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*American Journal of Political Science*, Vol. 45, No. 4 (Oct., 2001), 930-950.

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*American Journal of Political Science* is currently published by Midwest Political Science Association.

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# Attitudes toward Presidential Candidates and Political Parties: Initial Optimism, Inertial First Impressions, and a Focus on Flaws

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Most models of how citizens combine information about political candidates into attitudes toward them presume that symmetric linear additive processes are at work. We propose a model (called the ANM) in which the impact of favorable and unfavorable beliefs on attitudes is asymmetric and nonlinear. Cross-sectional national survey data (from 1972 to 1996) show that this model describes attitudes toward presidential candidates and political parties better than a symmetric linear model (SLM) among respondents high and low in political involvement. Longitudinal survey data (collected between 1980 and 1996) show that attitudes are derived from favorable and unfavorable beliefs in ways consistent with the ANM. And the ANM revealed that voter turnout is enhanced by a stronger preference for a citizen's preferred candidate if at least one candidate is disliked, whereas the SLM failed to detect this effect. These findings have important implications for understanding the impact of election campaigns on citizens' preferences and actions and for understanding the ingredients of vote choices.

Politics is, at its core, a process of forming and expressing preferences. When democratic citizens vote to elect representatives or terrorists detonate bombs to demand a voice in government policy making or insurgents attempt to overthrow a dictatorship, these political actors have opinions about what they consider to be good or bad and are expressing those attitudes through significant and consequential actions. Thus, to fully understand the workings of politics, we must understand how political actors form the attitudes that direct their conduct.

During this century, numerous scholars have explored the origins of political attitude formation in one particular domain: democratic elections. And in fact, most scholars of voting have shared a vision of the process by which citizens derive their evaluations of candidates. Whether manifested explicitly in discussions of information processing (e.g., Kelley 1983; Kelley and Mirer 1974) or implicitly in hundreds of linear regression equations estimated over the years (for a review, see Kinder 1998), we have presumed

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The research reported here was conducted partly while the second author was a Fellow at the Center for Advanced Study in the Behavioral Sciences (supported by NSF grant SBR-9022192), and while the first author was a University Fellow at the Ohio State University, and while she was a pre-doctoral trainee of the National Institute for Mental Health (Grant #T32-MH19728). The authors wish to thank Richard Petty, Tom Nelson, Joanne Miller, Wendy Rahn, Laura Stoker, Christopher Wlezien, and George Bizer for their help and advice throughout this project.

*American Journal of Political Science*, Vol. 45, No. 4, October 2001, Pp. 930–950

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that people add up favorable considerations and subtract unfavorable ones to yield overall attitudes toward candidates. And as the years have passed, we have identified increasing numbers of considerations that enter into the mix, from locations within the social structure (Berelson, Lazarsfeld, and McPhee 1954) to party affiliations and stands on policy issues (Campbell et al. 1960), perceptions of candidates' personalities and the emotional responses they evoke (Abelson et al. 1982), retrospective assessments of the nation's economy and international status (Kinder and Kiewiet 1979), prospective judgments of candidates' likely performance (Fiorina 1981), and much more (e.g., Kinder and Sears 1985; Miller and Shanks 1996).

The last ten years, however, have seen a number of challenges to conventional wisdom about voter decision making. For example, Lodge, McGraw, and Stroh (1989) challenged the presumption that voters canvass their considerations on election day with the notion that overall candidate evaluations are built on-line, updated regularly throughout campaigns. Rabinowitz and Macdonald (1989; Macdonald, Rabinowitz, and Listhaug 1995) challenged the widely popular spatial model of policy voting (e.g., Enelow and Hinich 1984) with a directional model (see also Westholm 1997). And Gelman and King (1993) used the inconsistency between the volatility of candidate popularity across campaigns and the predictability of election outcomes from facts measurable long before election day to generate a new vision of what voters learn and think as campaigns unfold.

We offer yet another challenge to conventional wisdom by reconsidering the simple model of information combination that voting researchers have so widely taken for granted. A great deal of research in psychology suggests that amendments should be made to this model, and we offer these amendments in the form of what we call the asymmetric nonlinear model (ANM) of attitude formation (see Cacioppo and Berntson 1994; Cacioppo and Gardner 1993; Cacioppo, Gardner, and Berntson 1997). We begin below by outlining traditionally used models of attitude formation in the voting literature and explaining how the ANM differs from them. We then report survey evidence pitting traditional models against the ANM in attempts to describe the origins of attitudes toward candidates and political parties. As we shall see, the ANM outperforms the traditional models quite consistently, a conclusion that has interesting and important implications for understanding the conduct of politics. Furthermore, we will see that the ANM allows detection of a new psychological determinant of voter turnout that the SLM does not.

## Two Models of Attitude Formation

The most popular model of candidate evaluation might best be called the symmetric linear model (SLM), stated most explicitly twenty-five years ago by Kelley and Mirer (1974). They proposed that people form an attitude toward a candidate by subtracting the number of unfavorable beliefs they have about him or her from the number of favorable beliefs they have. This model can be represented as follows:

$$A = \alpha_1 (F - U) + I \quad (1)$$

where  $A$  is a person's attitude toward a candidate,  $F$  is the number of favorable beliefs the person has about the candidate,  $U$  is the number of unfavorable beliefs the person has about the candidate, and  $\alpha_1$  is the impact of each favorable or unfavorable belief.  $I$  is the intercept: the attitude of a person with no favorable or unfavorable beliefs. According to the SLM,  $\alpha_1$  should be positive, and  $I$  should be the neutral point on the dependent variable (i.e., people with no favorable beliefs and no unfavorable beliefs are posited by this model to have neutral attitudes).

Linear multiple regression equations likewise presume that considerations are added together to yield overall attitudes. These models have been different from Kelley and Mirer's in two important ways, though. First, most models have permitted some categories of considerations to be weighted more heavily than others. And second, these models typically do not simply count considerations but rather treat them each as continuous variables. Nonetheless, the basic spirit of these equations is the same as Kelley and Mirer's (1974).

However, work in psychology adopting a behavioral adaptive perspective suggests a number of amendments to these sorts of simple models (Peeters 1971; Peeters and Czipanski 1990). According to this literature, human cognitive and behavioral processes developed because they facilitate survival and reproduction in a potentially hostile world. Stated most bluntly, if people are to survive, they must acquire food and avoid predators. So approaching any new and unfamiliar object with favorable expectations is worthwhile, because it could be food or could facilitate acquisition of food. However, one must vigilantly scan for any signs of danger an object might pose, so that one can extricate oneself from potentially lethal situations. When one's favorable expectations about an object are violated, one must be especially sensitive and react promptly, before it is too late to avoid potential danger.

Approaching novel objects and avoiding potential threats once enhanced the survival of our ancestors, and

these aspects of the evaluative system are likely to be observable in people today (see also Marcus and MacKuen 1993). In the absence of any information about an object, then, attitudes toward it should be slightly positive. And people should be especially attentive to the first information they receive about the object, in order to form an accurate first impression. Then, if the object appears to pose no great and immediate threat, vigilance can taper off, so the impact of each additional piece of information about the object may diminish. However, because of the greater survival value of threat avoidance in comparison to reward acquisition, unfavorable information should have especially powerful impact, more powerful than favorable information—and indeed, vigilance to additional unfavorable information should not taper off to the same degree as attention to additional favorable information.

The ANM can be represented by the following equation:

$$A = \alpha_1 (F)^m + \alpha_2 (U)^n + I \quad (2)$$

Again, F and U simply represent counts of the numbers of favorable and unfavorable beliefs a person has about a candidate. The coefficient  $\alpha_1$  represents the impact of a single piece of favorable information about a candidate. The exponent m represents the rate of deceleration in the marginal utility of additional pieces of favorable information as the total amount of favorable information increases. Likewise,  $\alpha_2$  represents the impact of a single piece of unfavorable information, and the exponent n represents the rate of deceleration in the marginal utility of additional pieces of unfavorable information. The intercept I represents the person's attitude in the absence of favorable and unfavorable information.

According to the ANM, the coefficient  $\alpha_1$  is presumed to be positive, such that favorable information increases the positivity of attitudes, whereas  $\alpha_2$  is presumed to be negative, because unfavorable information presumably decreases the positivity of attitudes. The exponents m and n are expected to be less than one, reflecting the *decelerating impact* of additional pieces of information. The tendency to feel slightly positive in the absence of information, called the *positivity offset*, should be expressed by a value of I slightly on the positive side of neutral. The tendency for unfavorable information to have greater impact than favorable information, called the *negativity bias*, may be expressed in two ways. First, the absolute value of  $\alpha_2$  may be greater than that of  $\alpha_1$ , representing hypersensitivity to initial unfavorable information. Second, the value of n may be larger than the value of m, demonstrating slower deceleration of the marginal utility

of unfavorable information than of favorable information (see Cacioppo, Gardner, and Berntson 1999).

Separate lines of research in psychology attest to the validity of each of these three elements of the ANM. For example, when people are asked to evaluate an unknown, hypothetical person, they tend to be slightly favorable (Adams-Weber 1979; Benjafield 1985). Numerous psychological studies of impression formation have shown that unfavorable information has more impact than favorable information (e.g., Fiske 1980; Gardner and Cacioppo 1996; Ronis and Lipinski 1985; Van der Pligt and Eiser 1980; Vonk 1993, 1996). And numerous impression formation studies have shown that impressions are more powerfully shaped by initial information (e.g., Anderson 1965a, 1967, 1973; Belmore 1987; Hendrick et al. 1973).<sup>1</sup> Furthermore, integrated tests of these elements have yielded strong support for them in describing the origins of attitudes toward a range of different objects (e.g., Cacioppo and Berntson 1994; Cacioppo, Gardner, and Berntson 1997; Gardner and Cacioppo 1996).

## Implications for Understanding Elections

Although the differences between the SLM and the ANM may seem small, these differences have a number of important implications for understanding the unfolding of campaigns. First, the SLM and the ANM make different predictions about the relative impact of favorable and unfavorable information. If the SLM is correct, favorable and unfavorable information about a candidate have equivalent impact on attitudes toward him or her. Thus, a candidate would benefit equally from presenting a piece of favorable information about himself or herself or presenting a piece of unfavorable information about his or her opponent. In contrast, the ANM posits that unfavorable information will have greater impact than will favorable information, suggesting an advantage to presenting unfavorable information about one's opponent, rather than presenting favorable information about oneself. Thus, the occurrence of an event during a campaign that advantages one candidate and disadvantages the other is likely to have more impact on the latter rather than the former.

<sup>1</sup>Recency effects have been found in some studies (e.g., Lichtenstein and Srull 1987; Richter and Kruglanski 1998) when people acquired information about an object without having the goal of forming an impression of the object (e.g., Lichtenstein and Srull 1987; Richter and Kruglanski 1998). Because people most likely form impressions of political candidates as they acquire information about them, such recency effects seem unlikely in the context of elections.

Second, the order in which information is learned is integral to the ANM, but completely irrelevant to the SLM. According to the SLM, the first information a person learns about a candidate leads to the same amount of attitude change as the last information learned. In contrast, the ANM suggests that the first piece of information about a candidate produces greater change in attitudes toward him or her than all subsequent information. Thus, the ANM suggests that any given message about a candidate will lead to the greatest attitude change among people who know the least about the candidate.

Finally, the SLM and ANM predict different attitudes toward candidates among people who have no information about a candidate. The SLM suggests that such people will be neutral toward the candidate, but the ANM suggests that these people will have slightly positive attitudes. And as we will see, whether voters are neutral or slightly positive toward a candidate has significant impact on whether they will turn out to vote in the election. Thus, the differences between the SLM and the ANM have important implications for understanding how campaigns affect voters' attitudes toward candidates, for understanding which campaign strategies are most effective in altering election outcomes, and for understating the dynamics of turnout.

## Study Overview

In doing the research described below, we set out to test the assertion that the ANM describes the processes by which citizens evaluate political candidates and political parties. Using survey data on U.S. presidential elections collected during a twenty-four-year period, we compared the fit of the SLM and the ANM, examining cross-sectional associations between beliefs about and attitudes toward Presidential candidates and political parties, generality across various subgroups of the electorate differing in political involvement, the causal influence of beliefs on attitudes, and the impact of attitudes toward candidates on turnout.

In order to optimally test the ANM and the SLM, one could track changes in favorable and unfavorable belief learning over the course of a campaign, as well as changes in attitudes toward the candidates. As people acquire beliefs, a researcher could, in principle, assess the impact of each belief after a new one is acquired. This approach would be strong in terms of external validity, but implementing it entails substantial practical challenges, and the frequent measurement required might be reac-

tive and therefore problematic with respondents. Consequently, alternatives are a must.

Another approach is laboratory experimentation. Respondents could receive favorable and unfavorable information about hypothetical candidates, and the effect of each piece of information on attitudes toward the candidates could be measured. Although this approach would be strong on internal validity, it is deficient in terms of external validity, because campaigns do not unfold so quickly, and generalizing from the relatively information-limited experimental context to the information-rich environment of real campaigns may be dangerous.

Our approach combined the internal validity advantages of this latter approach with the external validity advantages of the former. Specifically, we analyzed data from surveys in which respondents were asked to list all their favorable and unfavorable beliefs about candidates and that measured attitudes toward those candidates. This allowed us to compare the attitudes of people with different numbers of favorable and unfavorable beliefs in order to test the hypotheses of the ANM. In addition to testing the positivity offset and negativity bias, we tested one consequence of the primacy effect predicted by the ANM: that as the amount of previous information increases, the marginal utility of each additional piece of information will decrease.

The fact that we relied upon respondents' listings of their favorable and unfavorable beliefs about candidates might seem to imply that we are assuming that formation of attitudes toward candidates occurs in a memory-based fashion, rather than on-line (see Lodge, McGraw, and Stroh 1989). But in fact, such an assumption is not necessary. A person's beliefs about a candidate may have influenced their attitudes prior to the NES survey interviews (as an on-line view would presume) or during the interviews (as a memory-based view would assume); we need not endorse one of these models over the other to engage in our analyses. We must simply assume that the *number* of favorable beliefs about a candidate that a survey respondent reported and the *number* of unfavorable beliefs about a candidate that the respondent reported are accurate reflections of the *numbers* of pieces of information the respondent has about the candidate and that influenced his or her attitude. Because attitudes toward an object do not bias recall of information about that object (see Eagly and Chaiken 1998), any forgetting that did occur most likely simply contributes measurement error to our assessments, weakening our estimates of associations between beliefs and attitudes and biasing our goodness-of-fit assessments downward. If our analyses uncover clear evidence in support of one of the models, this is presumably in spite of such measurement error.

## Data

We analyzed National Election Study (NES) surveys conducted during all presidential election campaigns between 1972 and 1996.<sup>2</sup> During pre-election interviews, respondents were asked a question such as the following: "Now I'd like to ask you about the good and bad points of the Democratic and Republican candidates for President. Is there anything in particular about <candidate's name> that might make you want to vote for him? What is that? Anything else?" Respondents were also asked: "Is there anything in particular about <candidate's name> that might make you want to vote against him? What is that? Anything else?" Up to five responses to each question were recorded for each respondent. We simply computed the number of favorable and unfavorable beliefs each respondent articulated about each candidate in each year, ignoring the content of those beliefs and the order in which they were listed. Attitudes toward the candidates were measured during the pre-election interviews by asking respondents to rate each candidate on a 101-point feeling thermometer (for information on the question wordings, see the Appendix).

## Attitudes Toward Presidential Candidates

Using 26,489 counts of favorable and unfavorable beliefs and feeling thermometer scores, mean attitudes were calculated for each cell in a six by six matrix defined by the number of favorable and unfavorable beliefs each respondent had mentioned about each candidate (see Table 1).<sup>3</sup> The ANM anticipates that the mean in the (0,0) cell will be greater than 50, reflecting the positivity offset. And indeed, the mean of the 4,272 attitudes in that cell was 56.48, significantly larger than 50 ( $t(4271) = 20.90, p < .001$ ). Also in line with the ANM's notion of decelerating impact, the marginal utility of a favorable or unfavorable belief generally decreased in absolute mag-

nitude as the total number of beliefs increased. For example, the average difference between the attitudes of respondents who listed one favorable belief and the attitudes of respondents who listed two favorable beliefs was 7.19, whereas the difference in mean attitudes between respondents who listed four favorable beliefs and those who listed five favorable beliefs was only 2.01 (see the last row of Table 1). Similarly, the average difference between the attitudes of respondents who listed one unfavorable belief and the attitudes of respondents who listed two unfavorable beliefs was 8.50, whereas the difference in mean attitudes between respondents who listed four unfavorable beliefs and those who listed five unfavorable beliefs was only 6.09 (see the last column of Table 1).

Among people who listed more than one belief about a candidate, the expected negativity bias appeared. For example, the average difference between the attitudes of respondents who listed one favorable belief and those who listed two favorable beliefs was 7.19 (see the second column of the last row in Table 1), whereas the average difference between the attitudes of respondents who listed one unfavorable belief and those who listed two unfavorable beliefs was larger: 8.50 (see the second row of the last column in Table 1). And the average difference between the attitudes of respondents who listed four favorable beliefs and those who listed five favorable beliefs was 2.01 (see the fifth column of the last row in Table 1), whereas the average difference between the attitudes of respondents who listed four unfavorable beliefs and those who listed five unfavorable beliefs was again larger: 6.09 (see the fifth row of the last column in Table 1). Surprisingly, the negativity bias was not apparent when comparing the impact of a single unfavorable belief with the impact of a single favorable belief. The average difference between the attitudes of respondents who did not list any favorable beliefs and the attitudes of respondents who listed one favorable belief was 22.87 (see the first column of the last row in Table 1), whereas the average difference between the attitudes of respondents who did not list any unfavorable beliefs and the attitudes of respondents who listed one unfavorable belief was only 13.94 (see the last column of the first row in Table 1). Thus, Table 1 offers evidence mostly confirming the ANM, with one conspicuous exception (i.e., the negativity bias did not appear when comparing the impacts of a single favorable belief and a single unfavorable belief).

To generate a benchmark against which to compare the ANM, we estimated the parameters of the SLM in Equation (1):


$$A = 7.92 (F - U) + 57.69 \quad (3)$$

(.05)                      (.12)

<sup>2</sup>Pre-election face-to-face interviews with nationally representative samples of American adults were conducted mostly in September and October, and post-election interviews were conducted during the four months after each election. The total sample sizes were 2,705 in 1972, 2,248 in 1976, 1,614 in 1980, 2,257 in 1984, 2,040 in 1988, 2,485 in 1992, and 1,714 in 1996.

<sup>3</sup>Many respondents contributed two sets of responses to this analysis—one for a Democratic candidate and one for a Republican candidate. Because we obtained similar results when candidates from only one party were analyzed, we report results using data on all the Republican and Democratic candidates at once.

**TABLE 1** Attitudes Toward Candidates for Each Combination of Favorable and Unfavorable Beliefs

Number of Unfavorable Beliefs	Number of Favorable Beliefs						Row Means	Difference Between Adjacent Row Means	
	0	1	2	3	4	5			
0	56.48 (4,272)	74.39 (2,099)	80.16 (1,946)	82.42 (1,432)	84.11 (678)	86.10 (668)	70.84		13.94
1	40.85 (2,459)	61.74 (1,111)	69.89 (1,007)	73.09 (597)	76.46 (276)	78.13 (281)	56.90		8.50
2	35.04 (2,338)	55.23 (658)	64.27 (566)	67.56 (397)	70.67 (214)	74.86 (203)	48.40		7.38
3	30.45 (1,650)	49.82 (335)	56.01 (316)	61.39 (188)	69.40 (105)	70.44 (100)	41.02		4.66
4	26.12 (831)	46.04 (156)	50.84 (135)	57.98 (96)	64.20 (44)	67.55 (56)	36.36		6.09
5	22.89 (846)	33.64 (137)	44.46 (112)	49.90 (83)	54.52 (42)	58.44 (55)	30.27		
Column Means	41.54	64.41	71.60	75.09	77.75	79.76			
Difference Between Adjacent Column Means		22.87	7.19	3.49	2.66	2.01			

Note: Values in parentheses are the numbers of respondents in each cell.

Standard errors are shown in parentheses below the parameter estimates.<sup>4</sup> Although the SLM predicts that the intercept for this model will be 50, the intercept is in fact significantly greater than 50 ( $z = 64.08, p < .001$ ).

Next, we used nonlinear regression to estimate the parameters of Equation (2) to determine if the ANM's hypotheses about the positivity offset, negativity bias, and nonlinearity were supported.<sup>5</sup>

<sup>4</sup>To test the robustness of our results, we estimated all the equations reported in this article including variables to control for the year of the election, the candidate, educational attainment, age, race, gender, whether the respondent lived in a rural or urban setting, income, political knowledge, strength of party identification, internal political efficacy, and external political efficacy. The results obtained from these analyses were nearly identical to those reported in the text.

We also estimated the equations reported here including a measure of verbosity (the number of responses to a question asking respondents to list the most important problems facing the country) to control for differences in the tendency to be talkative and therefore to report more likes and/or dislikes. The results obtained from these analyses were nearly identical to those reported in the text.

<sup>5</sup>We used SPSS's nonlinear regression procedure, which requires the researcher to input suggested starting values for all parameter estimates; final parameter estimates are calculated iteratively using the Levenberg-Marquardt algorithm to minimize the sum of squared residuals. The Levenberg-Marquardt algorithm uses the steepest descent method in initial iterations and then switches

$$A = 19.66 (F)^{.36} - 12.27 (U)^{.61} + 54.83 \quad (4)$$

(.29)    (.01)(.26)    (.02)(.23)

The ANM ( $R^2 = .50, N = 26,489$ ) predicted respondents' attitudes significantly better than the SLM ( $R^2 = .45, N =$

to the inverse-Hessian method as a solution is approached (Marquardt 1963; Press et al. 1992). We used 1.0 for starting values for all parameters and report the results thusly obtained throughout this article. We also estimated the model using different starting values and obtained identical results.

To gauge the robustness of the parameter estimates produced by nonlinear regression, we conducted OLS regressions predicting attitudes toward candidates using the square root of likes and the square root of dislikes (a transformation that captures the expected nonlinearity) and obtained coefficients that were very similar to those obtained using nonlinear regression. We also estimated Equation (2) using nonlinear regression setting  $\alpha_2$  and  $\alpha_4$  equal to the coefficients we obtained from this OLS regression. The estimates of  $I, m,$  and  $n$  from Equation (2) were similar in this analysis to those obtained when all five parameters in Equation (2) were estimated simultaneously (i.e.,  $I$  was greater than 50,  $m$  and  $n$  were smaller than 1.0 and greater than 0, and  $m$  was larger than  $n$ ).

In order to test whether the nonlinearity we found was due to ceiling and floor effects, we estimated the SLM and the ANM using the logged odds ratio of the feeling thermometers. When we did so, the parameter estimates of the SLM and ANM were similar to those reported in the text, and the ANM continued to outperform the SLM (ANM:  $R^2 = .40, SLM: R^2 = .36$ ; comparison of model fit:  $F(3,26484) = 530.98, p < .001$ ), suggesting that the nonlinearity we found is not merely the result of floor or ceiling effects.

26,489;  $F(3, 26484) = 814.95, p < .001$ .<sup>6</sup> This comparison is particularly compelling because it is biased against finding a difference between these models, for two reasons. First, the SLM predicts that the intercept for this model would be 50, yet we allowed deviation from 50, which improved apparent fit to the data. Second, the fit of the model to each data point affects this comparison of the models equally. Consequently, the fit of the model in cells of Table 1 containing more respondents has more impact on this test than does the fit of the model in cells with fewer respondents. Yet the cells containing the most respondents (in the upper left quadrant of Table 1) are cells in which the SLM and the ANM make the most similar predictions. The cells where the models' predictions differ the most contained fewer respondents and therefore had less impact on the test. Thus, this test is likely to understate differences between the fit of the models.

In order to compare the fit of the models weighting all cells of Table 1 equally, we calculated a heuristic index: the sum of squared differences between each observed cell mean and the mean predicted for each cell by each of the models:

$$SS_{\text{error}} = \sum_{q=1}^p (A_q - O_q)^2 \quad (5)$$

where  $A_q$  is the predicted mean attitude for cell  $q$ ,  $O_q$  is the observed mean attitude for cell  $q$ , and  $p$  is the number of cells in Table 1.  $SS_{\text{error}}$  was 1500.04 for the SLM, more than five times that of the ANM ( $SS_{\text{error}} = 293.42$ ). This suggests that the ANM represents a substantial improvement over the SLM.

The intercept of Equation (4) is significantly greater than 50 ( $z = 20.96, p < .001$ ), confirming the expected positivity offset. Both exponents were significantly less than 1.0 (favorable beliefs:  $z = 64.00, p < .001$ ; unfavorable beliefs:  $z = 19.50, p < .001$ ) and significantly greater than 0 (favorable beliefs:  $z = 36.00, p < .001$ ; unfavorable beliefs:  $z = 30.50, p < .001$ ), confirming the expected nonlinearity.

The negativity bias is also apparent, but it is expressed as a difference in the exponents rather than as a difference in the coefficients. Contrary to our expectations, the coefficient for favorable beliefs ( $b = 19.66$ ) is significantly larger in absolute magnitude than the co-

efficient for unfavorable beliefs ( $b = 12.27; z = 18.95, p < .001$ ), meaning that a single favorable belief had more impact on attitudes than a single unfavorable belief. However, the exponent for unfavorable beliefs (.61) is significantly larger than the exponent for favorable beliefs (.36;  $z = 12.50, p < .001$ ), meaning that the marginal utility of unfavorable beliefs decelerated less quickly than that of favorable beliefs.

To explore whether the ANM performs better than the SLM because of the former's asymmetry or its nonlinearity or both, we calculated the parameters for two hybrid models, one constraining  $\alpha_1$  to equal  $\alpha_2$  in the ANM:

$$A = 15.82 ((F)^{.49} - (U)^{.47}) + 57.87 \quad (6)$$

(.20) (.01) (.01) (.16)

and the other instead constraining  $m$  and  $n$  to equal 1.0 in the ANM:

$$A = 8.22 (F) - 7.61 (U) + 56.91 \quad (7)$$

(.08) (.08) (.20)

As compared to the  $R^2$  of .45 for the SLM, the  $R^2$  for Equation (6) ( $R^2 = .49, N = 26,489$ ) is significantly greater ( $F(2, 26485) = 927.75, p < .001$ ), suggesting that nonlinearity alone significantly improved fit. Although after rounding to two significant digits, the  $R^2$  for Equation (7) ( $R^2 = .45, N = 26,489$ ) appears identical to that for the SLM, in fact the former is slightly larger and indeed significantly so ( $F(1, 26486) = 5.25, p < .05$ ), suggesting that asymmetry alone significantly improved fit as well. Reinforcing these conclusions, the  $R^2$  for the ANM, .50, was significantly larger than the  $R^2$ s for either Equations (6) or (7) ( $F(1, 26484) = 303.25, p < .001$ ; and  $F(2, 26483) = 1067.75, p < .001$  respectively). Furthermore,  $SS_{\text{error}}$  for Equations (6) and (7) were 471.08 and 1387.64, respectively, both substantially less than the  $SS_{\text{error}}$  for the SLM (1500.04) and substantially more than the  $SS_{\text{error}}$  for the ANM (293.42). Thus, both asymmetry and nonlinearity significantly improved fit.

## Generalization Across Elections

When we estimated the parameters of the ANM for attitudes toward candidates in each election year separately, the results were quite consistent with those shown in Equation (4) (see the top half of Table 2). For each year, the intercept is greater than 50,  $\alpha_1$  is greater than the absolute value of  $\alpha_2$ ,  $\alpha_2$  is negative,  $\alpha_1$  is positive, the exponents are less than 1, and the unfavorable beliefs exponent is larger than the favorable beliefs exponent.

<sup>6</sup>To compare the  $R^2$  of the SLM to that of the ANM, we computed the following test statistic:  $F(p_{\text{ANM}} - p_{\text{SLM}}, N - p_{\text{ANM}}) = ((RSS_{\text{SLM}} - RSS_{\text{ANM}}) / (p_{\text{ANM}} - p_{\text{SLM}})) / ((RSS_{\text{ANM}} / (N - p_{\text{ANM}})))$ , where  $p_{\text{SLM}}$  and  $p_{\text{ANM}}$  are the number of parameters for the SLM and ANM models,  $RSS_{\text{SLM}}$  and  $RSS_{\text{ANM}}$  are the residual sums of squares for the SLM and ANM models, and  $N$  is the total sample size. This approach is recommended for testing differences between nested nonlinear models (see Bates and Watts 1988; Greene 1990).



**TABLE 2** Parameters of the ANM for Individual Elections

Year	Parameters					R <sup>2</sup>	N
	$\alpha_1$	$\alpha_2$	m	n	Intercept		
<b>Attitudes toward Candidates</b>							
1972	21.58 (1.04)	-15.95 (.97)	.37 (.04)	.48 (.05)	54.78 (.83)	.51	2,601
1976	17.93 (.69)	-11.98 (.64)	.39 (.03)	.55 (.04)	56.98 (.58)	.45	4,308
1980	18.99 (.84)	-12.72 (.78)	.39 (.04)	.63 (.04)	56.37 (.73)	.49	3,057
1984	18.97 (.72)	-10.86 (.63)	.40 (.03)	.71 (.04)	57.27 (.55)	.53	4,353
1988	21.78 (.79)	-12.08 (.70)	.33 (.03)	.59 (.04)	54.34 (.56)	.48	3,918
1992	17.70 (.66)	-12.01 (.60)	.37 (.03)	.57 (.03)	52.67 (.52)	.49	4,866
1996	20.55 (.81)	-12.13 (.71)	.34 (.03)	.64 (.04)	52.96 (.60)	.55	3,385
<b>Attitudes toward Parties</b>							
1980	15.98 (.86)	-12.01 (.85)	.35 (.05)	.52 (.07)	56.80 (.52)	.26	3,030
1984	19.82 (.71)	-14.03 (.68)	.30 (.03)	.56 (.04)	57.02 (.41)	.38	4,280
1988	18.43 (.80)	-12.05 (.77)	.33 (.04)	.56 (.05)	56.36 (.51)	.32	3,856
1992	15.15 (.67)	-14.38 (.65)	.41 (.04)	.48 (.04)	55.79 (.43)	.33	4,770
1996 <sup>a</sup>	14.61 (1.16)	-12.66 (1.13)	.47 (.06)	.58 (.07)	54.82 (.78)	.33	1,631

<sup>a</sup>In 1996, only half of the respondents were asked questions about their favorable and unfavorable beliefs about the parties.

Note: Values in parentheses are standard errors.

### Generalization Across Subgroups of Citizens

Much research in psychology has shown that people who are highly involved in a domain form attitudes toward relevant objects differently than people less involved (e.g., Petty and Cacioppo 1986). In particular, highly involved people tend to form attitudes through effortful processes, focusing their thinking on the attributes of the objects, whereas low involvement people form their attitudes through simpler processes, less focused on object attributes. One might therefore suspect that the relatively complex process posited by the ANM is most likely to appear among people highly involved in politics. In contrast, less involved citizens might execute simpler integrative processes, perhaps more along the lines of the SLM. On the other hand, the ANM is thought to describe a basic, behaviorally adaptive, and universal process, so it might apply equally well across the range of involvement.

To assess the generalizability of the ANM across subgroups of respondents, we estimated its parameters separately for people high and low in political involvement,

operationalized in four different ways: voters vs. nonvoters, people who formed their candidate preferences early in a campaign vs. people who formed their preferences late, people high and low in factual political knowledge, and people high and low in education (see the Appendix for information about question wordings and codings). As expected, in every group,  $\alpha_1$  is positive,  $\alpha_2$  is negative, the two exponents are less than one and greater than zero,  $\alpha_1$  is greater in absolute magnitude than  $\alpha_2$ , the favorable beliefs exponent is smaller than the unfavorable beliefs exponent, and the intercept is greater than 50 (see the top half of Table 3). The model explains less variance in attitudes among respondents who were less politically involved (i.e., nonvoters, late deciders, low knowledge, and low education), presumably reflecting the fact that these individuals derived their attitudes less from the attributes of the objects involved, particularly so among late deciders. Nonetheless, even among these people, the ANM is superior to the SLM in describing the origins of attitudes.

**TABLE 3** Parameters of the AMN for Subgroups of Respondents

Year	Parameters					R <sup>2</sup>	N
	$\alpha_1$	$\alpha_2$	m	n	Intercept		
<b>Attitudes toward Candidates</b>							
Non-Voters <sup>a</sup>	17.93 (.72)	-11.74 (.66)	.40 (.03)	.63 (.04)	56.61 (.54)	.44	4,347
Voters	20.45 (.49)	-11.65 (.44)	.36 (.02)	.65 (.03)	55.50 (.42)	.53	8,887
Late Deciders <sup>b</sup>	14.66 (.73)	-7.10 (.67)	.36 (.04)	.79 (.06)	55.12 (.64)	.32	3,282
Early Deciders	21.87 (.43)	-12.77 (.38)	.33 (.01)	.61 (.02)	54.03 (.37)	.58	13,305
Low Knowledge <sup>c</sup>	19.27 (.50)	-12.52 (.46)	.34 (.02)	.54 (.03)	55.33 (.35)	.44	9,043
High Knowledge	20.85 (.47)	-12.19 (.42)	.36 (.02)	.64 (.02)	53.29 (.42)	.57	10,384
Low Education	20.45 (.39)	-13.01 (.36)	.33 (.02)	.54 (.02)	55.42 (.28)	.47	15,798
High Education	19.10 (.44)	-10.47 (.40)	.40 (.02)	.70 (.02)	52.57 (.41)	.53	10,690
<b>Attitudes toward Parties</b>							
Non-Voters <sup>a</sup>	18.34 (.90)	-11.90 (.90)	.34 (.05)	.61 (.07)	56.60 (.49)	.29	2,973
Voters	17.81 (.58)	-13.40 (.56)	.35 (.03)	.53 (.03)	57.34 (.39)	.36	6,511
Late Deciders <sup>b</sup>	10.70 (.88)	-9.70 (.87)	.45 (.07)	.52 (.08)	57.48 (.54)	.19	2,211
Early Deciders	17.65 (.50)	-14.68 (.47)	.37 (.02)	.53 (.03)	56.84 (.35)	.39	9,080
Low Knowledge <sup>c</sup>	17.68 (.57)	-13.20 (.57)	.31 (.03)	.42 (.04)	56.65 (.30)	.28	7,698
High Knowledge	16.52 (.52)	-13.32 (.49)	.41 (.02)	.57 (.03)	56.02 (.39)	.38	7,823
Low Education	19.21 (.51)	-13.58 (.51)	.30 (.03)	.48 (.04)	56.72 (.28)	.31	9,850
High Education	15.02 (.50)	-11.92 (.48)	.45 (.03)	.60 (.03)	55.06 (.36)	.36	7,717

<sup>a</sup>Only respondents interviewed post-election in 1976, 1980, 1984, and 1988 were included in these analyses.

<sup>b</sup>Only respondents interviewed post-election who said they voted were asked about time of decision.

<sup>c</sup>Only respondents interviewed post-election were included in these analyses. Knowledge questions were not included on Forms II, III, or IV of the 1972 questionnaire or in abbreviated post-election telephone interviews in 1984.

Note: Values in parentheses are standard errors.

### Attitudes Toward Political Parties

To further explore the generalizability of the ANM, we estimated its parameters predicting attitudes toward the two major political parties using all the National Election Studies providing the necessary data, from 1980, 1984,

1988, 1992, and 1996. During the pre-election NES interviews in those years, respondents were asked to describe what they liked and disliked about the Democratic and Republican parties and were asked to rate the parties on the feeling thermometer.

The estimated parameters of the SLM were:

$$A = 7.62 (F - U) + 57.47 \quad (8)$$

(.09)            (.15)

( $R^2 = .29$ ,  $N = 17,568$ ,  $SS_{\text{error}} = 1459.54$ ). Estimates of the parameters of the ANM were:

$$A = 17.04 (F)^{.37} - 13.27 (U)^{.54} + 56.36 \quad (9)$$

(.36)    (.02)(.35)    (.02)(.22)

( $R^2 = .33$ ,  $N = 17,568$ ,  $SS_{\text{error}} = 349.36$ ). This model fit significantly better than the SLM ( $F(2,17562) = 360.01$ ,  $p < .001$ ). As expected, the intercepts in both these models are significantly greater than 50 (SLM:  $z = 49.80$ ,  $p < .001$ ; ANM:  $z = 28.91$ ,  $p < .001$ ), the favorable beliefs coefficient is significantly larger than the unfavorable beliefs coefficient ( $z = 7.85$ ,  $p < .001$ ), both exponents are significantly smaller than 1 (favorable beliefs:  $z = 31.50$ ,  $p < .001$ ; unfavorable beliefs:  $z = 23.00$ ,  $p < .001$ ) and significantly larger than 0 (favorable beliefs:  $z = 18.50$ ,  $p < .001$ ; unfavorable beliefs:  $z = 27.00$ ,  $p < .001$ ), and the unfavorable beliefs exponent is significantly larger than the favorable beliefs exponent ( $z = 5.67$ ,  $p < .001$ ).

### Generalization Across Elections and Subgroups of Respondents

When we estimated the ANM for attitudes toward the parties in each election year separately, the results were quite consistent with those shown in Equation (9) (see the bottom half of Table 2). This was also true among respondents high and low in political involvement (see the bottom half of Table 3). Again, the model explains less variance in attitudes among respondents who were less politically involved, particularly among late deciders, suggesting that attitudes were based less upon the attributes of the parties.

### Documenting the Direction of Causality

Although the results thus far document consistent relations of attitudes with favorable and unfavorable beliefs, we cannot be sure from this cross-sectional evidence about the causal process(es) that yielded these relations. Both the SLM and ANM presume that the observed relations reflect the influence of favorable and unfavorable beliefs on attitudes, but it is also possible that attitudes influenced the numbers of favorable and unfavorable beliefs people reported through processes of rationalization

(e.g., Rahn, Krosnick, and Breuning 1994). It seems unlikely that people rationalize through as complex a process as that outlined by the ANM, but it is nonetheless possible in principle.

In order to assess more directly whether favorable beliefs and unfavorable beliefs shaped attitudes, we employed a procedure outlined by Kessler and Greenberg (1981; see also Finkel 1995) and used by others documenting causal direction (e.g., Rahn, Krosnick, and Breuning 1994). Using panel data, we assessed whether favorable and unfavorable beliefs measured at one point in time predicted subsequent changes in attitudes as the ANM proposes. More specifically, we regressed post-election attitudes on pre-election attitudes and the numbers of favorable and unfavorable beliefs people held pre-election. If beliefs predict subsequent changes in attitudes, these associations cannot be due to later attitude change having caused prior beliefs. Thus, we tested whether any derivation occurred (i.e., whether attitudes changed from the pre-election interviews to post-election interviews in a fashion increasing their consistency with the numbers of favorable and unfavorable beliefs reported during the pre-election interviews).

During the 1980, 1984, 1988, 1992, and 1996 NES pre-election interviews, respondents were asked to report their favorable and unfavorable beliefs about the major party presidential candidates, and these respondents reported their attitudes toward the candidates during both the pre-election and post-election interviews. Using these data, we regressed post-election attitudes ( $A_2$ ) on pre-election attitudes ( $A_1$ ) and the numbers of pre-election beliefs ( $F_1$  and  $U_1$ ):

$$A_2 = .55 A_1 + .12 (F_1)^{.58} - .09 (U_1)^{.65} + .26 \quad (10)$$

(.01)    (.01)    (.05)(.01)    (.07)(.01)

( $N = 14,968$ ,  $R^2 = .57$ ).<sup>7</sup> Both favorable and unfavorable beliefs are significant predictors of post-election attitudes (favorable beliefs:  $z = 12.00$ ,  $p < .001$ ; unfavorable beliefs:  $z = 9.00$ ,  $p < .001$ ), suggesting that attitudes were indeed derived from beliefs. As expected, the favorable beliefs coefficient is significantly greater than the unfavorable beliefs coefficient ( $z = 2.14$ ,  $p < .05$ ). Both exponents are significantly smaller than 1 (favorable beliefs:  $z = 8.40$ ,  $p < .01$ ; unfavorable beliefs:  $z = 5.00$ ,  $p < .001$ ) and significantly larger than 0 (favorable beliefs:  $z = 11.60$ ,

<sup>7</sup> We excluded data on attitudes toward Walter Mondale measured in 1984, because the Mondale feeling thermometer question was asked with different sets of preceding items during the pre-election and post-election interviews, introducing the possibility of substantial context effects on judgments, rendering the two waves noncomparable.

$p < .001$ ; unfavorable beliefs:  $z = 9.29$ ,  $p < .001$ ). And the unfavorable beliefs exponent is larger than the favorable beliefs exponent, though this difference is small and not significant ( $z = .91$ , n.s.). All but the last of these patterns replicate our cross-sectional analysis results.

However, a close look at the longitudinal data showed that this discrepancy is due to only two candidates who were relatively unfamiliar to respondents at the time of the relevant pre-election interviews. Our longitudinal analysis is predicated on the assumption that respondents learned relatively little new about a candidate between the pre- and post-election interviews. If so, it would be reasonable to presume that people's beliefs about the candidate remained relatively unchanged, so pre-election beliefs could have yielded subsequent change in attitudes toward the candidate that we could readily measure. If a candidate was unfamiliar to many Americans at the time of the pre-election interviews, though, later learning about him or her could have changed beliefs about the candidate substantially, thus interfering with the longitudinal prediction of attitudes from the belief measurements made during the pre-election interviews. Therefore, the cleanest longitudinal tests of the ANM are afforded by candidates who were well known at the time of the pre-election interviews.

When we conducted the longitudinal analysis using only beliefs about and attitudes toward candidates who were well known pre-campaign, we obtained results that nicely replicate those of our cross-sectional analyses:<sup>8</sup>

$$A_2 = .58 A_1 + .11 (F_1)^{.53} - .08 (U_1)^{.78} + .24 \quad (11)$$

(.01) (.01) (.06)(.01) (.09)(.01)

( $N = 11,209$ ,  $R^2 = .60$ ). Both favorable and unfavorable beliefs are significant predictors of post-election attitudes (favorable beliefs:  $z = 11.0$ ,  $p < .001$ ; unfavorable beliefs:  $z = 9.00$ ,  $p < .001$ ), again suggesting that attitudes were derived from beliefs. The favorable beliefs coefficient is significantly greater than the unfavorable beliefs coefficient ( $z = 2.14$ ,  $p < .05$ ). Both exponents are significantly smaller than 1 (favorable beliefs:  $z = 7.83$ ,  $p < .001$ ; unfavorable beliefs:  $z = 2.44$ ,  $p < .001$ ) and significantly larger than 0 (favorable beliefs:  $z = 8.83$ ,  $p < .001$ ; unfavorable beliefs:  $z = 8.67$ ,  $p < .001$ ). And the unfavorable beliefs exponent is significantly larger than the favorable beliefs exponent ( $z = 2.27$ ,  $p < .05$ ). This analysis there-

fore provides reassuring evidence that the ANM indeed describes the processes by which beliefs about candidates influenced attitudes.

## Turnout

Another way to overcome the ambiguity of cross-sectional analyses is to compare the abilities of the SLM and the ANM to predict behaviors performed after beliefs and attitudes have been measured. In this case, we focused on prediction of voter turnout. If the ANM captures the psychological process by which attitudes toward candidates are formed better than does the SLM, attitudes calculated using the ANM should predict voter turnout better than attitudes calculated using the SLM. And if this turns out to be the case, it cannot have occurred because turnout influenced prior assessments of beliefs.

In doing this analysis, we built upon Rosenstone and Hansen's (1993) finding that the more a citizen prefers one candidate over the other, the more likely the citizen is to turn out, presumably because he or she has more to lose if the undesired candidate should win the election. But we suspected that the impact of attitudes toward candidates might be more complex than described by this hypothesis. A citizen who likes both candidates will presumably be happy no matter which one wins, has little to gain by turning out, and is therefore unlikely to do so, no matter how much he or she prefers one candidate over the other. In contrast, a citizen who likes one candidate and dislikes the other has a lot of incentive to turn out, because he or she will presumably be pleased if the first candidate wins and unhappy if he or she loses. For this citizen, the election poses a threat, and this threat may lead him or her to act by voting (Miller 2000). The stronger a person's preference for a liked candidate over a disliked candidate, the more likely this person is to vote.

It is more difficult to make a prediction about people who dislike both candidates. On the one hand, such citizens presumably perceive the election to pose a substantial threat, which may motivate engagement. But there is nothing these citizens can do to avoid being unhappy with the election's outcome, so disengagement may be the most effective way to minimize disappointment, regardless of how much one candidate is preferred over the other.

To test these hypotheses, we conducted three logistic regressions predicting turnout, including a large set of previously documented predictors of turnout and five additional variables involving attitudes toward the candidates: (1) the absolute value of the difference between at-

<sup>8</sup> We considered candidates to be previously well known if they had been addressed in NES feeling thermometer questions during any year prior to the year in question: Ronald Reagan and Jimmy Carter in 1980, Ronald Reagan in 1984, George H. Bush in 1988, George H. Bush in 1992, and Bill Clinton and Bob Dole in 1996.

titudes toward the Republican and Democratic candidates, (2) a variable coded 1 if the respondent's calculated attitudes toward both candidates were favorable and 0 otherwise, (3) a variable coded 1 if the respondent's calculated attitudes toward both candidates were unfavorable and 0 otherwise, (4) the product of the absolute value of the difference between attitudes toward the two candidates and whether or not attitudes toward both candidates were favorable, and (5) the product of the absolute value of the difference between attitudes toward the two candidates and whether or not attitudes toward both candidates were unfavorable.<sup>9</sup> These five variables permitted testing whether the size of a person's preference for one candidate over the other influenced turnout differently for respondents who liked one candidate and disliked the other, respondents who liked both candidates, and respondents who disliked both candidates.

Each of these five attitude variables was calculated in three different ways, using respondents' feeling thermometer ratings, and using respondents' favorable and unfavorable beliefs to calculate attitudes using the SLM and the ANM (all attitude measures were coded to range from 0 to 1). If the ANM is a more accurate model of attitude formation, the attitude variables calculated from the favorable and unfavorable beliefs using the ANM should predict turnout better than those calculated from favorable and unfavorable beliefs using the SLM. It is harder to predict, however, how the attitude variables calculated using the ANM will compare to the attitude variables computed using respondents' feeling thermometer ratings. One might expect the attitude variables calculated using respondents' feeling thermometer ratings to predict turnout better than attitudes calculated using either the SLM or ANM, because the feeling thermometer ratings are the most direct measures of attitudes. However, there may also be substantial measurement error present in the feeling thermometer ratings because different people interpret the feeling thermometer scale points differently (e.g., Wilcox, Sigelman, and Cook

1989), not all the points on the feeling thermometers are labeled (which compromises reliability; see Krosnick and Berent 1993), and the feeling thermometers offer too many scale points (Krosnick and Fabrigar n.d.).

When the attitude variables were computed using the feeling thermometers, most control variables in the model had significant effects in the expected directions (see column 1 of Table 4). Also, replicating Rosenstone and Hansen's (1993) finding, people were more likely to vote the more they preferred one candidate over the other (see the first row in the first column of Table 4: probit coefficient = .47;  $z = 2.94$ ,  $p < .01$ ). Contrary to our expectations, neither of the interactions was statistically significant (see column 1 rows 4 and 5 of Table 4). Similar results were obtained when the parameters of Equation (3), the SLM, were used to calculate respondents' attitudes toward the candidates using their reports of favorable and unfavorable beliefs (see column 2 of Table 4).

A different story emerged when we used the ANM calculation method shown in Equation (4) instead. For the most part, the results obtained using the ANM (shown in column 3 of Table 4) resemble those generated using the SLM. But here, the interaction of the gap between attitudes toward the two candidates with whether or not attitudes toward both candidates were favorable was statistically significant (see the fourth row of the last column of Table 4: probit coefficient = -1.17,  $z = 2.05$ ,  $p < .05$ ). Moreover, the direction of the interaction was consistent with the proposed greater motivational implications of the avoidance of threats. Among people who disliked one or both candidates, a stronger preference for the preferred candidate yielded greater turnout (probit coefficient = 1.02,  $z = 4.32$ ,  $p < .001$ ). But among people who liked both candidates, the strength of preference for one candidate over the other had no significant effect on turnout (probit coefficient = -.33,  $z = .67$ , n.s.). Thus, the ANM identified a theoretically sensible interaction that the SLM and the feeling thermometers did not.

Furthermore, attitudes calculated using the ANM explained more variance in turnout than did attitudes calculated using the SLM or reported feeling thermometer scores. Compared to a model including the control variables alone, adding the attitude variables calculated using feeling thermometers and the SLM did not significantly improve the fit of the model (change in Pearson goodness-of-fit  $\chi^2_{(5)} = 10.42$ , n.s. and  $\chi^2 = 8.33$ , n.s.), but a model adding the attitude variables calculated using the ANM instead improved the fit of the model significantly and by nearly twice as much (change in Pearson goodness-of-fit  $\chi^2_{(5)} = 18.22$ ,  $p < .001$ ). Therefore, the ANM revealed a complexity in the impact of attitudes not shown by the SLM.

<sup>9</sup>The previously documented predictors of turnout included economic resources (e.g., employment and home ownership), cognitive resources (e.g., education, age, and internal efficacy), social resources (e.g., home ownership and time lived in the community), race, region of residence, involvement in politics (e.g., strength of party identification), and perceptions of the election (e.g., caring about the outcome and the perceived closeness of the major race; Campbell et al. 1960; Milbrath and Goel 1977; Rosenstone and Hansen 1993; Verba and Nie 1972; Weisberg and Grofman 1981).

We treated a respondent as having voted if official records indicated that he or she had voted, and we treated a respondent as having not voted if official records did not indicate that he or she voted. Because turnout was only validated for the 1976, 1980, 1984, and 1988 NESs, 5,599 respondents were included in these analyses.

**TABLE 4** Probit Equations Predicting Voter Turnout

Predictors	Measure of Attitudes		
	Feeling Thermometers	SLM	ANM
Attitude <sub>1</sub> -Attitude <sub>2</sub>	.47** (.16)	.97** (.24)	.80* (.30)
Both positive <sup>a</sup>	.04 (.12)	.00 (.12)	.15 (.14)
Both negative <sup>b</sup>	-.11 (.24)	.11 (.19)	-.12 (.27)
Attitude <sub>1</sub> -Attitude <sub>2</sub>   x both positive	-.66 (.53)	-.95 (.66)	-1.17* (.57)
Attitude <sub>1</sub> -Attitude <sub>2</sub>   x both negative	-.09 (1.38)	-.58 (1.37)	.87 (2.79)
Education	1.34** (.13)	1.28** (.13)	1.34** (.13)
External political efficacy	.55** (.09)	.54** (.09)	.54** (.08)
Internal political efficacy	-.07 (.08)	-.09 (.08)	-.08 (.08)
Age	4.78** (.57)	4.62** (.57)	4.71** (.57)
Age <sup>2</sup>	-4.52** (.73)	-4.15** (.73)	-4.22** (.73)
Black	-.33* (.11)	-.34* (.11)	-.34* (.11)
Mexican-American or Puerto-Rican	-.03 (.15)	-.01 (.15)	-.02 (.15)
Southern	-.69** (.07)	-.68** (.08)	-.69** (.07)
From a border state	-.33** (.12)	-.31** (.12)	-.32* (.12)
Income	.47** (.15)	.46** (.15)	.46** (.15)
Home owner	.59** (.07)	.58** (.07)	.58** (.07)
Years lived in community	.98** (.20)	1.02** (.20)	.99** (.20)
Employed	-.03 (.08)	-.03 (.08)	-.03 (.08)
Unemployed	-.15 (.17)	-.17 (.17)	-.17 (.17)
Party identification strength	.61** (.14)	.63** (.14)	.64** (.14)
Perception of the closeness of election	.11 (.07)	.11 (.07)	.10 (.07)
Contacted by a party	.26** (.08)	.25** (.08)	.26** (.08)
Care about the election	.42** (.07)	.40** (.07)	.43** (.07)
N	5,599	5,599	5,599

\*p &lt; .05 \*\*p &lt; .01

<sup>a</sup>This variable was coded 1 if both attitudes were above 50 (i.e., both were positive) and 0 otherwise.<sup>b</sup>This variable was coded 1 if both attitudes were below 50 (i.e., both were negative) and 0 otherwise.

## Breadth

Although we expected a single unfavorable belief to have more impact than a single favorable belief on attitudes, this did not occur. One potential explanation for this is that the favorable beliefs mentioned by NES respondents who mentioned only one favorable belief may have been broader than the unfavorable beliefs mentioned by NES respondents who mentioned only one unfavorable belief. Breadth of a belief refers to the diversity of characteristics implied by it; broad beliefs encompass many different characteristics of a person (e.g., "He supports wise policies."), whereas very narrow beliefs refer to single characteristics (e.g., "He favors the Brady Bill."). In general, broader beliefs would presumably have more powerful impact on attitudes. If single favorable beliefs were broader than single unfavorable beliefs, this would have inflated the coefficient for favorable beliefs.

McGraw et al. (1996) found that people used broader favorable personality traits and narrower unfavorable personality traits to describe politicians they liked, and that people used broader unfavorable personality traits and narrower favorable personality traits to describe politicians they disliked. If this was true of NES respondents' descriptions of their beliefs about candidates' personality traits and other characteristics, it would introduce a confound in our analyses. In the NES studies we analyzed, 58 percent of the candidate feeling thermometer ratings were above 50, meaning that respondents liked the candidates, whereas only 28 percent were below 50, indicating disliking. Likewise, 56 percent of party feeling thermometer ratings were above 50, and only 25 percent were below 50. McGraw et al.'s (1996) findings therefore imply that the favorable beliefs expressed in these surveys might have been broader on average than the unfavorable beliefs expressed, leading the impact of the former to appear stronger than the apparent impact of the latter.

We therefore set out to conduct an after-the-fact investigation to measure and control for belief breadth in these NES surveys. To do so, we asked 195 adults to rate the breadth of all beliefs the NES respondents mentioned about candidates over the years.<sup>10</sup> Respondents in this study were shown a series of beliefs NES respondents mentioned and told, "For each statement, think of all the behaviors a candidate could perform that would suggest to you that the statement fits the candidate. For some statements, you may be able to think of only one behavior, for others you may be able to think of a few behaviors, and for others you may be able to think of many behaviors.

<sup>10</sup> These respondents were students attending Ohio State University.

Then, decide how DIFFERENT those behaviors are from one another." The respondents were then asked to rate (on a seven-point scale from "extremely similar behaviors" to "extremely different behaviors") the breadth of each belief. Each of the respondents rated a randomly selected one-quarter of the 1,968 beliefs, so approximately fifty people rated each belief. To eliminate bias due to different respondents interpreting the meanings of the rating scale points differently (Ostrom and Upshaw 1968), we divided each respondent's rating of each belief by his or her mean rating of all the beliefs, so the resulting scores for each respondent would have a mean of 1.0. The resulting data had substantial face validity, because beliefs that seemed likely to be broad were rated as being much broader than beliefs that seemed likely to be narrow.<sup>11</sup>

On average, favorable beliefs mentioned by the NES respondents were not broader than the unfavorable beliefs they mentioned (means = 1.03 and 1.05, respectively). In fact, the observed difference in the opposite direction was statistically significant ( $t(23187) = 10.00$ ,  $p < .01$ ). In order to reestimate the parameters of Equations (3), (4), and (10) controlling for belief breadth, we replaced the numbers of favorable and unfavorable beliefs with the total of the breadth ratings of the mentioned favorable beliefs and the total of the breadth ratings of the mentioned unfavorable beliefs, respectively. The resulting parameter estimates did not change meaningfully, reinforcing the apparent validity of the findings reported above. Thus, the evidence that the negativity bias appears only after people have more than one piece of favorable or unfavorable information does not seem to have been the result of differences in the breadth of favorable and unfavorable beliefs.

## Discussion

### Model Comparison

Across a variety of tests, the ANM consistently emerged here as a better descriptor of the process by which citizens formed attitudes toward political agents than the SLM. This was apparent in attitudes toward Presidential candidates and political parties, in cross-sectional associations between beliefs and attitudes, in various subgroups of the electorate differing in political involve-

<sup>11</sup> For example, very broad statements such as "I don't like him." and "He's a bad President." received the highest breadth ratings (1.45 and 1.42, respectively), whereas very narrow statements such as "I agree with his position on the Tennessee Valley Authority." and "He has a good attendance record in Congress." received the lowest breadth ratings (.67 and .70, respectively).

ment, in longitudinal effects of beliefs on subsequent changes in attitudes, and in the prediction of voter turnout. Thus, it appears that favorable and unfavorable beliefs about political agents do not simply balance each other out in a symmetric fashion and combine together in a simple linear way. Rather, asymmetry and nonlinearity appear to be hallmarks of this process.

Interestingly, Kelley and Mirer (1974) themselves noted evidence pointing to flaws in the SLM. These scholars observed that the model's ability to predict vote choices declined as the number of favorable and unfavorable beliefs held by a person increased. In light of the ANM, this finding makes perfect sense: the more beliefs a person holds, the more the predictions of the SLM and the ANM differ, and thus the ANM performs relatively better at explaining attitudes. So the warning signs pointing to inadequacy of the SLM have been in front of us for some time.

Our findings show that the single most common method for analyzing the causes of vote choice is seriously mis-specified. In countless studies, investigators have reported additive linear regression equations predicting candidate preferences and estimated the coefficients either with ordinary least squares or probit techniques (e.g., Abelson et al. 1982; Fiorina 1981; Holbrook 1991; Kinder and Kiewiet 1979; Markus 1982; Miller and Shanks 1996). Such equations do not include the nonlinearities we have documented, nor do they represent the asymmetries we have shown to be operative. Therefore, it is no surprise that these equations explain far from all the variance in citizens' candidate preferences. Furthermore, the regression coefficients generated by these conventional methods are most likely distorted representations of the impact specific considerations had on vote choices in any given election. Future research should therefore attempt to bridge the gap between our findings and the typical analytic approach implemented in most studies of elections.

### Testing Primacy

To test the primacy effect predicted by the ANM, we assessed whether the marginal utility of information declined as the amount of previous information of the same type increased. Our findings in this regard are consistent with a primacy effect, but the decreased marginal utility we observed is also consistent with a very different hypothesis: acquiring new information may have reduced the impact of previously acquired information on attitudes, which would constitute a recency effect that would also yield decreasing marginal utility. Previous studies of attitude formation provide strong evidence of

primacy effects in attitude formation (Anderson 1965b), lending credence to our belief that the decreasing marginal utility we observed is the result of primacy. But to test these two competing accounts, we would need to gauge the effect of each favorable and unfavorable belief after it is acquired. This would be practically impossible in a field study, but it could be done in a complex laboratory experiment, and we look forward to seeing such evidence in the future.

### Other Tests of the Negativity Bias and the Positivity Offset

Our research is the first to properly test the negativity bias in forming attitudes toward political candidates by measuring the impact of favorable and unfavorable beliefs independently. Like us, Lau (1982) explored such a negativity bias using the NES "likes and dislikes" questions, but his measures of positivity and negativity confounded the two constructs. A measure of positivity was calculated by subtracting the number of unfavorable beliefs from the number of favorable beliefs and assigning a value of zero to respondents with more unfavorable beliefs than favorable ones. A measure of negativity was calculated by subtracting the number of favorable beliefs from the number of unfavorable beliefs and assigning a value of zero to respondents with more favorable beliefs than unfavorable ones. These measures of positivity and negativity are problematic because they are net, not gross measures of favorable and unfavorable beliefs (respondents could only be favorable or unfavorable about a candidate, not both).

Klein (1991, 1996) also purportedly tested for a negativity bias by examining respondent ratings of how well each of a series of favorable personality trait terms described candidates, on a scale ranging from "not well at all" to "extremely well." Traits on which a candidate was rated below the mean of all the trait ratings were considered "negative" traits, and Klein compared the impact of "negative" traits with the impact of other traits on attitudes toward candidates. This measure of negativity is problematic because low ratings could simply have reflected the absence of a positive trait rather than the presence of a negative one. Thus, our research is the first in which positivity and negativity have been properly gauged, and we found a more complex negativity effect than Lau (1982) or Klein (1991, 1996) uncovered.

A study by Lau and Sears (1979), showing that people are generally inclined to evaluate politicians favorably, might at first appear to offer confirmation of the positivity offset hypothesis. However, the positivity offset hypothesis refers specifically to situations in which a perceiver has no information at all about a target. Lau and



Sears (1979) focused on evaluations of politicians about whom respondents had a great deal of information, so their study did not test the positivity offset. Thus, our evidence is the first of relevance on this matter as well.

### **Convergence with Other Evidence**

Confidence in our findings is enhanced by their convergence with recent evidence generated using a very different method. Taber and Steenbergen (1995) conducted an experiment in which college undergraduates were given information about two hypothetical candidates for Congress and were asked to choose between them. Taber and Steenbergen (1995) then compared how well various models of decision processes could account for the vote choices respondents expressed. Two of the models compared were the Kelley-Mirer model (presumably comparable to our SLM) and a model based on prospect theory (including the asymmetry and nonlinearity components of the ANM). These investigators did not report a direct test comparing the predictive validity of these two models, but a more global test they reported suggested that they did not differ.

However, a close look at the goodness-of-fit statistics Taber and Steenbergen (1995) reported reveals that the prospect theory model was consistently better at explaining vote choices than the Kelley-Mirer model (which is in line with our findings). Furthermore, this difference was equally apparent among respondents low and high in political sophistication (as we found) and was especially large when respondents were given large amounts of information about the candidates (as would occur in a real election). Because Taber and Steenbergen (1995) did not explain exactly how they computed their measures of favorability and unfavorability toward each candidate, it is impossible to know how their approach lines up with ours. But the apparent convergence of their findings (based on an experiment with hypothetical candidates and very brief information presentation) with ours (involving general population samples, real candidates, and election campaigns unfolding over periods of months) is reassuring.

### **Rationalization vs. Derivation**

Our longitudinal analyses suggest that attitudes toward presidential candidates were at least partly derived from beliefs about those candidates. This result might appear to conflict with Rahn, Krosnick, and Breuning's (1994) conclusion that Ohio residents' reports of the reasons for their evaluations of 1990 gubernatorial candidates were almost completely rationalizations, rather than being the

real roots of those attitudes. In fact, however, Rahn, Krosnick, and Breuning's (1994) analytic method led them to understate the extent of derivation that occurred: when we obtained Rahn, Krosnick, and Breuning's (1994) data and reanalyzed them, we found evidence of substantial and reliable derivation when we examined attitudes toward each of the two gubernatorial candidates individually (in line with the present paper's analytic approach), rather than combining the two candidates in a single analysis predicting choice between them (as Rahn, Krosnick, and Breuning 1994, had done). Therefore, although rationalization of attitudes with beliefs appears to be quite a real phenomenon, derivation of attitudes from beliefs occurs as well.

### **The Impact of Negative Campaigning**

It is interesting to note that evidence of a negativity bias appeared in our analyses of the NES data despite a confound operating to suppress the negativity effect, involving the order in which candidates typically provide favorable and unfavorable information to citizens during a campaign. Most often, campaigns begin with candidates positively building their own credibility and offering solutions to problems, whereas campaigns typically end with candidates attacking their opponents (Devlin 1989; Greenblatt 1998; Hagstrom and Guskind 1986). Consistent with this logic, being interviewed closer to election day was associated with an increase in the number of favorable beliefs NES respondents expressed (unstandardized regression coefficient =  $-.004$ , SE =  $.0007$ ,  $t(27243) = 4.93$ ,  $p < .01$ ), but was associated with an even larger increase in the number of unfavorable beliefs expressed (unstandardized regression coefficient =  $.007$ , S.E. =  $.001$ ,  $t(27243) = 8.36$ ,  $p < .001$ ;  $z$ -test for comparison =  $2.47$ ,  $p < .05$ ). This suggests that unfavorable beliefs are usually acquired later in campaigns than favorable beliefs. If, as we hypothesize and previous evidence suggests (e.g., Anderson 1965b), information learned early about a person has more impact on attitudes toward him or her than information learned later, late development of unfavorable beliefs would have minimized their apparent impact if primacy effects accounted for the decreasing marginal utility of new information. And if people generalize from candidates to the political parties they represent, this could explain the wrinkle in the negativity bias in evaluations of parties as well.

### **Nuance in the Turnout Calculus**

The ANM uncovered evidence of nuance in decisions about whether to turn out to vote that was not apparent

with the SLM's portrayal of attitudes. Specifically, it appears that people who disliked at least one of the candidates were more motivated to turn out as the strength of their preferences for one candidate over the other increased. These were people who had something to lose by an undesirable outcome, and the more substantial these potential losses, the more motivated these people were to turn out. In contrast, among people who had only something to gain (i.e., because they liked both candidates), stronger preference for one candidate over the other did not motivate increased turnout. Not only does this finding reinforce confidence in the ANM, but it also adds to our understanding of the processes by which turnout decisions are made, suggesting a more nuanced process driven by perceived threats.

This finding suggests a possible contributor to changes in voter turnout in U.S. presidential elections. Although turnout was fairly constant between 1952 and 1960, it declined steadily between 1960 and 1988, increased slightly in 1992, and declined again in 1996 (Germond and Witcover 1996; Teixeira 1992). Although this general decline cannot be explained by the many predictors of turnout that are fairly stable across presidential elections, the decline may be due partly to changes in the age distribution of Americans, declining political efficacy, less exposure to newspapers, and reduced identification with political parties (Abramson and Aldrich 1982; Lipset and Schneider 1987; Shaffer 1981). But attitudes toward candidates may also have shifted in ways that may have exacerbated the decline as well. Among respondents who had unfavorable attitudes toward one or both candidates (i.e., those among whom the gap between predicted attitudes toward the two presidential candidates had an effect on turnout), the size of the gap declined between 1952 and 1996 ( $b = -.0004$ ,  $S.E. = .002$ ,  $p < .01$ ), which Table 4 suggests would yield declining turnout. That is, these people may be less likely to vote now because their attitudes toward the competitors are more similar than those attitudes were years ago.

### Failure of the Feeling Thermometers

Whereas the ANM revealed the nuanced effect of attitudes on turnout, the feeling thermometers did not. This is probably because of substantial measurement error present in the feeling thermometer ratings. Different people interpret the feeling-thermometer scale differently, creating systematic measurement error (e.g., Wilcox, Sigelman, and Cook 1989), and substantial random error most likely occurs because of incomplete verbal labeling of points on the scale (Krosnick and Berent 1993) and too many scale points compromising clear

meaning (Krosnick and Fabrigar n.d.). The ANM measure of attitudes is likely to have much less of both random and systematic error, yielding more reliable parameter estimates.

### The Declining Positivity Offset

Although we found that the parameters of the ANM have been remarkably consistent since 1972, an interesting trend appeared in one of the model's parameters: the intercept. As shown in the top half of Table 2, the intercept in models predicting attitudes toward candidates increased from 1972 to 1976 and decreased until it hit bottom in 1992 and stayed about the same in 1996. The same decline is apparent in the intercept in the model of attitudes toward parties (see the bottom half of Table 2). For both types of attitudes, OLS regressions showed that the year of the study was significantly and negatively related to the attitudes of respondents who reported no favorable or unfavorable beliefs: these attitudes became more negative over time (candidates:  $b = -.18$ ,  $SE = .04$ ,  $p < .01$ ; parties:  $b = -.15$ ,  $SE = .05$ ,  $p = .001$ ). Given trends in American political attitudes and behavior over these years that suggest decreasing positivity toward these political agents (e.g., Ansolabehere et al. 1994; Teixeira 1992; Wattenberg, 1984), the decrease in the positivity offset is to be expected. Given the increasing negativity towards politicians and politics in general, it is striking that we find the positivity offset at all in recent elections.

### Conclusion

Although simple models of political attitude formation are appealing because of their parsimony, our research demonstrates that the complexity of the ANM adds to our understanding of and our ability to predict attitudes toward both individual political actors and parties. The ANM is a general model of evaluative processes developed across behavioral domains, and it turns out to contribute substantially to our understanding of voters' attitudes toward presidential candidates and turnout behavior as well. This suggests that contemporary political processes may be shaped by cognitive processes that were adaptive for survival long ago.

The ANM's complex account of how attitudes are formed offers new views of campaigns' impact and the forces shaping popular political action. And there is every reason to believe that the evaluative processes documented here do not apply only to voters and elections. Indeed, any analysis of political attitude formation is likely to benefit from consideration of the issues raised

here and the processes our analyses documented. Whether one is interested in the preferences of a Secretary of State or of a guerilla terrorist or of an autocratic dictator, understanding processes of attitude formation and change and the behavioral consequences of attitudes will most likely be greater if we recognize initial optimism, asymmetry, and nonlinearity. Thus, it appears, the psychological processes governing political evaluation are not so "simple" (Kelley and Mirer 1974) after all.

*Manuscript submitted July 14, 1999.*

*Final manuscript received March 21, 2001.*

## Appendix Measures and Coding

**Candidate Favorable Beliefs:** (Coding: Number of favorable beliefs from 0 to 5); Variable numbers: 1972: v39, v43; 1976: v3112-3116, v3124-v3128; 1980: v102-v106, v78-v82; 1984: v94-v98, v82-v86; 1988: v116-v120, v104-v108; 1992: v3122-v3126, v3110-v3114; 1996: v960206-v960210, v960218-v960222.

**Candidate Unfavorable Beliefs:** (Coding: Number of unfavorable beliefs from 0 to 5); Variable numbers: 1972: v41, v45; 1976: v3118-v3122, v3130-v3134; 1980: v108-v112, v84-v88; 1984: v100-104, v88-v92; 1988: v122-v126, v110-v114; 1992: v3128-v3132, v3116-v3120; 1996: v960212-v960216, v960224-v960228.

**Candidate Feeling Thermometers:** Variable numbers: 1972: v254, v255; 1976: v3296, v3299; 1980: v154, v155; 1984: v301, v290; 1988: v155, v154; 1992: v3306, v3305; 1996: v960272, v960273.

**Party Favorable Beliefs:** (Coding: Number of favorable beliefs from 0 to 5); Variable numbers: 1980: v173-v177, v185-v189; 1984: v267-v271, v279-v283; 1984: v183-v187, v195-v199; 1992: v3402-v3406, v3414-v3418; 1996: v960326-v960331, v960314-v960318.

**Party Unfavorable Beliefs:** (Coding: Number of unfavorable beliefs from 0 to 5); Variable numbers: 1980: v179-v183, v191-v195; 1984: v273-v277, v285-v289; 1988: v189-v193, v201-v205; 1992: v3408-v3412, v3420-v3424; 1996: v960333-v960336, v960320-v960324.

**Party Feeling Thermometers:** Variable numbers: 1980: v168, v169; 1984: v758, v759; 1988: v164, v165; 1992: v3317, v3318; 1996: v960292, v960293.

**Political Knowledge:** (Coding: Percent of questions correct)

*House majority before the election:* (Coding: 0 if incorrect and 1 if correct); Variable numbers: 1972: v950; 1976: v3683; 1980: v1028; 1984: v1006; 1988: v878; 1992: v5951; 1996: v961072.

*Senate majority before the election:* (Coding: 0 if incorrect and 1 if correct); Variable numbers: 1984: v1008; 1988: v879; 1992: v5952; 1996: v961073.

*House members elected:* (Coding: 0 if incorrect and 1 if correct); Variable numbers: 1972: v951; 1976: v3684; 1980: v1029; 1984: v1007.

*Party Ideology:* (Coding: 0 if incorrect and 1 if correct); Variable numbers: 1972: v500; 1976: v3194; 1984: v874, v875; 1988: v810, v811; 1992: v5914, v5915.

**Voter Turnout:** (Coding: 0 if official records showed that a respondent did not vote and 1 if official records showed that he or she did vote); Variable numbers: 1976: v5002, v5012; 1980: v1207; 1984: v1121, v1132; 1988: v1148.

**Time of Vote Choice Decision:** (Coding: 0 if a respondent decided before the last two weeks of the campaign who he or she would vote for in the presidential election and 1 if he or she decided during the last two weeks of the campaign); Variable numbers: 1972: v479; 1976: v3666; 1980: v996; 1984: v790; 1988: v765; 1992: v5611; 1996: v961084.

**External Political Efficacy:** (Coding: Responses to each question were coded 0 if agree, 1 if disagree, .5 if missing or don't know and the two items were averaged); Variable numbers: 1972: v272, v269; 1976: v3818, v3815; 1980: v1033, v1030; 1984: v313, v312; 1988: v938, v937; 1992: v6103, v6102; 1996: v961244, v960568.

**Internal Political Efficacy:** (Coding: 0 if agree, 1 if disagree, .5 if missing or don't know); Variable numbers: 1972: v271; 1976: v3817; 1980: v1032; 1984: v314; 1984: v939; 1992: v6104; 1996: v961246.

**Party Identification Strength:** (Coding: 0 if independent or apolitical, .33 if independent leaning towards a party, .5 if don't know or missing, .67 if weak partisan, 1 if strong partisan); Variable numbers: 1972: v1404; 1976: v3174; 1980: v266; 1984: v318; 1988: v274; 1992: v3634; 1996: v960420.

**Perception of Election Closeness:** (Coding: 0 if respondent thinks one candidate will win by quite a bit, 1 if he or she thinks the race will be close, .5 if missing); Variable numbers: 1972: v26; 1976: v3027; 1980: v55; 1984: v77; 1988: v99; 1992: v3103; 1996: v960382.

**Contacted by Political Party:** (Coding: 0 if not contacted, 1 if contacted); Variable numbers: 1972: v466, v467; 1976: v3539, v3540; 1980: v785, v786; 1984: v812, v813; 1988: v820, v821; 1992: v5801, v5802; 1996: v961162, v961163.

**Care Which Party Wins the Presidential Election:** (Coding: 0 if don't care very much, 1 if care a good deal, .5 if missing); Variable numbers: 1972: v29; 1976: v3030; 1980: v61; 1984: v80; 1988: v102; 1992: v3106; 1996: v960202

**Verbosity:** (Coding: 0 if no problems listed, .5 if one problem listed, 1 if more than one problem listed); Variable numbers: 1972: v547; 1976: v3688; 1980: v978; 1984: v992; 1988: v816; 1992: v325; 1996: v961140.

**Gender:** (Coding: 0 if female, 1 if male); Variable numbers: 1972: v424; 1976: v3512; 1980: v720; 1984: v707; 1988: v413; 1992: v4201; 1996: v960066.

**Education:** (Coding: 0 if 8 grades or less, .25 if 9-12 grades with no diploma or equivalency, .50 if 12 grades, diploma, or equivalency, .75 if some college, 1 if college degree and/or advanced degree); Variable numbers: 1972: v300; 1976: v3389; 1980: v436; 1984: v438; 1988: v422; 1992: v3908; 1996: v960610.

**Age:** (Coding: Age in years recoded to range from 0 to 1); Variable numbers: 1972: v294; 1976: v3369; 1980: v408; 1984: v529; 1988: v417; 1992: v3903; 1996: v960605.

**Income:** (Coding: 0 if 0-16th percentile, .25 if 17th-33rd percentile, .5 if 34th-67th percentile, .75 if 68th-95th percentile, 1 if 96th-100th percentile. Missing data were coded .5); Variable numbers: 1972: v420; 1976: v3507; 1980: v686; 1984: v680; 1988: v520; 1992: v4104; 1996: v960701.

**Race:** (Coding: 1 if African-American, 0 otherwise); Variable numbers: 1972: v435; 1976: v3513; 1980: v721; 1984: v708; 1988: v412; 1992: v4202; 1996: v96067.

**Mexican-American and Puerto Rican:** (Coding: 1 if Mexican-American or Puerto Rican, 0 otherwise, and .5 if missing); Variable numbers: 1980: v722; 1984: v709; 1988: v540, v541; 1992: v4122-v4123; 1996: v960708, v960709.

**Southern:** (Coding: 1 if the respondent lived in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, or Virginia, 0 otherwise); Variable numbers: 1972: v4; 1976: v3005; 1980: v2364; 1984: v9; 1988: v8; 1992: v3014; 1996: v960108.

**From a Border State:** (Coding: 1 if the respondent lived in Missouri, Kentucky, Maryland, Oklahoma, or West Virginia, 0 otherwise); Variable numbers: 1972: v4; 1976: v3005; 1980: v2364; 1984: v9; 1988: v8; 1992: v3014; 1996: v960108.

**Home Owner:** (Coding: 0 if not home owner, 1 if an owner); Variable numbers: 1972: v421; 1976: v3509; 1980: v719; 1984: v706; 1988: v552; 1992: v4135; 1996: v960714.

**Years in Community:** (Coding: number of years rescaled to range from 0 to 1); Variable numbers: 1972: v419; 1976: v3502; 1980: v714; 1984: v702; 1988: v548; 1992: v4130; 1996: v960712.

**Employed:** (Coding: 1 if employed, 0 otherwise); Variable numbers: 1972: v306; 1976: v3409; 1980: v515; 1984: v457; 1988: v429; 1992: v3915; 1996: v960616.

**Unemployed:** (Coding: 1 if unemployed, 0 otherwise); Variable numbers: 1972: v306; 1976: v3409; 1980: v515; 1984: v457; 1988: v429; 1992: v3915; 1996: v960616.

**Urban Residence:** (Coding: 1 if central city, .5 if suburban area, and 0 if rural, small town, or outlying and adjacent area); Variable numbers: 1972: v12; 1976: v3018; 1980: v21; 1984: v19; 1988: v22; 1992: v3067; 1996: v960118.

Note: Data source: National Election Studies 1972, 1976, 1980, 1984, 1988, 1992, and 1996 and the 1948-1996 Cumu-

lative NES Data File. All data and specific question wordings are available at <http://www.umich.edu/~nes/>.

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