

Looking the Part: Television Leads Less Informed Citizens to Vote Based on Candidates' Appearance

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As long as there has been democratic government, skeptics have worried that citizens would base their choices and their votes on superficial considerations. A series of recent studies seems to validate these fears, suggesting that candidates who merely look more capable or attractive perform better in elections. In this article, we examine the underlying process behind the appearance effect. Specifically, we test whether the effect of appearance is more pronounced among those who know little about politics but are exposed to visual images of candidates. To do so, we combine appearance-based assessments of U.S. Senate and gubernatorial candidates with individual-level survey data measuring vote intent, political knowledge, and television exposure. Confirming long-standing concerns about image and television, we find that appealing-looking politicians benefit disproportionately from television exposure, primarily among less knowledgeable individuals.

Several recent studies indicate that candidates who simply look more capable or attractive are more likely to win elections (Atkinson, Enos, and Hill 2009; Ballew and Todorov 2007; Banducci et al. 2008; Berggren, Jordahl, and Poutvaara 2010; Hall et al. 2009; King and Leigh 2009; Lawson et al. 2010; Rosar, Klein, and Beckers 2008).¹ For instance, Todorov et al. (2005) find that candidates in U.S. Senate and House elections who appeared more competent to naïve student subjects enjoyed markedly greater electoral success, even though the subjects' judgments were based on brief exposure to unlabeled, black-and-white photographs of the candidates in question. The results, they conclude, "suggest that rapid, unreflective inferences can contribute to vote choices" (2005, 1623).

These findings are consistent with psychological research indicating that people often judge unfamiliar individuals based on their appearance, inferring personality traits such as competence, intelligence, honesty, and trustworthiness from facial features alone (Bar, Neta, and Linz 2006; Hassin and Trope 2000; Zebrowitz 1997).² People rely more heavily on such impressionistic assessments when they know little else about the subjects of their assessments—that is, they use appearance as a low-information heuristic (Hassin and Trope 2000).

In this article, we test a prediction about the process underlying the effect of appearance. If individuals do indeed use facial features as a low-information heuristic, then citizens should rely disproportionately on faces when they know little about candidates beyond their

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¹The individual-level data for this article are from the Cooperative Congressional Election Study (web.mit.edu/polisci/portl), which also contains the incumbency data. Alex Todorov generously shared the candidate appearance ratings. Candidate spending advantage data are from www.opensecrets.org. Candidate experience and education advantage measures are from a variety of publicly available sources (see Supporting Information found online at *AJPS*). Finally, the Cook political rating archives are from cooktemp.dreamhosters.com. Replication data are available from the authors.

²A growing literature investigates the neurological bases of these judgments (Engell, Haxby, and Todorov 2007; Rule et al. 2009; Spezio et al. 2008; Todorov, Baron, and Oosterhof 2008; Winston et al. 2002).

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appearance. For uninformed voters to judge candidates based on their appearance, however, they must actually see images of the candidates. We therefore test whether the effect of appearance is particularly pronounced among those who know little about politics but watch a good deal of television.

Using individual-level voting data for 2006 gubernatorial and Senate elections, we find strong support for this prediction. People who are poorly informed about politics but watch a good deal of TV cast their ballots for governor and senator disproportionately on the way candidates look. The pattern is almost identical in both types of contests, and it holds when controlling for campaign spending, incumbency, candidate experience, electoral competitiveness, and party strength. It also survives other robustness checks.

These findings have potentially important implications for the study of democratic politics. First, they lend further credence to the notion that candidate appearance influences citizens' voting decisions, at times favoring candidates who "look the part" over candidates who share citizens' policy views or are more qualified. Second, our findings underscore the importance of visual images embedded in media messages (Graber 1996, 2001; Iyengar, Peters, and Kinder 1982; Lau and Redlawsk 2006; Mendelberg 2001; Valentino, Hutchings, and White 2002). Finally, our results speak to some of the concerns scholars have long held about the influence of television on electoral politics. As critics of the medium have argued, exposure to television does appear to encourage image-based voting. By testing whether politicians who merely look the part profit from TV exposure, especially among less informed citizens, our analysis examines two concerns about democracy: that citizens judge politicians on superficial traits like appearance and that television's focus on image exacerbates this worrisome tendency.

The Effect of Appearance—A Review of Recent Research

Research on candidate appearance and voting is burgeoning. Most recent studies in this literature follow the same general design. Naïve subjects view images of candidates' faces with all identifying information removed; they then rate the candidates on various traits (e.g., apparent competence), guess the outcome of the election, cast votes in hypothetical contests, or offer some other summary judgment. Researchers then use subjects' responses to predict candidates' actual electoral performance. Studies employing this approach have documented appearance

effects in a range of contests, such as U.S. House, Senate, and gubernatorial races (Atkinson, Enos, and Hill 2009; Ballew and Todorov 2007; Todorov et al. 2005), national and municipal legislative contests in Finland (Berggren, Jordahl, and Poutvaara 2010), Australian parliamentary races (King and Leigh 2009), German legislative elections (Rosar, Klein, and Beckers 2008), Brazilian gubernatorial and Federal Deputy contests (Lawson et al. 2010), Canadian federal parliamentary contests (Efron and Patterson 1974), and run-off elections for the French parliament (Antonakis and Dalgas 2009). The magnitude of the effect varies from one study to another, but it can be quite large. In both Todorov et al. (2005) and Antonakis and Dalgas (2009), naïve coders correctly predicted the outcome of approximately 70% of races. In Banducci and colleagues' (2008) study—which focused on a low-information contest where photographs of candidates for urban development boards appeared on the ballot—contenders who looked best to raters had close to a 90% chance of winning; their less appealing-looking rivals had only a 10% chance.³

There are, of course, potential alternative explanations for these findings. One such alternative is that raters and voters may be responding to candidates' race and gender, rather than to their facial features. Another is that raters may be more familiar with winners, even though they report not recognizing them, and so rate them as more competent or more likely to win (Zajonc 2001). A third alternative is that harder-working or better-funded candidates may procure better-looking pictures of themselves and so look better to raters.

Researchers have addressed these and other alternatives from several angles. The appearance effect holds, they have found, when:

- 1) candidates are matched on race and gender (e.g., Todorov et al. 2005);
- 2) raters are unfamiliar with the candidates because they are from other countries (Berggren, Jordahl, and Poutvaara 2010; King and Leigh 2009; Rule et al. 2010; Lawson et al. 2010);
- 3) the pictures used for rating are from a standardized source (Antonakis and Dalgas 2009; Klein and Rosar 2005);
- 4) differences in image quality and other aspects of the pictures, such as visible light, are taken into account (Klein and Rosar 2005; Lawson et al. 2010);

³Earlier research investigated appearance effects using alternative approaches (Rosenberg, Kahn, and Tran 1991; Rosenberg and McCafferty 1987; Sigelman 1990; Sigelman et al. 1990; Sigelman, Sigelman, and Fowler 1987).

- 5) candidates are comparable in actual quality and in resources (Antonakis and Dalgas 2009; Benjamin and Shapiro 2009);
- 6) researchers control for candidate spending (Atkinson, Enos, and Hill 2009) and party strength (Benjamin and Shapiro 2009; King and Leigh 2009; Lawson et al. 2010; Rosar, Klein, and Beckers 2008);⁴
- 7) legislators compete against members of their own party (Berggren, Jordahl, and Poutvaara 2010)⁵ and in nonpartisan contests (Banducci et al. 2008; Martin 1978); and
- 8) researchers control for the apparent competitiveness of races at the time candidates are making decisions about entering the race (Atkinson, Enos, and Hill 2009).⁶

Our analysis pushes these tests still further in two ways. First, we control for a richer set of candidate quality and campaign effort variables than have previous studies. Second, our prediction that individuals who watch a good deal of television *and* know little about politics will be particularly susceptible to how candidates look constitutes a unique test of claims about the electoral effect of appearance. The alternative explanations do not obviously lead to this prediction. For example, if the effect of appearance arises simply because harder working candidates attract more votes and procure more flattering photographs, we would not necessarily expect the appearance effect to be larger among high-TV/low-knowledge individuals. Depending on the intensity of the campaigns, we might instead expect candidate effort to most affect individuals at midlevels of political knowledge (Zaller 1992).

⁴Instead of using candidate pictures, Benjamin and Shapiro (2009) showed raters short clips of gubernatorial debates either with sound, with muffled sound, or without sound. Raters were best able to predict elections in the without sound condition.

⁵That is, party and incumbency are included as fixed effects in multimember districts.

⁶A final possibility is that, instead of representing an unreflective bias in favor of appealing-looking candidates, the appearance effect could represent a judgment about actual candidate quality. Voters might believe that appearance reflects the influence of genes, health, or some other factor, which in turn makes better-looking politicians more effective leaders (e.g., Case and Paxson 2008). Studies examining the diagnostic validity of appearance have yielded mixed results and the accuracy of these judgments may vary by trait (Ambady, Hallahan, and Conner 1999; Berry 1991; Hassin and Trope 2000; Mueller and Mazur 1996; Olivola and Todorov 2010; Stirrat and Perrett 2010; Wilson and Eckel 2006; Zebrowitz 1997; Zebrowitz et al. 2002). So far, scholars have not examined whether appealing-looking candidates make for more effective public servants.

Data

To test our central prediction, we combine data from a survey that asks about vote choice, political knowledge, and TV exposure with data about candidates' faces for 2006 gubernatorial and Senate elections. The survey is the 2006 Cooperative Congressional Election Study (Ansolabehere 2007), which interviewed about 36,500 respondents. The CCES is an opt-in Internet panel that uses a novel approach to achieve a representative sample. Hill et al. (2007) find that responses in this survey are not too dissimilar from phone surveys, though the 2006 CCES underrepresents those with lower levels of education and political knowledge.

We use the CCES because its sample is sufficiently large to assess media effects in state-level contests, because it contains a richer battery of political knowledge and television items than do other large surveys, and because it inquires into gubernatorial and Senate vote choice. To the extent that the CCES overrepresents politically knowledgeable individuals, it may lead us to treat moderately informed individuals as if they were poorly informed. That fact, of course, would lead us to underestimate the actual difference in the effect of appearance between low-knowledge and high-knowledge Americans.

For the dependent variable, we use Democratic vote intention, coded 1 if the respondent planned to vote for the Democratic candidate and 0 if she planned to vote for the Republican (*Vote*). To measure political knowledge, we create a 21-item scale from questions in the CCES (reliability of .90; see Supporting Information online for details). These items ask voters specifically about the gubernatorial and Senate candidates (e.g., their party affiliation), as well as about general political knowledge.⁷ Finally, to measure exposure to TV, we rely on self-reported viewing. Approximately half of the CCES respondents were asked nine questions about how frequently they had watched particular genres of TV in the week before their interview, such as national news, local news, sports news, and entertainment shows (reliability = .70; see Supporting Information for details). In the analyses below, we use both an unweighted average of answers to these items (*TV*) and an indicator variable for an above-the-median score on this average (*High TV*), which corresponds to watching about 16 or more TV shows in the previous

⁷We include general political knowledge items because political knowledge tends to be general (Zaller 1985)—the same people who know about one aspect of politics also tend to know about others—and because the CCES contains only a handful of candidate-specific questions. In our tests, general political knowledge measures outperformed candidate-specific measures, though our principal findings hold with just the candidate-specific measures.

week. Subtracting out those respondents who did not get the battery on TV exposure, we have an average of 266 respondents per state who expressed a vote intention in the gubernatorial contests and 314 who did so in the Senate races. We use the CCES sampling weight in all analyses.

For measures of candidate appearance, we rely on data from Ballew and Todorov (2007, Experiment 3), who collected ratings of the 2006 gubernatorial and Senate races weeks before the actual election. They showed 64 student subjects pairs of similarly sized, black-and-white, head-and-shoulder photographs of the main candidates. The photos contained no identifying information, and both the position of the winning candidate and the order in which pairs were presented was randomized. The instructions emphasized that participants should rely on their “gut” reactions. Neither elections nor candidates were mentioned at any point. After seeing the pair of photographs, participants reported which candidate in the pairing appeared more competent. To ensure that judgments of competence were based solely on facial appearance, not prior knowledge, Ballew and Todorov (2007) excluded judgments for races in which the participant reported recognizing any of the faces. For this article, we simply recode these judgments as the proportion rating the Democratic candidate more competent than the Republican (*Appearance advantage*).⁸

In 2006, 36 states held gubernatorial elections and 33 held Senate elections. We have ratings of candidates’ faces for all but the California gubernatorial race, and all but the Connecticut, New York, Hawaii, and Indiana Senate races; these states are excluded from the analysis. We thus analyze 35 gubernatorial and 29 Senate races.

Television Slightly Increases the Effect of Appearance among All Respondents

Given that television is a visual medium, voters who watch a good deal of TV are likely to be disproportionately exposed to images of candidates. If the literature on candidate appearance is correct, television viewers may then rely on candidate appearance in deciding which candidate to support. As a result, candidates who enjoy a significant

⁸According to the raters, Democratic candidates were at a slight disadvantage in these races. About 46% rated the Democrat as more competent-looking in gubernatorial races and about 45% did so in Senate races. The standard deviation for Appearance advantage is about .20 for gubernatorial and Senate races. See Supporting Information for descriptive statistics.

advantage over their opponents in terms of appearance should do well among television viewers. As discussed above, however, this effect should be much greater among those who are poorly informed about politics and less pronounced among those who know a good deal. As a result, it may be relatively modest overall.

To test how large this effect is, we conduct a series of regression analyses (examining Senate and gubernatorial races separately). As in subsequent analyses, we use individual-level Vote for the Democrat as the dependent variable and estimate the effects with Linear Probability Models.⁹ Given the multilevel data, we cluster the standard errors at the state level. For ease of interpretation, we code all variables to vary between 0 and 1.

We begin with a simple model that includes the main effects of Appearance advantage and the High-TV indicator, as well as their interaction. If this interaction is positive, then greater exposure to TV exacerbates the effect of appearance. We use the High-TV indicator instead of the continuous TV scale to simplify the interpretation of the interactions (switching to the TV scale strengthens the results; see below). We include controls for *Partisan identification* using the standard 7-point scale; presidential approval (*Bush approval*); a 5-point, self-assessed *Ideology* scale; whether the respondent saw the invasion of Iraq as a mistake (“*Iraq was a mistake?*”); and political knowledge (for question wordings, see Supporting Information).¹⁰ We code these variables so that higher values are associated with more support for the Democrat.

Table 1 presents the results, showing unstandardized regression coefficients from the linear probability models. These results are consistent with our expectation of a modest but positive interaction between Appearance advantage and television exposure.

In gubernatorial races, we see little effect of Appearance advantage among either low- or high-TV respondents (see Column 1); however, when we include the attitudinal controls, such as party identification, the effect of candidate image increases from almost nothing among low-TV respondents to about $(0 + .07 =) .07$ among high-TV respondents, a significant increase (see Column 2). The magnitude of these effects is modest. Appearance advantage among gubernatorial candidates has a range of .63, from .16 to .79 (that is, from pairings

⁹We use linear probability models because they are consistent under weak assumptions and the estimates are simpler to interpret, especially with interaction terms (Ai and Norton 2003). For the probit results, which yield the same findings, see Supporting Information.

¹⁰Missing values on these control variables were imputed. The results do not change with listwise deletion (see Supporting Information).

TABLE 1 The Effect of Television, Candidate Appearance, and Political Knowledge on Individual-Level Vote for Democrat

	<i>DV: Gubernatorial Vote (for Dem.)</i>				<i>DV: Senate Vote (for Dem.)</i>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Appearance advantage (for Democrat)	0.04 (0.13)	-0.00 (0.08)			0.23* (0.08)	0.10* (0.05)		
Appearance advantage × High TV	0.03 (0.06)	0.07* (0.03)			0.08* (0.04)	0.11* (0.02)		
High TV	0.14* (0.04)	-0.01 (0.02)			0.13* (0.02)	-0.03* (0.01)		
Low knowledge × Appearance advantage			0.11 (0.20)	0.02 (0.13)			0.40* (0.15)	0.20* (0.10)
Low knowledge × Appearance × High TV			0.21* (0.10)	0.20* (0.07)			0.15* (0.07)	0.17* (0.05)
Low mid knowledge × Appearance advantage			0.05 (0.19)	0.02 (0.08)			0.30* (0.12)	0.08 (0.06)
Low mid knowledge × Appearance × High TV			-0.02 (0.12)	-0.03 (0.06)			-0.02 (0.08)	0.03 (0.06)
High mid knowledge × Appearance advantage			0.07 (0.14)	-0.02 (0.06)			0.32* (0.13)	0.10* (0.04)
High mid knowledge × Appearance × High TV			-0.14 (0.11)	0.03 (0.05)			-0.08 (0.10)	0.04 (0.04)
High knowledge × Appearance advantage			-0.18 (0.15)	-0.05 (0.05)			-0.17 (0.15)	-0.06 (0.04)
High knowledge × Appearance × High TV			-0.09 (0.09)	-0.02 (0.05)			0.00 (0.15)	0.18* (0.08)
Partisan identification		0.40* (0.03)		0.40* (0.03)		0.39* (0.03)		0.39* (0.03)
Ideology		0.21* (0.03)		0.21* (0.03)		0.22* (0.02)		0.22* (0.012)
Bush approval		0.38* (0.03)		0.38* (0.03)		0.38* (0.02)		0.38* (0.02)
Iraq was a mistake?		0.14* (0.02)		0.14* (0.02)		0.18* (0.02)		0.18* (0.02)
Low mid knowledge		0.01 (0.01)	-0.02 (0.06)	0.03 (0.03)		0.01 (0.02)	-0.00 (0.04)	0.05 (0.03)
High mid knowledge		0.03* (0.01)	-0.03 (0.05)	0.02 (0.04)		0.01 (0.02)	-0.01 (0.05)	0.04 (0.04)
High knowledge		0.03 (0.02)	0.08 (0.14)	0.04 (0.06)		-0.01 (0.04)	0.15 (0.13)	0.09* (0.05)
Low knowledge × High TV			-0.01 (0.05)	-0.08* (0.04)			0.00 (0.03)	-0.08* (0.02)
Low mid knowledge × High TV			0.16* (0.06)	0.09* (0.05)			0.18* (0.04)	0.10* (0.04)
High mid knowledge × High TV			0.33* (0.06)	0.13* (0.05)			0.25* (0.06)	0.10* (0.03)
High knowledge × High TV			0.28* (0.089)	0.13* (0.05)			0.25* (0.10)	0.05 (0.06)
N	10273	10273	10273	10273	9980	9980	9980	9980
R ²	0.02	0.59	0.04	0.59	0.04	0.65	0.05	0.65
SER	0.49	0.32	0.49	0.32	0.49	0.29	0.48	0.29

Note: *p < 0.1. Using individual-level voting models, this table shows two key findings for gubernatorial and Senate races. First, it shows that above-the-median TV viewing (High TV) slightly exacerbates the effect of appearance on voting (Col. 1–2 and 5–6). Second, it shows that above-the-median TV viewing especially exacerbates the appearance effect among low-knowledge individuals (Col. 3–4 and 7–8). It shows both findings without attitudinal control variables and with these variables. The coefficients showing these findings are highlighted with boxes. The table presents unstandardized regression (OLS) coefficients with robust standard errors clustered at the state level in parentheses. Each column shows a separate regression model. All variables coded to vary between 0 and 1 and so that higher values should correspond with support for the Democrat. Source for individual-level data: 2006 CCES.

where only 16% of raters felt the Democrat looked more competent than the Republican to those where 79% of raters felt the Democrat looked more competent). Thus, among those respondents who are above the median on

TV viewing, a candidate with the highest appearance advantage would receive about (.63 × .07 × 100 =) 4.4 percentage points more vote share than a candidate with the worst relative rating.

Television exposure more consistently accentuates the role of appearance in Senate races, as shown in the right side of Table 1 (Columns 5 and 6). With attitudinal controls, the effect is about .10 among those who watch less TV and .21 (.10 plus .11) among those who watch more, a statistically significant increase (Column 6). Because Appearance advantage for the 2006 Senate contests ranges from .08 to .84, a candidate with the highest facial competence rating would receive about 16 percentage points more vote share than a candidate with the lowest competency rating among high-TV respondents.¹¹ Among low-TV respondents, this difference is only 8 points.

All told, greater TV exposure appears to slightly increase the overall effect of image, especially in Senate races. Candidate appearance, these estimates also imply, better predicts votes in Senate races than in gubernatorial races, a pattern consistent with other findings (cf. Ballew and Todorov 2007; Todorov et al. 2005). This is precisely what we would expect if citizens rely on appearance as a low-information heuristic, as senators and Senate races receive less local media coverage, and spending in Senate campaigns is generally lower than in gubernatorial campaigns (see Supporting Information and Ansolabehere, Snowberg, and Snyder 2006).

Television Markedly Increases the Effect of Appearance among the Less Informed

Graphical Analysis

Our central prediction, of course, is not that television would exacerbate the appearance effect among all respondents, but rather that it should do so among less politically informed individuals. Less informed citizens who watch television are exposed to candidates' faces but are unlikely to learn other information about them from television, and so may rely on faces as a low-information heuristic. To test this prediction, we begin by examining these data visually. Figure 1 presents scatterplots of Democratic vote share by Appearance advantage in the gubernatorial races, showing these plots for *Low knowledge* (bottom quartile) and *Low mid knowledge* (second from the bottom quartile), and below and above the median TV exposure. To simplify the figures, we do not show scatterplots for the top two knowledge quartiles, though we do present effect estimates for them in the regression models. We further simplify by switching from individual-level analysis

(used in Table 1) to state-level analysis, taking the average vote share for each knowledge quartile within each state, weighting by the number of respondents so smaller states receive proportionately less weight.

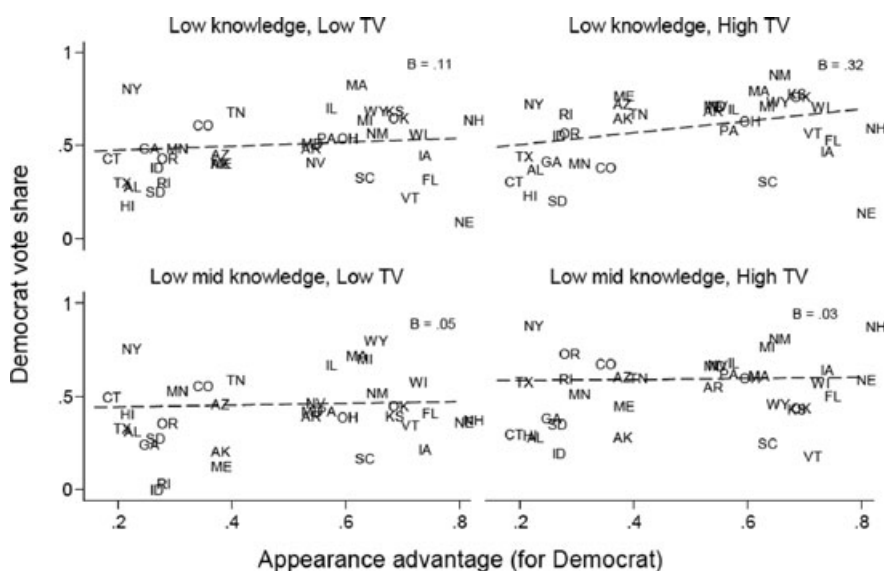
Our prediction is that appearance should matter *more* as television viewing *increases* among the less informed. This is exactly what we find in Figure 1. Candidate appearance matters more (steeper slope) for gubernatorial vote when less informed individuals watch a good deal of television. As shown in the top-left scatterplot in Figure 1, the regression slope is about .11 for high-TV/low-knowledge respondents, suggesting that a 10 percentage point increase in the share of raters who say the candidate looks more competent leads to about a 1.1 percentage point increase in vote share. Since the standard deviation is 20 percentage points (.20), 10 percentage point differences are common. As shown in the top-right scatterplot, however, when these less informed respondents watch more TV (high TV/low knowledge), the slope increases almost threefold to .32, suggesting that a 10 percentage point increase in the share of people who say the candidate looks more competent leads to about a 3.2 percentage point increase in vote share. In terms of the range, the latter effect implies that a candidate with the highest competency rating (.79) would receive about 20 percentage points more vote share than a candidate with the lowest appearance rating (.16) among that group of voters—a large effect.

Figure 1 also shows that television fails to exacerbate the appearance effect among more knowledgeable individuals. The bottom row presents these scatterplots for low mid knowledge individuals, the second knowledge quartile from the bottom. In this quartile, candidate appearance does not become more predictive of vote among those who watch a good deal of television, nor does it become so for the other knowledge quartiles, which we omit from the figure but show in the regressions below. Thus, while television appears to exacerbate the effect of candidate appearance among the bottom quartile of political knowledge, it does not appear to do so among more politically knowledgeable individuals.

A similar pattern holds in 2006 U.S. Senate races, as indicated by the scatterplots in Figure 2. As with gubernatorial elections, TV tends to exacerbate the effect of appearance among less informed individuals. Among low-TV/low-knowledge respondents, the regression slope is about .40 (top left), suggesting that a 10 percentage point increase in the share of people who say the candidate looks more competent leads to about a 4 percentage point increase in vote share. In contrast, when these less informed respondents watch more TV (high TV/low knowledge), the slope increases to .55 (top right), implying that a 10 percentage point increase in the share

¹¹ $(.84 - .08) \times .21 \times 100 = 16.0$.

FIGURE 1 Television Encourages Image-Based Voting among the Ill Informed in 2006 Governors' Races



Note: Candidate appearance better predicts vote intent in gubernatorial races among less informed citizens (bottom quartile of political knowledge) who self-report above-the-median TV exposure. The figure shows that this difference is absent among somewhat more informed citizens (low mid political knowledge quartile). The plots for other political knowledge quartiles are not shown, though estimates from them are presented in Table 1. The dependent variable is the share of respondents intending to vote for the Democratic candidate, excluding nonmajor party voters, and the analysis is weighted by the number of respondents, so small states like Nebraska receive almost no weight. The explanatory variable is Appearance advantage. Political knowledge is measured with a 21-item index of responses to factual questions. TV is measured with a 9-item scale about frequency of watching in the previous week and is split at the median. Source for individual-level data: 2006 CCES.

of people who say the candidate looks more competent leads to about a 5.5 percentage point increase in vote share. (This effect implies that a candidate with the highest competency rating would receive about 35 percentage points more vote share than a candidate with the lowest appearance rating among that group of voters—an even larger effect than for the gubernatorial races.) As with the gubernatorial races, no similar increase occurs between low- and high-TV exposure in the other knowledge quartiles. The bottom row of Figure 2 presents this result for the low mid knowledge quartile, and we show it for the top two knowledge quartiles in the regressions analysis below.

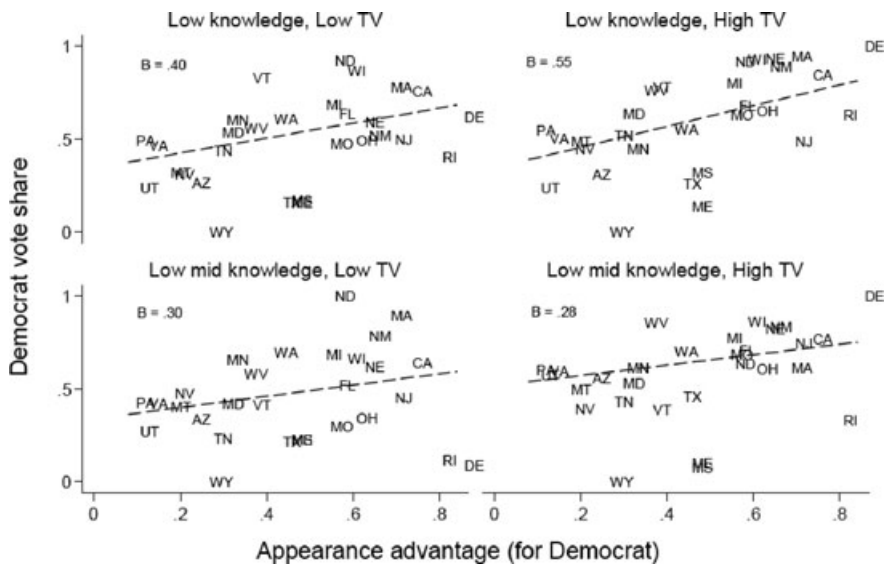
Regression Analysis and Attitudinal Controls

To check whether the findings in Figures 1 and 2 are statistically significant and robust, we estimate these effects using a linear probability model. (Probit models yield similar results.) Because this analysis involves triple interactions—that is, all possible combinations of ap-

pearance advantage with television exposure and political knowledge—and the addition of a number of potentially confounding variables, this section is necessarily technical. The key takeaway point, however, is straightforward: these analyses confirm the graphical findings summarized above.

For ease of presentation, we use statistical models that closely resemble the structure of the scatterplots, but with individual-level data instead of state-level data. The top panels of Figure 1 showed that, for gubernatorial races, the appearance effect increased from .11 among low-knowledge/low-TV respondents to .32 among low-knowledge/high-TV respondents. Column 3 of Table 1 tests whether this $(.32 - .11 =)$.21 slope increase is statistically significant. Its first coefficient, which is for the interaction Low knowledge \times Appearance advantage, simply shows the same .11 slope as Figure 1 for low-TV/low-knowledge individuals. The next coefficient in Column 3, which we highlight with borders, tests whether the .21 increase induced by television exposure is statistically significant. We conduct this test with the triple interaction Low knowledge \times Appearance advantage \times High

FIGURE 2 Television Encourages Image-Based Voting among the Ill Informed in 2006 Senate Races



Note: Candidate appearance better predicts vote intent in Senate races among less informed citizens (bottom quartile of political knowledge) who self-report above-the-median TV exposure. The figure shows that this difference is absent among somewhat more informed citizens (low mid political knowledge quartile). The plots for other political knowledge quartiles are not shown, though estimates from them are presented in Table 1. The dependent variable is the share of respondents intending to vote for the Democratic candidate, excluding nonmajor party voters, and the analysis is weighted by the number of respondents, so small states like Wyoming and Rhode Island receive almost no weight. The explanatory variable is Appearance advantage, an average of naïve students’ ratings of unlabeled, black-and-white photographs of candidate pairs, with higher values indicating a Democratic advantage. Political knowledge is measured with a 21-item index of responses to factual questions. TV is measured with a 9-item scale about frequency of watching in the previous week and is split at the median. Source for individual-level data: 2006 CCES.

TV—the key statistical test of this article. Since it tests an interaction, its coefficient shows the slope increase, .21, and finds that this increase is indeed statistically significant ($p < .035$). Applying the same model to Senate races, Column 7 shows that this key triple interaction is slightly smaller in size for these races, .15, and is also statistically significant ($p < .032$).¹² Thus, the finding that appealing-looking candidates benefit disproportionately from television exposure among low-knowledge individuals is unlikely to be due to chance.

Besides showing that these increases are statistically significant, the coefficients in these columns (3 and 7) also show that appealing-looking candidates

do not benefit from television exposure in any of the higher political knowledge quartiles. The triple interactions between, for instance, Low mid knowledge \times Appearance advantage \times High TV are small for gubernatorial and Senate races. As we hypothesized, therefore, appealing-looking candidates primarily benefit from television exposure among the less informed.¹³

To ensure that these findings survive the attitudinal control variables, Columns 4 and 8 of Table 1 add these

¹²To allow for separate intercepts for each knowledge quartile, we include the political knowledge indicators (Low knowledge is the omitted category) and the double interactions between these indicators and High TV. We do not include the main effects of Appearance advantage or High TV because, with this setup, we estimate these separately within each knowledge quartile, as we did in the graphical analysis. The main effects and double and triple interactions between Appearance advantage, High TV, and the knowledge indicators are thus captured by our specification.

¹³In general, higher-knowledge individuals appear less affected by candidate appearance, as shown by the smaller double interactions, e.g. (Low mid knowledge \times Appearance advantage), but the effects are not zero, especially for mid-level knowledge individuals in Senate races. These individuals may still be influenced by appearance because, despite being generally politically knowledgeable, they may not know much about the specific candidates in these races. Heuristics, such as appearance, may also continue to bias their judgments even though they are also engaging in systematic processing about the races (Eagly and Chaiken 1993). One anomaly is worth noting in Table 1: for Senate candidates, there is a hint of our interaction for high-knowledge individuals. However, this interaction is not present in the models without attitudinal controls, nor is it robust to the controls used below (see Table 2).

to the models. The results remain essentially the same. Thus, the basic finding from the graphical analysis, that TV exacerbates the effect of image among less informed individuals, survives controls for the major issues of the 2006 election—presidential approval and attitudes about the Iraq war—as well as controls for partisanship and ideology (we examine more controls below).

Continuous TV Scale (Instead of Median Split)

So far, we have used a median split on the television scale (High TV). Although this approach has the advantage of simplifying the interactions, it throws out a good deal of relevant information on the extent of television exposure (specifically, it disregards the variation in television exposure *within* the High-TV and Low-TV groups). To test the interaction of appearance with the continuous TV measure, we reestimate the statistical models replacing the indicator variable High TV with the continuous variable TV, which ranges from 0 (watched none of the nine types of television shows in the past week) to 1 (watched all nine show types every day in the past week). This measure has a mean of .33, and a standard deviation of .18. Table 2 presents the estimates with continuous TV, controlling for the attitudinal variables. This table shows a large number of specifications, most of which are discussed in the next section, but Columns 1 and 8 show that the key triple interaction (Low knowledge \times Appearance advantage \times TV) is statistically significant and larger than it was with the binary High-TV variable (compare with Table 1, Columns 4 and 8). For Senate races, for example, the triple interaction is .67, implying that a shift from the least to the most competent-looking Democrat corresponds with a 51 percentage point increase in Democratic vote share for individuals at the top of the TV scale over the increase among those at the bottom, a large effect. For individuals at the 75th percentile on the TV scale (.44 on our 0–1 scale), the effect is still large: 22 percentage points. In sum, switching from a dichotomous to a continuous indicator of television exposure strengthens our finding.

Candidate Quality and Effort Controls

As discussed earlier, there are several alternative explanations for recent findings on candidate appearance. For example, harder-working candidates or candidates with more party support may win more votes and procure better pictures; as a result, what seems like an appearance effect could theoretically be a product of strong candidates having better “image management.” To check whether

these and other alternatives can account for the findings, we add five new control variables to our model; we also interact these controls with political knowledge quartiles and TV viewing. This approach necessarily requires the inclusion of a large number of interaction terms, which makes the analysis even more complicated. Again, however, the takeaway point is straightforward: the effects we document above are not the product of confounding variables.

To control for candidate quality, we first assemble an indicator of candidate experience in elected office (*Experience advantage*) that places greater weight on more prominent offices; higher values indicate that the Democratic candidate is more experienced than his Republican opponent. (See Supporting Information for details on this and the other control variables.) Second, we create a measure of educational achievement (*Education advantage*); higher values indicate that the Democrat completed more schooling or attended more selective academic institutions than her Republican rival. Although these measures are imperfect indicators of candidates’ true abilities, they presumably correlate with qualities like effort and ability that citizens value in their representatives (experience and intelligence). Third, we control for *Incumbency*, which is coded 1 when the incumbent is a Democrat, 0 for open seats, and -1 when the incumbent is a Republican. Fourth, to capture campaign effort, we measure the Democratic candidate’s share of campaign spending among major party candidates (*Spending advantage*). Finally, we include a measure of competitiveness of the race from *The Cook Political Report*, which takes eight values, ranging from solidly Republican to solidly Democratic (*Cook ratings*). We use Cook ratings from June 2005 to capture the strategic environment before candidates commit to the race (Atkinson, Enos, and Hill 2009). With the exception of incumbency, we code all these variables to range between 0 and 1.

One problem with controlling for these variables (with the possible exception of Education advantage) is that their causal relationship to appearance is unclear. In fact, appearance may be causally prior to these variables. Appealing-looking candidates may be incumbents precisely because their looks influenced voters in previous elections. Likewise, appealing-looking candidates may raise more campaign funds because their looks directly or indirectly influence donors. If so, controlling for these variables would lead us to underestimate the total effect of appearance on electability.

Another problem with controlling for these variables is that they all strongly intercorrelate. In Senate races, for instance, Appearance advantage correlates at .59 with

TABLE 2 The Effect of Television on Image-Based Voting with Continuous TV and Controls for Candidate Effort and Quality

	<i>DV: Gubernatorial Vote (for Democrat)</i>							<i>DV: Senate Vote (for Democrat)</i>						
	(1)	Spd (2)	Exp (3)	Edu (4)	Inc (5)	Cook (6)	Q.Scl (7)	(8)	Spd (9)	Exp (10)	Edu (11)	Inc (12)	Cook (13)	Q.Scl (14)
Low knowledge × Appearance advantage	-0.05 (0.12)	-0.04 (0.08)	-0.13 (0.11)	-0.07 (0.12)	-0.22* (0.11)	-0.16 (0.10)	-0.17* (0.10)	0.08 (0.09)	-0.18* (0.09)	-0.05 (0.11)	0.01 (0.10)	-0.10 (0.10)	-0.10 (0.10)	-0.16 (0.10)
Low knowledge × Appearance advantage × TV	0.54* (0.15)	0.53* (0.18)	0.50* (0.18)	0.61* (0.16)	0.38* (0.21)	0.43* (0.18)	0.46* (0.19)	0.67* (0.18)	0.48* (0.22)	0.48* (0.22)	0.52* (0.16)	0.58* (0.26)	0.51* (0.22)	0.48* (0.24)
Low knowledge × Spending advantage		0.28* (0.08)							0.39* (0.10)					
Low knowledge × Spending advantage × TV		0.15 (0.14)							0.17 (0.15)					
Low knowledge × Experience advantage			0.34* (0.09)						0.35* (0.17)					
Low knowledge × Experience advantage × TV			-0.10 (0.17)						0.35* (0.21)					
Low knowledge × Education advantage				0.08 (0.06)							0.15 (0.10)			
Low knowledge × Education advantage × TV				-0.22* (0.13)							0.34* (0.12)			
Low knowledge × Incumbency					0.08* (0.02)							0.08* (0.03)		
Low knowledge × Incumbency × TV					0.06 (0.06)							0.01 (0.06)		
Low knowledge × Cook rating (prior year)						0.21* (0.06)							0.23 (0.08)	

(Continued)

TABLE 2 Continued

	DV: Gubernatorial Vote (for Democrat)							DV: Senate Vote (for Democrat)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Spd	Exp	Edu	Inc	Cook	Q.Scl	Spd	Exp	Edu	Inc	Cook	Q.Scl		
Low knowledge × Cook rating × TV					0.18 (0.14)						0.08 (0.10)			
Low knowledge × Quality scale						0.30* (0.06)								0.35* (0.11)
Low knowledge × Quality scale × TV						0.05 (0.17)								0.16 (0.16)
High knowledge × Appearance advantage	-0.04 (0.08)	-0.04 (0.09)	-0.07 (0.09)	-0.03 (0.08)	-0.13 (0.11)	-0.07 (0.09)	-0.09 (0.10)	-0.12 (0.09)	0.03 (0.10)	0.03 (0.08)	-0.10 (0.07)	0.04 (0.09)	0.05 (0.09)	0.07 (0.09)
High knowledge × Appearance advantage × TV	-0.04 (0.17)	-0.06 (0.17)	-0.14 (0.16)	-0.13 (0.14)	-0.08 (0.20)	-0.08 (0.17)	-0.11 (0.17)	0.50 (0.33)	0.10 (0.31)	0.11 (0.25)	0.33 (0.28)	0.18 (0.36)	0.19 (0.33)	0.04 (0.30)
n	10273	10273	10273	10273	10273	10273	10273	9980	9980	9980	9980	9980	9980	9980
R ²	0.59	0.60	0.60	0.59	0.60	0.60	0.60	0.653	0.67	0.66	0.66	0.66	0.67	0.67
SER	0.32	0.31	0.32	0.32	0.31	0.32	0.32	0.293	0.29	0.29	0.29	0.29	0.29	0.29
Knowledge quartiles indicators	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TV * Knowledge quartile interactions	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Attitude controls and interactions	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Triple interactions (all included, selected ones shown)	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Note: *p < 0.1. This table shows that the main finding from Table 1, that television exposure exacerbates the appearance effect among the bottom political knowledge quartile, continues to hold when controlling for measures of campaign effort and candidate quality. That is, the key triple interaction Low knowledge × Appearance advantage × TV (see the second row) remains substantively large and statistically significant, including when we control for a scale constructed from all the candidate effort and quality variables (Quality scale). The table also shows that television does not have a similar effect with the candidate-effort control variables (e.g., Spending advantage) among low-knowledge individuals: the triple interactions between Low knowledge, the various candidate effort variables, and TV are generally small and only statistically significant in one case. Low-knowledge respondents are therefore not disproportionately influenced by candidate spending, for instance, when they watch more television. Since we cannot show all the estimates in one table, this table only shows the key coefficients of interest. We do include, however, all main effects and all double interactions. For the full results, see Supporting Information. Unlike Table 1, this table uses the continuous TV exposure measure (instead of the binary measure). The table shows unstandardized regression (OLS) coefficients with robust standard errors clustered at the state level in parentheses. Each column shows a separate regression model with a different set of control variables. All models also include Partisan identification, Ideology, Bush approval, and attitudes about Iraq. All variables coded to vary between 0 and 1, except incumbency, and are coded so that higher values should correspond with support for the Democrat. Source for individual-level data: 2006 CCES.

Spending advantage, .56 with Incumbency, and .61 with Cook ratings. The principal exception to these strong correlations is Education advantage—arguably the most exogenous measure of candidate quality—which correlates with spending, experience, and vote, but not with Appearance advantage.

Given that all these variables measure aspects of candidate quality and correlate highly, we do not show models with all these variables included simultaneously.¹⁴ Instead, we first estimate separate models controlling for each quality variable on its own, interacting it with the knowledge quartile indicators and continuous TV, including all the double and triple interactions. Second, since all of the candidate quality measures fall on one factor in principle component factor analysis (first eigenvalue = 3.78, second eigenvalue = .71), we create a candidate Quality scale (Q. Scl.) using the factor weights. We then control for this Quality scale and the interactions between it, knowledge quartile indicators, and continuous TV (including all the double interactions and the triple interaction).

When we add these variables to the model, we continue to find that appealing-looking candidates benefit disproportionately from television exposure among low-knowledge individuals. Table 2 presents the estimates, with each column representing a model with a different control variable and its interaction terms. Because the double and triple interactions do not all fit into one table, Table 2 only shows those for the bottom and top knowledge quartiles. For gubernatorial and Senate races, the key triple interaction between low knowledge, appearance, and television remains similar in size and statistically different from zero at the 10% level or better in all models (Columns 2–14). In sum, even when controlling for these measures of candidate quality and campaign effort, we still find that candidate appearance tends disproportionately to influence voters who watch more TV and know less about politics.

To provide additional robustness checks, we show a variety of alternative specifications in Table 3. To present them as efficiently as possible, we only show the key interactions for each specification. The first set of estimates shows that the triple interaction between Low knowledge, Appearance advantage, and the TV scale remains substantively large and statistically significant when controlling for the interactions between the attitudinal variables, knowledge quartile indicators, and continuous TV (including all the double and triple interactions). The

¹⁴The results largely hold when we do. In models that include all controls and all interactions, the Low knowledge × Appearance advantage × TV interaction is 0.52 (SE = 0.20) for Senate races and 0.35 (SE = 0.24) for gubernatorial races.

TABLE 3 Additional Robustness Checks

	Triple interactions TV × Appearance Advantage × (See Row)	
	Gubernatorial	Senate
× Low knowledge (bottom quartile)		
With attitudinal interactions	0.55* (0.15)	0.66* (0.17)
With attitudinal & Quality scale interactions	0.47* (0.19)	0.45* (0.23)
With state-level long-term partisanship attitudinal & Quality scale interactions	.49* (0.20)	.43* (0.24)
Interaction with highest p-value dropping each state individually	0.44* (NY) (0.18)	0.43* (CA) (0.23)
Robustness to political knowledge thresholds (With attitudinal & Quality scale interactions)		
Political knowledge quintiles		
× Bottom quintile	0.47* (0.22)	0.46* (0.28)
× Other quintiles (combined)	-0.04 (0.14)	0.04 (0.11)
Political knowledge sextiles		
× Bottom sextile	0.47* (0.24)	0.58* (0.26)
× Other sextiles (combined)	-0.03 (0.15)	-0.01 (0.10)
Political knowledge septiles		
× Bottom septile	0.43* (0.22)	0.76* (0.27)
× Other septiles (combined)	0.01 (0.14)	-0.03 (0.12)
Political knowledge octiles		
× Bottom octile	0.48* (0.26)	0.73* (0.24)
× Other octiles (combined)	0.01 (0.13)	0.00 (0.13)
Candidates matched on race and gender (22/35 gubernatorial & 18/29 Senate) (With attitudinal & Quality scale interactions)		
× Bottom quarter	0.52* (0.21)	0.70* (0.31)
× Other quartiles (combined)	-0.22* (0.11)	-0.14 (0.13)
Candidates in races with only male candidates (25/35 gubernatorial & 23/29 Senate) (With attitudinal & Quality scale interactions)		
× Bottom quarter	0.55* (0.19)	0.52* (0.29)
× Other quartiles (combined)	-0.21 (0.12)	0.06 (0.14)

Note: *p < 0.1. This table shows that the key triple interaction from Table 2, Low knowledge × Appearance advantage × TV, survives a host of robustness checks. It also shows that similar effects do not occur with higher-knowledge groups. Unlike previous tables, this one only presents the key triple interaction from the specified model. It begins by showing that this triple interaction is similar in size and statistically significant with additional controls and interactions (which are added to the models in Table 2, Columns 1 [gubernatorial] and 8 [Senate]) and when each state is dropped sequentially and the analysis rerun. It then shows that the results are not sensitive to using the bottom quartile as the cutoff threshold. Finally, it shows that the triple interaction also holds in races where the candidates are all matched on race and gender and holds in races with only male candidates. See the notes to Tables 1 and 2 for more details and the Supporting Information for additional robustness checks. Unstandardized regression (OLS) coefficients with robust standard errors clustered at the state level in parentheses.

second set of estimates shows that this key interaction also remains substantively large and statistically significant when, in addition to the attitudinal interactions, we add the Quality scale and its double interactions and triple interaction. The third set of findings adds state-level partisanship and its double and triple interactions to the same model. Although the model already controls for party identification and its interactions, adding state-level partisanship, measured as mean Democratic vote share (of the two-party vote) in the previous four presidential elections, further ensures that partisanship does not explain the results. The fourth set of estimates shows our findings do not depend on any particular state. That is, the key triple interaction is substantively large and statistically significant when we drop each state individually and reestimate the model. The table itself presents the estimates for the highest p-value found, which emerge when we drop the New York gubernatorial race and the California Senate race.

The next set of robustness checks in Table 3 shows that the findings are not sensitive to the use of political knowledge quartiles. The table presents the triple interaction for the bottom fifth, sixth, seventh, and eighth of the political knowledge scale. For gubernatorial races, the triple interaction remains statistically significant and similar in size in all the low-knowledge groupings. For Senate races, these triple interactions are also always statistically significant and become larger among lower-knowledge groups, rising by about 50% in the bottom eighth. To show the absence of the key triple interactions for higher-knowledge individuals, the table also presents them for the average of the higher-knowledge groups. Thus, if anything, television's tendency to encourage appearance-based voting increases as political knowledge declines; this finding is not sensitive to using the bottom quarter as the threshold.

To show that these results also hold when candidates are matched on race and gender, the next set of estimates shows the triple interaction for the bottom quartile and the other quartiles (combined) in matched races. Consistent with other research, the estimates show that the triple interactions for low-knowledge individuals are slightly larger and remain statistically significant, despite the smaller sample size, in matched gubernatorial and Senate races. Because research suggests differential effects of candidate appearance with female candidates (Chiao, Bowman, and Gill 2008; Poutvaara, Jordahl, and Berggren 2009), we also show that the results hold when we exclude all races where one or both candidates are female, leaving us with 25 gubernatorial and 23 Senate all-male races.

Conclusion

Since the advent of television, political observers have fretted about the degree to which it privileges image over substance (e.g., Mickelson 1976). The results we report appear to confirm some of these long-standing fears. Politicians who merely look the part benefit from TV, especially among less informed citizens. Consider, for example, the effect for Senate races, which is generally larger than the effect in gubernatorial races. Among low-knowledge individuals (bottom quartile), a 10 percentage point increase in their appearance advantage leads to only a .8 percentage point increase in vote share among those who watch little or no television, a 2 percentage point increase among those with average TV viewing, and a 4.8 percentage point increase among those who watch the most TV.¹⁵ Since 10 percentage point differences in appearance advantage are common, as one standard deviation is 20, the effect is considerable. In contrast, television does not exacerbate the effect of appearance among more knowledgeable individuals. Among those in the middle two knowledge quartiles, for example, a 10 percentage point increase in Appearance leads to a .8 percentage point increase in vote share among those who watch zero television, a 1 percentage point increase among those with average TV viewing, and a 1.3 percentage point increase among those who watch the most TV.

The magnitude of the appearance effect for high-TV/low-knowledge individuals is comparable to other electoral effects researchers have studied. For example, research on newspaper endorsements typically finds that they persuade 1%–5% of readers (Erikson 1976; Krebs 1998). Estimates of the incumbency advantage in U.S. House elections find an effect of about five percentage points in recent decades (for a review, see Ansolabehere, Snowberg, and Snyder 2006).

The appearance effect for low-knowledge/high-TV individuals is also robust. It holds when controlling for standard attitudinal variables, such as party identification and presidential approval. It holds when controlling for measures of candidate quality and effort, such as incumbency and spending, and when controlling for state-level partisanship. It holds when we include the interactions between these control variables, political knowledge, and television exposure. It holds when we exclude each state from the analysis (that is, robust to state outliers). It holds when we use political knowledge thresholds other than quartiles. It holds when we examine only races where

¹⁵Estimates of the size of the effect are based on Table 2, Column 14.

candidates are matched on race and gender. It holds among races with only male candidates. Finally, it holds independently in gubernatorial and in Senate races—a key test of robustness on its own. By confirming this prediction from psychology about using faces as a low-information heuristic, these results thus add credence to recent findings on candidate appearance.

All told, our findings pose in a new form the age-old question of whether participation by less informed citizens enhances or detracts from democratic government. Certainly, shallow, image-based judgments are hardly novel features of democratic politics. In the days before TV, critics of representative government regularly lamented how some leaders could exploit their personal charisma to manipulate mass opinion. As James Madison warned, people “misled by the artful misrepresentations of interested men, may call for measures which they themselves will afterwards be the most ready to lament and condemn” (Madison, Hamilton, and Jay 1987, 63). Is the modern analogue—looking good on TV—truly worse? In some ways, it is not. Nevertheless, the combination of widespread political disengagement in the citizenry with saturation levels of exposure to visual images of candidates is a distinctly modern phenomenon, bringing with it distinctly modern problems. Moreover, there is no reason to suspect that these problems are American; television exposure is high, and political knowledge low, in a range of countries, especially in the developing world. Understanding the problems posed by this political environment and devising ways to address them remain important challenges for political science.

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Supporting Information

Additional Supporting Information may be found in the online version of this article:

Notes on constructing scales and measures used in the article

Television exposure

Attitudes, ideology, and party ID

Political knowledge

Candidate experience and education

Descriptive statistics

More robustness checks (in addition to those in Table 3)

Replication of Table 1 with probit instead of linear probability

Replication of part of Table 2 with probit instead of linear probability

Experience advantage and educational advantage on vote

Full results for Table 2 estimates for gubernatorial candidates

Plausibility of less informed hypothesis

Image as a low-information heuristic?

CCES sampling procedure

Other individual-level data?

Multilevel model?

Appearance Effect for 1990–2002 Senate races (including within state)

Quasi-experiment

Appearance advantage and in-state versus out-of-state originating broadcasts

Classification of counties into in-state or out-of-state originating broadcasts

An example of in-state and out-of-state dominated media markets: Pennsylvania counties

Quasi-experimental scatterplot: Television slightly exacerbates the effect of image

Quasi-experimental findings

Measuring exposure to television coverage during campaigns

News stories mentioning candidates by in-state and out-of-state media market

Balance table for quasi-experiment: County-level statistics, before and after matching

Applying the media market measures from 1995 to 2000 to the 2006 CCES

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