generate. Debates are usually scheduled far enough ahead of time that media outlets are able to work on pre-debate stories that begin appearing a few days before the debates. And debates take place during prime time and are covered uninterrupted by all major networks. This coverage is followed by immediate postdebate "analysis" and by at least a day or two of analysis of the fallout from the debate. Although the numbers have declined in recent years, nearly half of all households tune in to watch the debates (Stanley & Niemi, 1994, p. 76), and this does not take into account the indirect exposure to the debates via extended media coverage and political discussions. It is also worth recalling that one of the explanations given for declining knowledge gaps when issues are local in nature is that local issues are frequently conflictual, and this conflict stirs greater interest and attention across social strata (Donohue et al., 1975). To the extent that conflict produces such results, it should not be surprising that events such as debates, which pit the candidates against each other in a high-stakes contest, could lead to a reduction in information inequalities.

By contrast, other events that emerge from the day-to-day campaign may be covered by the print and broadcast media, but they are unlikely to get anywhere near the level of exposure given to debates. In other words, as campaign events go, presidential debates are likely to generate more interest and to be more accessible than any other events in the fall campaign. And, because they occur relatively late in the fall, the information presented in the debates is more likely to be new information to low information voters than to high information voters. In short, to borrow from Moore (1987), debates provide a perfect opportunity for low information voters to "catch up" to their better informed counterparts.

Conclusion

Presidential campaigns perform a very important civic function—they bring much needed information to voters, information that hopefully results in a more reasoned and enlightened electorate. But very little attention has been paid to what happens to information during presidential campaigns. One possibility suggested by the knowledge gap hypothesis is that information reaches the electorate, but with some level of discrimination. This analysis did indeed find evidence of education-based gaps in candidate information, and in a number of cases those gaps expanded over time. This finding is in keeping with the knowledge gap hypothesis and points to the very real possibility that campaigns contribute to a growing inequality in political resources (information being

viewed as a resource) over time. This is not to say that campaigns do not inform, only that some voters are more easily informed than others. But not all of the evidence points to such a bleak verdict for the civic function of campaigns: The tendency toward growing knowledge gaps was found in only four of the six campaigns studied here, and there was no significant expansion of the knowledge gap in the other two.

On a much more salutary note, there is strong evidence here to suggest that high visibility, high profile campaign events such as debates reduce knowledge gaps. Debates represent the type of political events that are likely to be most accessible to low information voters and that afford them the best opportunities to learn about the candidates and to gain ground on high information voters. In terms of the civic function of campaigns, then, this analysis has shown that voters can learn from presidential campaigns and that campaign information is most likely to be acquired on an equitable basis when it is presented in a highly visible and accessible format.

Notes

1. The evidence on motivation is somewhat mixed, however. For instance, Griffin's (1990) study of the knowledge gap in energy information during the energy crisis of the early 1980s showed that those who were most seriously affected by rising energy prices (the elderly, the poor, the less educated, and those living in older homes) were the least likely to have information about the crisis. See also Weenig and Midden (1997).

2. Miyo (1983) did find that media dependence-based (television vs. newspaper) gaps narrowed during the campaign.

3. The studies used here are the 1976, 1980, 1984, 1988, 1992, and 1996 American National Election Studies (ICPSR studies 7381, 7763, 8298, 9196, 6067, and 6896, respectively). The multivariate sample sizes of the NES for this analysis range from 1,203 for 1980 to 1,607 for 1976. Case weights were used for the 1976, 1992, and 1996 NES surveys in order to ensure representative samples. These data were made available by the Inter-university Consortium for Political and Social Research at the University of Michigan.

4. Although closed-ended factual and issue position questions are frequently used in studies of voter knowledge and have been used to study information acquisition during campaigns (Brady & Johnston, 1987), open-ended questions such as the ones used here offer a number of other advantages for this study. First, as useful as closed-ended questions are for many purposes, it is difficult for the NES (or anybody else) to anticipate which issues are likely to become important in the campaign. As a consequence, closed-ended questions may or may not be related to the content of the campaign. Second, although there is some over-time consistency in the closed-ended questions used by the NES, the format of the open-ended questions is identical from year to year, making it easier to create measures of candidate information that are comparable over time. Finally, until 1996 respondents were not asked candidate issue and ideological placement questions if they were unable to place themselves on the issue and ideology scales. As a result, many of the low-information voters would be excluded from an analysis that focuses on closed-ended candidate placement items.

5. For instance, Luskin (1990) and Smith (1989) argue that education *per se* is not a good measure of sophistication because it really just stands in for other variables, such as interest, motivation, and general cognitive skills. While this is true, I think it also argues in favor of using education as a broad indicator of sophistication, precisely because it is a proxy for many factors that are related to sophistication. In addition, the model used here controls for the impact of motivational and cognitive variables, thereby allowing us to get a sense of the independent effect of education on knowledge about candidates.

6. In 1992, the three presidential debates were held within an 8-day period, making it very difficult to tease out separate effects. Therefore, debate dummy variables were used only for the first and third debates.

7. The interviewers were asked to rate the respondents' apparent intelligence on a 5-point scale ranging from very high (1) to very low (5). See Luskin (1990) for a succinct defense of this measure of intelligence in which he finds it to have a high level of both over-time reliability and external validity.

8. Unfortunately, the format of the media exposure items from the NES varies somewhat over the years. In order to ensure the greatest comparability across election years, the measures (one each for newspaper and television) used here combine whether respondents reported watching television or reading newspaper stories about the campaign in the week prior to the interview with the amount of attention they paid to the campaign news. For instance, in 1996 the newspaper variable is scored 0 for those who did not read a newspaper in the week prior to the interview or who paid no attention to stories about the campaign, 1 for those who read the newspaper and paid very little attention to campaign stories, 2 for those who read the newspaper and paid some attention to the campaign, 3 for those who read the newspaper and paid quite a bit of attention to the campaign, and 4 for those who read the newspaper and paid a great deal of attention to news about the campaign. Due to differences in the "attention" component of the media questions over time, this variable ranges from 0 to 3 in some years.

9. Because the dependent variable represents a count of the number of comments respondents were able to make about candidates, negative binomial regression is used for the analysis. For a nice discussion of this and other "count" models, see Long (1997).

10. The correlation between the size of the knowledge gap and the impact of the gap variables is .74, albeit with only six observations.

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Appendix: Description of Independent Variables and Anticipated Relationships to Candidate Information

Variable	Description
Intelligence	Interviewer's assessment of respondent's apparent intelligence: 1 = very high, 2 = above average, 3 = average, 4 = below average, 5 = very low (negative relationship to candidate information).
Education	What is the highest grade of school or year of college you have completed? Range: 0 to 17 (positive relationship to candidate information).
Interest	Some people don't pay much attention to political campaigns. How about you? Would you say that you have been (1) very much interested, (3) somewhat interested, or (5) not much interested in the political campaigns so far this year? (negative relationship to candidate information).
Verbosity	Length of interview in minutes (positive relationship to candidate information).
White	A dichotomous variable coded 0 for all non-White respondents and 1 for all White respondents (positive relationship to candidate information).
Female	A dichotomous variable scored 1 for all male respondents and 2 for all female respondents (negative relationship to candidate information).

Appendix: Description of Independent Variables and Anticipated Relationships to Candidate Information (*Continued*)

Variable	Description
Newspaper	An ordinal variable measuring exposure and attention to campaign news in the newspapers. Because the wording of media exposure variables varies somewhat over time, this variable ranges from 0 (no exposure) to 3 (exposure/high attention) in 1980 and 1984 and from 0 to 4 in all other years (positive relationship to candidate information).
Television	An ordinal variable measuring exposure and attention to campaign news on television. Because the wording of media exposure variables varies somewhat over time, this variable ranges from 0 (no exposure) to 4 (exposure/high attention) in 1988 and 1996 and from 0 to 3 in all other years (positive relationship to candidate information).
Care	Do you care which party wins the presidential elections? 0 = don't care very much, 1 = care a great deal (positive relationship to candidate information).