

**ADVANTAGES AND DISADVANTAGES OF COGNITIVE HEURISTICS
IN POLITICAL DECISION MAKING**

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Abstract

This paper challenges the often untested assumption that cognitive “heuristics” improve the decision making abilities of everyday voters. The potential benefits and costs of five common political heuristics are discussed. A new dynamic process tracing methodology is employed to *directly observe* the use of these five heuristics by voters in a mock presidential election campaign. We find that cognitive heuristics are at times employed by almost all voters, and that they are particularly likely to be used when the choice situation facing voters is complex. A hypothesized interaction between political sophistication and heuristic use on the *quality* of decision making is obtained across several different experiments, however. As predicted, heuristic use generally *increases* the probability of a correct vote by political experts but *decreases* the probability of a correct vote by novices. A situation in which experts can be led astray by heuristic use is also illustrated. Discussion focuses on the implications of these findings for strategies to increase input from under-represented groups into the political process.

Advantages and Disadvantages of Cognitive Heuristics in Political Decision Making

The “cognitive revolution” may not have revolutionized research in political science to the extent it has in psychology, but it did provide a pat answer to one of the most troubling and persistent questions in the field: how a public that is notoriously uninterested and largely “innocent” of political matters can provide any control over public policy. The widespread ignorance of the general public about all but the most highly salient political events and actors is one of the best documented facts in all of the social sciences (e.g., Converse, 1975; Delli Carpini & Keeter, 1995; Kinder & Sears, 1985). While almost everyone in the U.S. knows who the President is, barely half of the public can name even the most prominent members of the cabinet, and only a third can name their two senators or their representative in Congress.¹ Bare majorities know the simplest facts about how government works, and fewer still hold "real" attitudes toward even the most important political issues of the day (Converse, 1964).

Yet this widespread ignorance flies in the face of what is required of citizens by classic democratic theory, which assumes that an informed and attentive public is necessary for democracy to work effectively. The problem is that democracy seems to be working pretty well, despite the “hands off” approach of most of its citizens. Lau and Redlawsk (1997) estimate that in recent U.S. presidential elections, about 75% of the voting public (which admittedly is barely half of the eligible electorate) voted “correctly,” by which they mean “in accordance with what their fully informed preferences would be.” And if we look not at individual opinions but at “aggregate” public opinion, that opinion appears far more stable and reasonable than the “minimalist” view of public opinion would suggest (Page & Shapiro, 1989).

These seemingly contradictory findings are typically reconciled in one of two ways.

Aggregate opinion can be much more stable and apparently “rational” than individual opinions, as long as error in individual opinions is assumed to be random (see Miller, 1986 Wittman, 1989). Even large proportions of random error “cancel out” in the aggregate, resulting in fairly efficient “collective choices.” The benefits of aggregate decision making disappear once nonrandom error is introduced, however (Althaus, 1998). Well known biases in both what gets reported in the press (e.g., Gans, 1979; Patterson, 1980) and how people selectively perceive political information (Graber, 1984; Kinder & Sears, 1985) means that a great deal of the error in individual opinions must be *nonrandom*.

The second, and in our opinion, more compelling way that widespread political ignorance can be reconciled with the view that democracies work reasonably well is by referring to the psychological literature on “cognitive heuristics” (e.g., Kahneman, Slovic, & Tversky, 1982; Nisbett & Ross, 1980). This literature is predicated on the view of humans as “limited information processors” or “cognitive misers” (Fiske & Taylor, 1991; Lau & Sears, 1986; Simon, 1957, 1985) who have become quite adept at applying a variety of information “shortcuts” to make reasonable decisions with minimal cognitive effort in all aspects of their lives. Indeed, one of the reasons this line of argument is so compelling is that it explains the low levels of political information to begin with: it is not just in politics that people are faced with making decisions with far less than full information, and it is only reasonable to assume that people will apply to politics the same information shortcuts they have learned to use throughout life (see also Downs, 1957).

This line of argument presumes two essential points. The first is that just about everyone can (and does) employ cognitive shortcuts in thinking about politics – that is, heuristic use is not limited to political experts, say, or any other nonrepresentative sample of the public – just as

everyone must at times rely upon cognitive heuristics to comprehend nonpolitical aspects of their lives. The second point is that heuristic use at least partially *compensates for* a lack of knowledge about and attention to politics, so that citizens who are largely unaware of events in Washington nonetheless can make reasonably accurate political judgments. This view is so pervasive now in political science that we could probably refer to it as the new conventional wisdom.

As Bartels (1996) warns, however, it is far easier to *assume* that information shortcuts allow uninformed voters to act as if they were fully informed, than to demonstrate that in fact they do (see also Kuklinski and Quirk, 2000, for a recent critique of this literature.). Indeed, it is far easier to assume that voters use cognitive heuristics in the first place than to carefully define and actually demonstrate their use. In some real sense, “low information rationality” (Popkin, 1991) has become a catch-all term, a *verbal* solution to tricky analytic problems that is consistent with certain stylized facts about the electorate, a verbal solution which allows researchers to move on to other problems they find more tractable (see also Sniderman, 1993). Bartels’ (1996) recent demonstration of very real and politically consequential effects of information *per se* on the political preferences of otherwise similar individuals illustrates the dangers of merely assuming that cognitive shortcuts somehow overcome most of the problems of cognitive limitations and political ignorance. Bartels’ findings should also remind us of a possible liability of cognitive heuristics, one emphasized much more by psychologists than by political scientists: Heuristics can sometimes introduce serious *bias*, along with cognitive efficiency, into decision making.

Believing that information matters is not inconsistent with believing that cognitive heuristics also matter, however. While we should not simply assume that cognitive heuristics are

used (or are used effectively) by everyone, they may nonetheless be an important part of the decision making processes of most voters. Heuristics may even improve the decision making capabilities of some voters in some situations but hinder the capabilities of others. The trick is not assuming or guessing, but providing hard evidence. The proof, as they say, is in the pudding.

The remainder of this paper is divided in four sections. The first will carefully define five cognitive heuristics that are widely used by voters during an election. By “heuristics,” we mean problem solving strategies (often employed automatically or unconsciously) which serve to “keep the information processing demands of the task within bounds” (Abelson & Levi, 1985, p 255). The reader should not expect any surprising “discoveries” here, for none of these heuristics will be new to students of voting behavior. Rather, discussion will focus on the extent to which various familiar influences on the vote decision act as heuristics, as cognitive shortcuts, the ways they provide cognitive “savings,” and how their use might result in biased decision making.

Then we will present a relatively new research technique, a “dynamic process tracing methodology,” that is ideally suited for studying information processing and decision making during an election. Next, a series of experiments that we have conducted using this technique will be briefly described. Data from several of these experiments will then be used to address two major empirical questions: (1) What are the individual and contextual determinants of heuristic use? and (2) Does the use of heuristics affect (without prejudging whether it improves or hinders) the quality of political decision making? Our own expectations are expressed in the guise of formal hypotheses. The final section of the paper will summarize what we have learned, try to place it in the context of related work within political science and psychology, and set out a research agenda for the future.

Five Common Cognitive Heuristics Employed by Voters

Political scientists have considered a number of different heuristics that citizens can employ to help make sense of politics (Brady & Sniderman, 1985; Hamill, Lodge, & Blake, 1985; Iyengar, 1990; Jervis, 1986; Lodge & Hamill, 1986; Lupia, 1994; Ottati, 1990; Ottati, Fishbein, & Middlestadt, 1988; Scholz, 1998; Sniderman, Brody, & Tetlock, 1991; Sniderman, Hagen, Tetlock, & Brady, 1986). We have grouped these into five major categories. The first and perhaps most important political heuristic is relying on a candidate's *party* affiliation (Lodge & Hamill, 1986; Rahn, 1993); a closely related heuristic is relying on a candidate's *ideology* for cognitive savings (Conover & Feldman, 1986, 1989; Hamill et al., 1985; Sniderman et al., 1986). Party and ideological stereotypes or schemata are among the richest and most widely shared in American politics. If the salient characteristics of a particular politician are consistent with or representative of the prototypic Republican, say, then voters may readily infer that she is for a strong defense, low taxes, against government intervention in the economy, against abortion, and so on; and will probably have a readily-available affective response (what Fiske, 1986, calls a schema-based affective response) to the party label. Relying on stereotypes or schemata provide an obvious cognitive saving, to the extent that particular attributes (e.g., issue stands) are assumed "by default" rather than learned individually in each specific instance. They can also lead to obvious biases or errors, most dramatically when a particular candidate is mistakenly categorized as liberal when he is really moderate, say, but more subtly (and probably more frequently) when a general categorization is more or less correct but the presumed default values are not true in all instances (e.g., a pro-choice Republican like Governor Whitman of New Jersey). Although these two heuristics are quite similar, party cues are somewhat simpler to grasp, and noticeably more prevalent on the American political scene. For theoretical reasons it

will be convenient to treat them as distinct.²

Endorsements are another type of political information that has obvious heuristic value. In contrast to carefully considering each candidate's stands on all policies that affect women in a particular election, say, a voter could instead simply learn a relevant interest group's endorsement (like NOW) as a summary of all of the difficult candidate- and issue-specific information processing. In essence, voters who rely on endorsements defer the tough cognitive effort to trusted others. All that is necessary is to learn the candidate endorsed by a group, and one's own attitude toward the endorsing group, and an obvious and cognitively-efficient inference can be made (see Brady & Sniderman, 1985; Sniderman et al., 1991). The more candidates in an election, and the larger the number of issues that should be considered, the greater the cognitive savings. Potential biases or errors in influence are introduced when the reason for the endorsement is different from what the voter expects, or when the actual candidate endorsed is unclear. Although we have no examples of them in our experiments, exactly the same cognitively efficiency is gained when voters rely on the endorsements or recommendations of respected individuals like former party leaders, prominent politicians or political commentators, or the editorial boards of trusted newspapers (see Carmines & Kuklinski, 1990; Mondak, 1993; Sniderman et al., 1986, 1991).³

Although it is typical to derogue political polls as merely "horse race" information, poll results provide another very important type of cognitive savings. Here the heuristic cues are coming from the electorate as a whole rather than a particular subsample of the electorate, and as such provide less specific information. But the information that is provided can produce tremendous reductions in cognitive efforts. Polls provide "*viability*" information, and particularly early in the primary season when there are typically many candidates competing for

a nomination, polls can help the voter eliminate several alternatives from consideration. Reducing the choice set from four candidates to two, say, immediately provides a 50% reduction in the amount of information that must be processed. Seeing a candidate leading in the polls provides a type of "consensus information" that could motivate a voter who had previously rejected or ignored a candidate to more closely consider that candidate (McKelvey & Ordeshook, 1985; Mutz, 1992). Errors can occur, however, if one candidate is ahead in the polls, and a brief consideration of this candidate proves him to be "satisfactory" (Simon, 1957). In such cases voters might be willing to support this candidate and refrain from further political information processing, thus never actually locating the "best" candidate for them.

The final political heuristic to be considered here is possibly the most important (or at least most frequently employed): *candidate appearance*. This heuristic is so important because it is not restricted to the political realm but is used in all aspects of our social lives. Visual images are so pervasive in the social world that researchers rarely consider their heuristic value. A single picture or image of a candidate provides a tremendous amount of information about that candidate, including gender, race, and age, and often general "likableness," which immediately brings many social stereotypes into play (Riggle, Ottati, Wyer, Kuklinski, & Schwartz, 1992).⁴ Visual images can also trigger emotions, which can have great impact on candidate evaluation (Marcus, 1988; Marcus & MacKuen, 1993). People who know absolutely nothing about politics nonetheless know a great deal about other people, and make social judgments of all types with these social stereotypes with great cognitive efficiency (Rosenberg, Kahn, & Tran, 1991). Moreover, most people have schemas or stereotypes for political leaders (Miller, Wattenberg, & Malanchuk, 1986), just as they do for the political parties, and thus Kahneman and Tversky's (1972) representativeness heuristic can easily come into play. Of course one can legitimately

question the appropriateness or reliability of making vote decisions on the basis of such “person” judgments, and when certain images become disproportionately available (e.g., Bush getting sick in Japan, Dukakis riding around in a tank), even otherwise reliable person judgments could be mistaken.

Hypotheses

The growing conventional wisdom within political science suggests that cognitive heuristics are used more or less effectively by virtually everyone to help them “tame the tide” (Graber, 1984) of political information. Three primary hypotheses test this conventional wisdom and shape the analyses to follow. To begin with, and consistent with the conventional view, we expect most voters to employ at least some of the political heuristics identified above in trying to make sense of a political campaign and decide how to vote. Cognitive heuristics are made necessary by severe limitations in human information processing. This “prediction” seems so noncontroversial that we will not unduly glorify it by calling it a hypothesis. We will, however, be presenting a new method for determining or “observing” heuristic use, and we will examine our new measure in light of this baseline prediction.

Just because everyone uses some cognitive heuristics does not mean that everyone uses all of them, or uses all of them equally effectively. We will examine a variety of individual difference factors as predictors of heuristic use, the most theoretically interesting of which is political sophistication or expertise. Sniderman et al (1991, pp 24-25; see also Brady & Sniderman, 1985) clearly predict an interaction between political sophistication and the use of a “likability” heuristic (similar to our endorsement heuristic), on the one hand, and the use of abstract ideology (part of our political schemata heuristic), on the other. According to Sniderman et al., use of these particular heuristics is limited to the more sophisticated portion of

the public. Other common heuristics (viability, and certainly candidate appearance) are less likely to be related to political sophistication, however, given the pervasiveness of “horserace” information during major elections and the importance of various person perception mechanisms in all aspects of our lives. Thus our first hypothesis states that virtually all voters employ some common political heuristics during political campaigns. Consequently, individual difference factors should not be strongly related to their use, with the exception of political sophistication. Sophistication should be related to the use of certain cognitive heuristics in political decision making, particularly the Ideological Schema heuristic and the Endorsement heuristic.

Situational or contextual factors should also influence heuristic use. Because heuristics provide cognitive efficiency, they should be relied upon more heavily in more cognitively complex situations, and/or for decisions that involve more difficult choices. Bodenhausen and Wyer (1985), for example, find that stereotypes (similar to our two political schema heuristics) are more likely to be employed in complex judgment tasks (see also Bodenhausen & Lichtenstein, 1987), and Abelson and Levi (1985) provide numerous examples of “informational biases that serve a simplifying function ... [being] amplified under overload conditions” (p. 287). When a choice is relatively easy, on the other hand, there is less need to use cognitive shortcuts. Hence our second hypothesis suggests the more complex the information environment, and the more difficult the choice, the more voters should rely on political heuristics, all else equal.

Most importantly, we hypothesize that the use of cognitive heuristics generally will be associated with higher quality decisions. Our reasoning is simple: if heuristics did not “work,” at least most of the time, they would not be developed and utilized. Somewhat paradoxically, however, we expect heuristic use to be *most* efficacious for political experts. This is paradoxical

because if heuristics serve to compensate of a lack of knowledge, they should be less necessary for the politically sophisticated. But as Sniderman et al. put it, the “comparative advantage [of experts] is not that they have a stupendous amount of knowledge, but that they know how to get the most out of the knowledge they do possess” (1991, p.24). In other words, not only will experts be more likely to *employ* certain cognitive heuristics, but they should also be more likely to employ them *appropriately*. Thus our third hypothesis suggests that the use of cognitive heuristics will interact with political sophistication to predict higher quality decisions. In general, the decision making of relative experts will benefit most from political heuristic use.

Method

We have developed a new technique for studying political information processing, which we call a *dynamic processing tracing* methodology (see Lau, 1995; Lau & Redlawsk, 1997, in press; Redlawsk, 2001a). Our technique is a revision of the classic "information board" developed by behavioral decision theorists for studying decision making (see Carroll & Johnson, 1990, for an overview). The standard information board presents decision makers with an *m by n* matrix, where the columns of the matrix are headed by the different alternatives (e.g., candidates) and the rows of the matrix are labeled with different attributes (e.g., issue stands, past experience, etc.). None of the specific information is actually visible, however, and decision makers must actively choose what information they want to learn by clicking a box on a computer screen. The researcher can record and analyze what information was accessed, the order in which it was accessed, how long it was studied, and so on. The basic premise of process tracing studies is that it is best to study decision making *while the decision is being made*. A growing literature in psychology, marketing, and the interdisciplinary field of behavioral decision theory employs information boards as a basic research tool.⁵

While the standard decision board is a reasonable model for studying certain types of decision making, it is a poor analog to the vote decision for a number of important reasons. With a decision board the decision maker can access any information any time he or she wants, while campaigns have a dynamic quality about them such that information easily available today might be harder to find tomorrow and almost completely gone by the following day. All information on a standard information board is equally easy to access, while in a political campaign certain types of information (e.g., hoopla and horse race) are much easier to find than others (e.g., detailed issue stands). Decision makers must actively choose to learn everything they find out about the alternatives with a standard information board, but much information during political campaigns (e.g., political commercials) comes to us without any active effort by the decision maker to learn that information. And most importantly, decision making with an information board is far too "manageable," too controllable, too easy; while during a typical high level political campaign (e.g., presidential elections and many statewide races in the U.S.), voters are overwhelmed by far more information than they can possibly process. In many ways the static information board represents an "ideal world" for decision making that can be contrasted to voting in an actual political campaign.

Our dynamic process tracing methodology retains the most essential features of the standard information board while making it a better analog of an actual political campaign. Our guiding principle was to devise a technique that would mimic crucial aspects of an actual election campaign while still providing a detailed record of the search process employed by voters. If a standard information board is artificial because it is static and therefore too "manageable," we overwhelm subjects with information. If the standard information board is unrealistic by making all information available whenever a subject wants it, we mimic the

ongoing flow of information during a campaign, where information available today might be much harder to find tomorrow. If the standard information board is artificial because all different types of information are equally available, we model in a realistic way the relative ease or difficulty of finding different types of information during a campaign. And if a standard information board only allows for information that is actively accessed by the decision makers, we provide our decision makers with a good deal of relevant information "free of charge," without any active decision on their part to learn that information.

We accomplished these goals by designing a radically revised information board in which the information about the candidates scrolls down a computer screen rather than being in a fixed location. There are only a limited number of attribute labels (six) visible on the computer screen -- and thus available for access -- at any given time. Most of these labels include a candidate's name and the particular information about that candidate that would be revealed if this label were "accessed" (e.g., "Martin's political experience;" "Walker's stand on defense spending"). The rate of scrolling is such that most people can read approximately two labels before the positions change. Subjects can "access" (i.e., read) the information behind the label by clicking a mouse. Thus this methodology combines the printed nature of information presentation in newspapers with the relatively uncontrollable order of information availability of electronic media. The scrolling continues while subjects process the detailed information they have accessed, so that typically there is a completely new screen when subjects return to the scrolling -- thus mimicking the dynamic, ongoing nature to the political campaign.

The scrolling format of the information presentation achieves two of our goals, by making only a small subset of the information available at any one time, and by making the entire decision making task much less "manageable." We also wanted to make some types of

information "harder" to get than others, and accomplished this by varying the probabilities that specific types of information would appear on the screen.⁶ Finally, at periodic intervals the computer screen is taken over by a 20 second political advertisement for one of the candidates in the campaign. Voters can carefully watch these commercials or avert their eyes while they are on the screen, but they cannot gather any other information relevant to the campaign while the commercial is on.⁷

Subjects

We have run four experiments with the dynamic process tracing methodology described above, one of which also included a standard static information board. Three of the experiments used paid volunteers (most subjects were donating their \$20 payment to a voluntary organization to which they belonged) and one used unpaid volunteers. All subjects had to be eligible voters (American citizens above the age of 18), with the only other restriction that no one currently attending college could participate in the experiment.

The 657 subjects who participated in the four experiments are not meant to be a representative sample, but they do comprise a broad pool of adult citizens. They ranged in age from 18 to 84 with a mean of 45. 54% percent were female, and 16% were nonwhite; 28% had at most a high school degree, while 47% of the subjects were college graduates. 59% of the sample were currently employed, 5% unemployed, 23% retired, and 13% homemakers. In terms of religious preference, 35% were Catholics, 17% Jewish, 25% Protestants, and 11% professed some "other" religious preference. When it came to politics, 38% of the sample identified with the Democratic Party, and 27% identified with the Republican Party.

Procedure

The basic experimental paradigm has subjects "experience" and "vote in" a primary

election involving multiple candidates in each party, and a subsequent general election involving one candidate from each party. We created a scenario for a mock presidential election involving 2-4 Democratic and 2-4 Republican candidates. Subjects "registered" to vote in either the Democratic or Republican primary, learned as much about any of the candidates as they wanted (or could, given the time and information available) during the primary campaign, "voted" for one of the candidates from their party, evaluated all candidates in the primary on a 100-point feeling thermometer, answered a few questions about the difficulty of the decision they had just made, learned which two candidates will be running in the fall campaign, gathered as much additional information about these two candidates as they wanted (or could) during the "general election" campaign, voted for one of them, evaluated the remaining candidates again on feeling thermometers, attributed a few issue stands to them, and answered the questions about the difficulty of the general election choice. Subjects also received an unexpected memory task where they were asked to recall as much as they could remember about the two candidates running in the general election campaign.

Before the campaigns began, subjects completed a fairly standard political attitudes questionnaire designed to measure their political preferences (crucial for determining which candidates they "should" support) and their general level of political sophistication. Figure 1 of Lau and Redlawsk (1997, p. 588) summarizes the typical experimental procedure, which on average lasted about one hour and 45 minutes.

The candidates were all designed to be very realistic (e.g., they were dispersed along the ideological spectrum appropriate for their party, they were politically experienced, they were all at least 45 years old, etc.), although we were careful not to make any of the candidates appear too much like some actual individual. Creating mock candidates provides crucial control over

differences between subjects in prior knowledge of actual politicians. No one had any knowledge of any candidate before the mock campaign began, other than what might be inferred from, say, party affiliation.

Results

Direct Measures of Heuristic Use

Few studies of cognitive heuristics, whether in the political or any other realm, have direct measures of the use of the hypothesized heuristic. More typically, the availability of some cue is manipulated in a simple experiment, and heuristic use is inferred if hypothesized differences in some dependent variable occur (e.g., Carmines & Kuklinski, 1990; Iyengar, 1990; Mondak, 1993; Quattrone & Tversky, 1988.). Alternatively, a significant regression weight in some model of impression formation or attitude change will be taken as evidence of heuristic processing (e.g., Brady & Sniderman, 1985; Conover & Feldman, 1986, 1989; Iyengar, 1990; Lau, 1986, 1989; Sniderman et al., 1991).

With process tracing methodologies, however, hypothesized information processing strategies can be *directly* observed and measured. We contend that *if a decision maker is employing a particular heuristic*, then in general *information relevant to that heuristic should be sought out early and often*. For example, if endorsements are to be of maximum use to a decision maker, they ought to be accessed as *soon* as they become available, and *many* of them ought to be examined. Particular types of information were determined a priori to be indicative of the use of a given heuristic, and we measured how early information within each category was accessed, the proportion of all available items within that category that were accessed, and the proportion of all accessed items that fell into that particular category, separately for information processing during the primary and general election campaigns.⁸ We then formed summary

scales of the use of the different types of political heuristics in the primary and general election campaigns by standardizing and then averaging together the three measures, after the priority measures were reversed so that early access of items within a category was scored high. We will have more to say about equating information search with heuristic use below.

The first four columns of Table 1 present various indicators of the extent to which voters in our experiments employed the five political heuristics discussed above. The first column shows the percent of subjects who examined at least two items categorized a priori as indicating heuristic use. This is a minimal standard of “use.” The second column is perhaps the best indicator of the pervasiveness of heuristic use during our mock election campaigns, because it shows the average proportion of items actually selected during the mock campaigns that were examples of the different types of political heuristics. An average of 43% of the items selected came from one of the five categories of political heuristics. It is an important to keep these numbers in perspective, however. One of the reasons the political heuristics we have identified here are so useful is that information relevant to them is so widely available – an availability modeled by the stochastic algorithm of our computer program. If all subjects had chosen information randomly, the data in the second column of Table 1 would not be very different. Nonetheless our baseline prediction is clearly supported: virtually all voters employ cognitive heuristics at least some of the time in making their vote decisions.

***** Insert Table 1 about here *****

More indicative of how important the different heuristics were to individual subjects is data in the next two columns, which reports the mean percent and variability of the unique information considered within each category. On average subjects examined 42% of all of the group endorsements, for example, and 37% of the poll results that concerned candidates from

their party in the primary and the two candidates during the general election. More important analytically, the variance of all five of these measures includes the full range of the potential scale, from not accessing *any* information relevant to a heuristic, to finding and accessing *all* of the relevant information. The internal consistency (Cronbach's alpha) of the summary scales of each type of heuristic use is reported in the last column of Table 1. The scale reliabilities vary between .63 and .86, very respectable numbers for relatively short scales.

Political Sophistication and Heuristic Use

It would certainly appear from the data reported in Table 1 that most voters in our experiments utilized the five political heuristics at least some time during their decision making task. But a more complete investigation is warranted. In particular, Hypothesis 1 suggests that more politically sophisticated voters will be more likely to employ an Ideological Schema and the Endorsement heuristic. The top panel of Table 2 shows the results of an analysis where the summary measures of use of each political heuristic are regressed on a comprehensive measure of political sophistication comprised of separate indicators of Political Knowledge, Political Behavior, Political Interest, Political Discussion, and Media Use (see Lau & Erber, 1985); plus various demographic variables and standard political beliefs as controls. The bottom half of the table reports a similar analysis, keeping the different components of sophistication distinct.

As predicted by Hypothesis 1, political experts are more likely to use an Ideology Schema ($p < .05$, one-tailed) and the Endorsement Heuristic ($p < .001$). In the former case it is Political Knowledge and Following Politics in the Media which are particularly important, while in the latter case it is Political Knowledge and self-professed Political Interest.⁹ Although we could find no prior literature suggesting this might be the case (and thus not formally specified in Hypothesis 1), it follows logically that if almost everyone uses political heuristics, but certain

political heuristics are more likely to be employed by experts, then other political heuristics may be more the province of those low in political sophistication. Our data suggest two decent possibilities, the Candidate Appearance heuristic and the Party heuristic (although in the latter case the results are not quite statistically significant). All told, our data provide strong support for Hypothesis 1. We will control for the effects of political sophistication in the remainder of the analyses.

***** Insert Table 2 about here *****

Situational Factors Determining Political Heuristics Use

The second hypothesis holds that voters will be more likely to employ cognitive heuristics in more difficult choice situations -- that is, in situations with greater cognitive demands. The strongest test of this hypothesis comes from an experiment that varied the basic presentation format: in one condition the experiment utilized the classic static information board (which can be viewed as an ideal world for decision making), while the second condition used the much more challenging (and realistic) dynamic scrolling procedure described above. Our hypothesis clearly predicts greater use of cognitive heuristics with the dynamic rather than static procedure.¹⁰

To test this hypothesis we conducted an multivariate analysis of variance (MANOVA) in which the Static-Dynamic presentation format and Political Sophistication (dichotomized at its median) were the independent variables, and the five heuristic use variables, summed across the primary and general election campaigns, were the dependent variables. The main effects of both the Static-Dynamic manipulation – multivariate $F(5,158) = 127.31, p < .001$ – and Political Sophistication – multivariate $F(5,158) = 2.31, p < .05$ – were significant. As can be seen in the top half of Figure 1, all five of the political heuristics were much more likely to be employed

when information was presented via the more realistic, and more cognitively difficult, dynamic scrolling format, compared to the ideal world of a static information board. All five of the univariate F tests were also highly significant. In contrast, differences in heuristic use between those high and low in political sophistication (displayed in the bottom half of Figure 1) were quite modest in magnitude and, as already seen in Table 2, mixed in direction. Only the Viability Heuristic produced a significant univariate F tests for sophistication.¹¹

***** Insert Figure 1 about here *****

A second operationalization of task complexity is the number of alternatives in the choice set. Several of our experiments randomly manipulated the number of candidates running in the primary of the party in which the subject “registered” to vote. A choice is relatively simple with only two candidates, but much more complex with four candidates.¹² We again conducted a MANOVA with use of the five political heuristics during the primary election campaign as the dependent variables and Number of Candidates in the subject’s party and Political Sophistication as the independent variables. The effect of Political Sophistication is essentially the same here as in Figure 1, albeit slightly weaker statistically. Of more immediate interest is the Number of Candidates manipulation, which was statistically significant, multivariate $F(5,356) = 4.71, p < .001$. An examination of the group means of the different dependent variables, however, shown in Figure 2, reflects a fairly complicated pattern of results. Subjects were slightly (and nonsignificantly) more likely to employ the Ideology and Candidate Appearance heuristics in the four candidate condition than the two candidate condition, but significantly more likely to employ the Endorsement and Viability heuristics in the two candidate condition. Clearly, something more than the need for cognitive efficiency is determining these results. Notice that there were only trivial differences in the use of the Party heuristic across conditions in this

campaign – but of course party is of little use in distinguishing between candidates running in a primary election, at least after candidates belonging to the different parties are sorted out.

***** Insert Figure 2 about here *****

Together, these results are more complicated than Hypotheses 2 predicts. While voters of all stripes employ cognitive heuristics, they do not all equally appreciate the difficulty of the choice situation they face and revise their information processing strategies to compensate for that difficulty. It is important to note that sophistication does *not* help explain any of these conflicting findings. More generally, the data on heuristic use suggest that cognitive heuristics may not be a panacea for the broad lack of information and interest in politics displayed by the average citizen they have been assumed to be. Heuristics may not be used in a cognitively most efficient manner by everyone, even the most politically sophisticated voters.

Is “Information Acquisition” the Same Things as “Heuristic Use”?

We have argued that directly observing and measuring heuristic use is superior to indirectly inferring heuristic processing from some simple experimental manipulation or significant regression weight. Still one could ask with our operationalizations of heuristic use, is *gathering* relevant information the same thing as *using* a certain heuristic? At one level the answer is obvious: no one can “use” a heuristic if they do not know it is applicable, e.g., if they do not *know* the party affiliation of candidate(s). But we are not employing simple dichotomous operationalizations of heuristic use; frequency and time of information acquisition are also part of our measures. And even with simple information acquisition, how do we know the information is actually being *processed* and *used* in a heuristic manner?

The political science literature provides almost no guidance on this issue, and the psychology literature is little better. However, our experiments gathered a great deal of

information that can be used to “flesh out” just what heuristic processing is (or ought to be), and to simultaneously validate our measures of heuristic use. We do not have the space to go into great detail here, but Table 3 provides a sense of the type of evidence we have gathered for three of our heuristics.¹³ To begin with, heuristic use tends to be positively correlated with memory for relevant information. These positive correlations provide evidence that relevant information is at least *processed*. More telling for current purposes, however, would be evidence that employing heuristics allow voters to process information *efficiently*, to *reduce* information processing demands in some domains. That is the key.

***** Insert Table 3 about here *****

After asking subjects to remember as much as they could about the two candidates in the general election campaign in our last experiment, we asked them to place the candidates on five different issue scales. Controlling on general Political Sophistication, both the Ideology and Endorsement heuristics – but not Party -- are associated with more accurate placement of the two candidates on the issues in general. Even more telling (again controlling on Political Sophistication), all three of these heuristics were associated with more accurate placement of candidates on issues *in the absence of actually learning the candidates’ stand* on the issues. Ideology and Endorsements – but again, not Party – also tend to *substitute* for accessing detailed issue information in the more taxing 4-candidate primary condition, in that they were associated with less accessing of specific issue stands per candidate. Together, the data presented in Table 3 indicates that our measures of political heuristics truly *are* associated with heuristic processing of information. We know of no similar evidence in the political science literature.

Effect of Political Heuristics on Correct Voting

The third hypothesis states that use of political heuristics will be associated with higher

quality decisions primarily among political experts. Defining "higher quality" decisions can be a very tricky matter. Fortunately, we can rely on the definitions presented earlier by Lau and Redlawsk (1997). We developed two techniques for determining whether subjects voted "correctly" in our experiments, one determined by the subjects themselves after a very thorough examination of all information available about the competing candidates (including much information the subjects had not actually seen when they made their vote choice); the second technique a more normative, objectively-determined criteria. Because the subjective measure is only available for the primary election from two of the four experiments, but the normative measure is available for all elections in all experiments, we rely on the latter measure here.¹⁴

Our normative measure of correct voting is based on an approximation of how people could naively or intuitively go about making the vote decision. From the questionnaire filled out by subjects before the experiment began, we know where subjects stand on the issues, what groups they like, what party they identify with, and so on. We also know, objectively, where the candidates stand on the issues, what groups endorse which candidates, what party a candidate belongs to, and how attractive the candidates' appearance and personalities are.¹⁵ We determine empirically what categories or types of information are important in the decision calculus of each voter by assuming that if a particular attribute (say, a candidate's stand on crime) was only considered for a single candidate, it was probably the product of simple curiosity, random error, or "sampling" but then rejection of this type of information, and therefore was not at all important in the voter's decision calculus. If a particular attribute was examined for two or more of the available candidates, on the other hand, we assume this type of information *was* an important part of the voter's decision calculus and is therefore a relevant consideration about every candidate. The favorableness of each individual attribute was rescaled to range between -1

at its most unfavorable (e.g., endorsement by a group the voter dislikes) to +1 at its most favorable (e.g., complete agreement with a candidate on an issue), and then a "normative naive" evaluation of each candidate was computed by averaging together the different considerations. This evaluation is "naive" in that it is based on the voter's *own* political values and preferences, and their *own* determination of what specific information is important to them. But this measure is "normative" in that it is also based on an objective, externally-determined evaluation of the candidates, and on the normative judgment that voters *should have* considered the same (important) information about all candidates in the choice set. A "correct" vote decision is then defined as a vote for the candidate with the highest "normative naive" evaluation. See the appendix of Lau and Redlawsk (1997) for more details on the construction of this measure.

There is one further complication. Although it is clear how to determine the "correct" choice with such a procedure, it is not so clear what to do about "incorrect" choices.¹⁶ Should they all be treated equally, or should they somehow be scaled to reflect the egregiousness of the error? It does not seem right to treat voting for the worst possible candidate the same as voting for one that is only slightly inferior to the "best" possible candidate. We decided to employ a simple dichotomous "correct" or "not correct" dependent variable, but to create a "difficulty of choice set" independent variable to control for these other considerations. This control variable was created by computing the average difference between the naive normative evaluation of the best candidate in the choice set and the evaluation of each individual alternative in the choice set. When the alternatives are all evaluated very similarly, this average difference will be quite small, and it should be relatively difficult to pick out the best alternative. When the alternatives are evaluated quite differently, on the other hand, the average difference score will be much larger, and it should be relatively easier to pick out the best alternative. Our measure of the

difficulty of the choice set is then the reciprocal of this average difference score, so that the more difficult choice sets have the highest scores on this control variable. This variable should be negatively correlated with the probability of a correct vote, all else equal.

We then specified logistic regression equations in which the dichotomous correct vote dependent variable was regressed on (1) the Difficulty of Choice Set control variable just described; (2) experimental manipulations of Task Complexity; (3) the comprehensive measure of Political Sophistication described above; (4) a summary measure of use of Political Heuristics,¹⁷ dichotomized at its median; and finally (5) interactions between the last three factors. Because Hypothesis 3 argues that heuristic use will aid decision making primarily among politically sophisticated voters, we pay particular attention to the interaction between political sophistication and heuristic use on the probability of making a correct decision.

Our analysis considers the probability of a correct vote in the primary election of the experiments which manipulated the number of candidates in the choice set. The results of the logistic regression are shown in Table 4. As expected, subjects were much less likely to vote correctly in the more difficult four candidate condition than the two candidate condition ($p < .001$), and controlling on this manipulation, somewhat less likely to vote correctly when the choice set was more difficult ($p < .07$, one-tailed). Neither political sophistication nor heuristic use had a main effect in the analysis. But as predicted by Hypothesis 3, there was a significant two-way interaction between sophistication and heuristic use ($p < .01$). The nature of this interaction is shown in Figure 3. Cognitive heuristics are a great aid to the decision making of relatively sophisticated voters, increasing the probability of their making a correct decision by 20%. But this advantage to the most sophisticated voters is almost exactly balanced by a comparable *disadvantage* for relatively unsophisticated voters, whose probability of making a

correct vote decreases by almost 21% when they rely heavily upon cognitive heuristics. As Hypothesis 3 predicts, then, the decisions of more sophisticated voters are often helped by employing cognitive heuristics, but less sophisticated voters may actually end up making lower quality decisions if they employ those same heuristics (albeit, in a less efficient manner). Seen from another perspective, *political sophistication absent heuristic use contributes little to better decision making*. Only in combination with heuristic use does sophistication help improve decision making. What political sophistication brings a voter is knowledge of how the political world is typically structured, and the ability to make clear inferences from heuristic cues.¹⁸

***** Insert Table 4 and Figure 3 about here *****

Disadvantages of Heuristic Use

That very knowledge could work against sophisticated voters if the world (i.e., a political campaign) is not structured in the typical manner. One final manipulation varied the stereotypic nature of the outparty candidate (that is, the candidate from the party in which the subject did not “register”) running in the general election campaign in one of our experiments. In the stereotypic condition this candidate was a moderate slightly to the left (if a Democrat) or right (if a Republican) of center. In the nonstereotypic condition the outparty candidate took a very liberal stand on some issues, a very conservative stand on others, and a moderate stand on the remaining issues. On average, the objective issue stands of the stereotypic and nonstereotypic candidates were indistinguishable (and their qualifications for the presidency on other dimensions were quite comparable), but the ideological range of views expressed by the nonstereotypic candidate was much greater – so much greater, in fact, that this candidate might very well take several issue stands that a voter preferred to the stands of the inparty candidate.¹⁹

Table 5 presents the results of an analysis in which correct voting is regressed on the

difficulty of choice control variable, the nonstereotypic candidate manipulation, political sophistication, use of a party heuristic, and interactions between the last three factors. We focus on use of the party heuristic because the nonstereotypic candidate violated *partisan* stereotypes. The positive .72 interaction between Heuristic Use and Sophistication suggests that, as we have seen already, political heuristics are particularly efficacious for politically sophisticated voters – at least when the candidates conform to the expected norms of their parties. This interaction is not quite statistically significant at conventional levels ($p < .09$, one-tailed).²⁰ As shown by the significant 3-way interaction between the experimental manipulation, political sophistication, and heuristic use, however, this advantage disappears when nonstereotypic candidates are running in the campaign. Now sophisticated voters who employ heuristics are noticeably *less* likely to vote correctly. As Figure 4 illustrates, when the outparty candidate is stereotypic (as is typically the case), using heuristics increases the probability of a correct vote among sophisticated voters from about .55 to .81. But when the outparty candidate is nonstereotypic, using heuristics actually *decreases* the probability of a correct vote from .77 to .58 among sophisticated voters. The effects of heuristic use are opposite in direction, and noticeable smaller in magnitude, among unsophisticated voters.

***** Insert Table 5 and Figure 4 about here *****

Discussion

To summarize our most important findings, cognitive heuristics are not a panacea for all the ills of popular democracies. Although the five political heuristics considered here were used by almost everyone (at least outside of the “ideal world” of a static information board), they did not substitute for political sophistication in predicting correct voting. In fact, heavy reliance on political heuristics actually made decision making less accurate among those low in political

sophistication. Only relative experts appear to be generally helped in their decision making by using heuristics. Thus our results should give pause to those who assert that heuristics are the answer to the problems of low information voting. We join in Bartels' (1996) skepticism that voters who are relatively unaware of politics can make decisions as if they had full information, simply by employing cognitive shortcuts. Ironically, heuristics are most valuable to those who might in fact need them least. Sophisticated voters, who understand the political environment, can use these shortcuts to their advantage. But even they can be misled when the political environment is not structured according to their prior expectations.

These conclusions are based on our being able to directly observe the information processing of voters. This increased observational power comes at a cost, however, in the realism of our experimental setting. While our simulation captures crucial aspects of modern election campaigns, we would not pretend that it captures all of them. As in any experiment, subjects in our “campaigns” knew they were being studied, which might alter their decision making strategies in unknown ways. Voters were unfamiliar with all of the candidates before the election began, which at best is not the case when an incumbent is running for re-election. The “campaign” itself lasted little more than half an hour, leaving no time for reflection on any of the information learned about any of the candidates. All information about all of the candidates was obtained from a computer – a highly unusual experience for subjects (at least when we began running these experiments) – and all information was obtained in social isolation, without the opportunity to talk about the candidates and their views with other people. Thus in certain very important ways, the “mundane realism” of our campaign simulation was fairly low.

We would not argue with this assessment; our dynamic process tracing methodology, as

with any research technique, involves real tradeoffs between internal and external validity. On the other hand, we would argue that information boards are far less intrusive methods for conducting process tracing research than the alternatives (“think aloud” protocols, or monitoring eye movements; see Abelson & Levy, 1985). As more and more people have access to computers and the internet at work and at home, and as more and more of us turn more regularly to internet sources for our political information, what five years ago was a relatively unusual manner of obtaining political information may soon become the norm. Furthermore, what our research design lacked in mundane realism, it made up for in *experimental realism* (Aronson, Wilson, & Brewer, 1998). That is, with few exceptions subjects in our experiments truly *cared about* the mock election campaigns, and took the task of deciding who to vote for quite seriously. Some subjects cheered if their candidate “won” their party’s primary campaign, and many expressed disappointment when, at the end of the experiment, we did not tell them who “won” the general election campaign. During the debriefing we asked how realistic the candidates seemed, and only three subjects (of over 600 run) responded “Very Unrealistic.”²¹ Thus while we should never forget that our data come from subjects participating in a controlled laboratory experiment, we believe that our experimental procedure was sufficiently engaging, and the decision task facing voters sufficiently realistic, that our results should be taken seriously. Certainly the great majority of our subjects took the task seriously.

Cognitive heuristics are not the only psychological mechanism used by people to “stem the tide” of political information, of course, and it would be remiss of us to not mention the work of Lodge and his colleagues at Stony Brook (Lodge, McGraw, & Stroh, 1989; Lodge, Steenbergen, & Brau, 1995). Lodge and colleagues argue that people typically form impressions of politicians by continually updating a “running tally” evaluation. Once any new

information has been processed and the tally updated, the information itself can be (and often is) forgotten. Thus Lodge et al. argue that the vote decision is often much better “informed” than would be inferred from the low levels of political information that can typically be recalled by everyday citizens. Although we do not agree with every aspect of the online model (see Lau & Redlawsk, in press; Redlawsk, 2001b), it seems clear that evaluations of political candidates are based on exposure to and the processing of much more information than can typically be recalled at some later date. Indeed, our dynamic process tracing methodology is another technique for providing evidence to test the online model. The point we want to make here is to acknowledge that remembering the implications of some new information about a candidate (i.e., remembering the updated running tally) but forgetting the details of that new information is another way in which cognitively limited information processors cope with an overwhelmingly rich social environment.

We should also mention several relatively new theories within social psychology which distinguish between two largely distinct routes to attitude change (Chaiken, 1980, 1987; Petty & Cacioppo, 1986). Such theories should be of great relevance to political scientists, for what is a political campaign other than an elaborate, often quite expensive attempt at mass attitude change? According to these theories, when the recipient of a message is highly motivated (e.g., the message is personally relevant) and able (they have the intelligence, and background knowledge to place the message in an appropriate context, and the immediate context is not too distracting) to think about the message, they will engage in relatively more effortful, systematic or “central route” processing of the message. This is the type of processing that most candidates (and most political scientists) wish citizens would engage in during a political campaign – but we know very few do. On the other hand, when motivation and/or ability are low, relatively

more shallow, “heuristic,” or “peripheral route” processing will occur. The latter process better describes most political information processing, and the simple heuristics that are studied in these attitude change experiments (e.g., experts are usually correct; someone arguing against her own self-interest really believes what she is saying) serve some of the same functions as the political heuristics examined in our study.

There is one important difference between how attitude theorists think about heuristic or peripheral route processing, however, and how we think about the political heuristics we have studied: how actively people seek out information relevant to the heuristics they do employ. Our method (with the exception of the candidate appearance heuristic) generally requires voters to actively decide to use any particular heuristic, while the attitude change theories under consideration here view heuristic processing as a much more automatic, almost unconscious “default” type of processing when motivation is low. This difference is more apparent than real, however, driven more by methodological than theoretical considerations. Even subjects in the “heuristic” or “peripheral route” conditions of these attitude change experiments must somehow learn that the communicator was attractive, say, or an expert. These experiments simply do not give subjects the option of not “accessing” this information, which from our perspective makes it appear much more “automatic” than in fact may be the case.

More recently political scientists have begun to examine the information environment in which processing occurs as a determinant of shifting processing modes. Whether the cause is the processor's emotional state of mind derived from an assessment of the relative familiarity and safety of the environment (Marcus, Neuman, and MacKuen, 2000; Marcus and MacKuen, 1993) or the motivated reasoner's unexpected encounter with information that is affectively incongruent with previous expectations (Lodge and Taber, 2000; Redlawsk, 2001b) information

processing may shift from routine, relatively thoughtless processing to processing under heightened awareness, where information is considered more carefully. In the agitated emotional state of mind as is characterized by anxiety, processors are expected to pay more attention to information, and would presumably be less likely to use heuristic-based processing. Thus, for some voters, our experimental environment might not represent the political environment in which they operate, in that it is not embedded in an environment of anxiety or uncertainty. We might expect that if the environment were emotionally challenging that heuristic use would be lessened. Likewise, encountering negative information about a liked candidate (or positive information about a disliked candidate) might also cause the voter to stop and think, at least temporarily focusing processing more carefully than otherwise would be the case, and thus decreasing reliance on heuristics. However, we believe that the political environment for most voters, most of the time, is not one of high emotional anxiety, given that the average citizen pays relatively little attention to politics in the first place. And the likelihood that motivated reasoners will actually encounter very much incongruent information is relatively low, since among other things, such processors are motivated towards preferential search for information that confirms rather than challenges existing evaluations. So while our findings may not apply in every environment all the time, we believe they are applicable to the peripheral route processing which represents the larger portion of political information processing voters carry out on a routine basis.

In conclusion, as a new technique for exploring political behavior, the experimental simulation described here -- and its dynamic process tracing methodology -- offers an exciting new avenue for research. If political decisions are based at least in part on the information at hand when the decision is made, then it is time for political scientists to begin studying explicitly

how information is gathered, and how it is combined into a decision. Our answers to these questions have important implications for our theories of political behavior, and any practical recommendations we might make based on those theories.

For instance, the distinction between *using* a particular heuristic, and the apparent *effect* that use has on decision making, is important because the evidence from political science might lead policy makers to pursue very different courses of action if they were trying to improve voters' ability to make reasonable, coherent decisions. If we believed that cognitive shortcuts helped virtually everyone and consequently wanted to ensure that voters had sufficient heuristic cues available to make reasonable vote decisions, we might try to make sure that party and ideological labels, well-known group or elite endorsements, "characteristic images" of the candidates, and even reputable poll results were widely available before the election. This information is not too hard to come by in presidential elections,²² at least for the politically motivated, but it is not nearly so prevalent for elections to lower offices. Although this idea would certainly require much more thought and research, some of this information could be provided in the voting booth when citizens go to the polls. Party labels already are a common part of the ballot for many types of elections; why not a picture of each candidate as well? Modern voting machines already have this capability, and it is currently employed in several countries around the world (e.g., Brazil). Why not provide the endorsements of a dozen broadly representative groups as well? Some states are already experimenting with internet voting, and consequently almost limitless information could be at voters' fingertips (mouse clicks?) as they make their web-based vote choices.

Our findings suggest, however, that were this path to be followed, it would aid the decision making capabilities primarily of those already more interested and knowledgeable about

politics. There is nothing wrong with aiding the decision making of this portion of the general public, as long as the capabilities of the remainder of the public are not harmed. Our findings raise an important cautionary flag here. But if the goal is to improve the decision making of less sophisticated voters, pursuing the road to cognitive shortcuts may prove to be a dead end. The political heuristics of all voters are not equal. “Republican” or “liberal” means one thing to a relatively naive citizen, and something much richer, more meaningful, and more nuanced to a politically sophisticated citizen. The cognitive revolution will not allow us to get away from the importance of civic engagement and attention to politics in the mind of a successful citizen.

TABLE 1
Measures of Political Heuristic Use

	% Using Heuristic At All	Mean % of All Accessed Info. Coming from Category	% Unique Information from Category Ever Examined		Scale Reliability
			Mean	Std.Dev.	
Partisan Schema	98%	9.2%	83%	22%	.63
Ideology Schema	93%	4.6%	63%	31%	.77
Endorsement Heuristic	97%	10.4%	42%	23%	.82
Viability Heuristic (Polls)	98%	12.1%	37%	22%	.86
Candidate Appearance Heuristic	95%	6.7%	69%	29%	.73

Note: The first column reports the percent of all subjects accessing an item from the appropriate category (at least *twice*, to control for accidental accessing and “sampling”). The second column reports the percent of all accessed items that fell into a particular category, irrespective of how often any particular bit of information is accessed. The third column reports the mean percent of all relevant unique items within a category that were accessed at least once, while the fourth column reports the standard deviation of this measure. This last measure does not “double count” items that were accessed more than once, whereas data in the second column allows for such double counting. Table entries in the last column are Cronbach's alpha from the scales built to measure heuristic use. Data are limited to subjects in the more realistic dynamic scrolling conditions of the experiments. N varies between 550 and 555.

TABLE 2
Effect of Political Sophistication on Use of Political Heuristics

Variable	<i>Party Schema</i>		<i>Ideology Schema</i>		<i>Endorsement Heuristic</i>		<i>Viability Heuristic</i>		<i>Candidate Appearance Heuristic</i>	
	B	SE B	B	SE B	B	SE B	B	SE B	B	SE B
Analysis 1										
Overall Measure of Sophistication	-5.31	(3.45)	9.87@	(5.34)	24.32***	(5.59)	4.30	(5.52)	-10.83*	(5.40)
Analysis 2										
Knowledge	-1.38	(3.26)	17.02***	(5.04)	14.38**	(5.32)	-2.97	(5.25)	-6.35	(5.16)
Behavior	.94	(2.25)	-.06	(3.49)	2.64	(3.68)	-2.56	(3.63)	-5.44	(3.57)
Discussion	-2.96	(2.44)	-2.39	(3.77)	-.48	(3.98)	-4.07	(3.93)	-1.52	(3.86)
Interest	-3.94	(2.61)	-3.40	(4.04)	9.49*	(4.27)	2.46	(4.21)	.43	(4.14)
Media Use	-1.19	(3.08)	10.56**	(4.76)	-.61	(5.03)	12.62**	(4.96)	-.88	(4.87)
	@ <i>p</i> < .05 (one-tailed)		* <i>p</i> < .05		** <i>p</i> < .01		*** <i>P</i> < .001			

Note: Table entries are unstandardized regression weights (with standard errors in parentheses), from two separate sets of analyses, the first where the summary measures of heuristic use are regressed on a comprehensive measure of political sophistication, the second where the same dependent variables are regressed on separate indicators of the constituent parts of political sophistication. All regressions also include controls for gender, race, age, education, family income, religiosity, and strength of partisanship and ideology. All variables have a 1-point range. Analyses are limited to the more realistic “dynamic scrolling” presentation format. N = 482.

TABLE 3
Further Validity Evidence for Measures of Political Heuristics

	<i>Party Schema</i>	<i>Ideology Schema</i>	<i>Endorsement Heuristic</i>
Memory for Relevant Items	r = .25***	r = .02	r = .22***
Accuracy of Perception of Issue Stands	NS	r = .16**	r = .17**
Accuracy of Inference Absent Actual Knowledge	b = 11.44**	b = 10.73**	b = 4.62*
Substitutes for Information Search in 4-Candidate Primary Condition	NS	b = -1.32**	b = -2.82***

* $p < .10$ ** $p < .05$ *** $p < .01$

Note: Data in the first two rows of the table are partial correlations between the measure of heuristic use and the relevant criteria, controlling for Political Sophistication and Total Item Search. “Accuracy” in rows 2 and 3 is defined as agreement with experts’ ratings of the candidates’ actual issue stands. Data in the third row reports the regression weight for the interaction between the heuristic of interest and *not* actually accessing a candidate’s issue stand, thus requiring inference. In the fourth row we report the regression weight for the interaction between heuristic use and the 2- or 4-candidate manipulation, where the dependent variable is the average number of issue stands accessed for in-party candidates. All regressions also controlled for Political Sophistication. Because these various criteria were not available in every experiment, N is 285 in the first row, 110 in the second and third rows, and 364 in the last row.

TABLE 4
Effect of Political Sophistication and Use of Heuristics
on Correct Voting

Variable	B	S.E.
Constant	.40	.29
# of Candidates Manipulation	-2.04**	.42
Difficulty of Choice	-1.08	.71
Political Sophistication	-.21	.31
Heuristic Use	-.20	.38
Manip. X Sophist.	.46	.37
Manip. X Heuristics	.39	.60
Heuristics X Sophist.	.92*	.37
-2 * Log Likelihood	285.74	
Model Chi-Square (7 df)	56.21**	
Percent Correctly Classified	69.2%	
N	254	

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

Note: Table entries are logistic regression coefficients.

TABLE 5
Heuristic Use in Inappropriate Situations

Variable	B	S.E.
Constant	.41	.32
Nonstereotypic Manipulation	.29	.46
Political Sophistication	-.43	.38
Difficulty of Choice	.12	.72
Party Heuristic Use	-.27	.43
Nonstereotypic X Heuristic	.23	.65
Nonstereotypic X Sophist.	1.41*	.57
Heuristic X Sophist.	.72	.53
Nonstereotypic X Heuristic X Sophistication	-2.39*	.81
<hr/>		
-2 * Log Likelihood	224.95	
Model Chi-Square (8 df)	12.75	
Percent Correctly Classified	62.9%	
N	178	

* $p < .01$

Note: Table entries are logistic regression coefficients. Dependent variable is voting correctly.

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Endnotes

1 . This evidence is reviewed in Chapter 2 of Delli Carpini and Keeter (1996). Moreover, they note that because surveys samples are not completely representative, and those who are not represented tend to have the least knowledge, these numbers undoubtedly *overestimate* the true figures.

2 . We may be bucking the current tide in political science by employing the "schema" term. We agree with critics who claim the term has been used far too energetically and uncritically by political scientists, and that the older terms of "attitudes" or "stereotypes" could be substituted into much of the published work on political schemata with little loss of meaning (Kuklinski, Luskin, & Bolland, 1991). If there are any areas in which this criticism does not hold true, however, it is in treating party and ideology as cognitive schemata. Researchers in these domains have carefully documented the memory, processing, and heuristic value of these two concepts (Conover & Feldman, 1984, 1986, 1989; Hamill & Lodge, 1986; Hamill et al., 1985; Lau, 1986, 1990; Lodge & Hamill, 1986), and we feel on safe ground by utilizing the "schema" concept here.

3 . The term "endorsement" implies more formality than need be the case. A voter might easily infer that a particular candidate supports and is supported by a particular individual or social group by observing the individual with the candidate, or seeing many group members wildly cheering the candidate at a rally. The possibilities of mistaken inferences are greater with such "informal" endorsements, of course.

4 . The psychology literature often treats these individual characteristics as distinct heuristics or stereotypes influencing person judgments. Because in practice these are all based on a

person's appearance, however, we will combine them into a single heuristic.

5. For summaries of this literature, see Abelson & Levi, 1985; Dawes, 1988; Ford, Schmitt, Schechtman, Hults, & Doherty, 1989; Jacoby, Jaccard, Kuss, Troutman, & Mazursky, 1987; Payne, Bettman, & Johnson, 1992, 1993. For applications of information boards to political decision making by other researcher teams, see Herstein, 1981; Mintz, Geva, Redd, & Carnes, 1997; and Riggle & Johnson, 1996.

6. To make these probabilities realistic, we first conducted an elaborate study of the prevalence of different types of information in newspapers during the 1988 presidential campaign (Lau, 1992), and modeled the probabilities after the actual prevalence of those types of information during the 1988 campaign.

7. Our typical experiment included ten 20-second commercials during a 22 minute primary campaign, and six 20-second commercials during a 12 minute general election campaign. Thus information from political commercials monopolized 17-22% of the total time during a campaign, with the remainder available for voters to access the information *they* wanted to learn (within the constraints of what was available, of course).

8. Candidates' "Party Affiliation," "Basic Social/Political Philosophy," and their "Basic Economic Philosophy" were deemed relevant to using a political schema heuristic; their pictures (e.g., "Picture of Gerry Singer") were relevant to the candidate appearance heuristic. The endorsements of any of 14 interest groups were relevant to the endorsement heuristic; finally, any poll result was relevant to the viability heuristic. "Nonheuristic" information was thus everything else available about the candidates, including specific issue stands, background

information, and personality descriptions. What characterized this nonheuristic information was that it was candidate-specific, and less prone to generalization than ideological or partisan labels.

Because the proportion of available items falling into the different categories differed widely, and because the order in which they appeared on the screen varied randomly, we could not simply consider how early during a campaign a particular item was accessed. Instead, the measure of early access was computed by noting whether the first available item within a category was accessed, the second accessed, etc. This variable would be undefined if no items within a category were accessed during a campaign. To overcome this problem, in such instances we assigned a priority score of one more than the highest nonmissing priority score observed across subjects -- in essence, assuming the subject *would have* accessed the next available item within that category if the campaign had lasted a little longer.

9. There is a scattering of significant effects among the control variables in these analyses, most strikingly a strong negative effects of age on use of all five of the political heuristics. This effect is probably an artifact of the timing of our experiments (older people in the 1990s being generally less familiar with personal computers) rather than a true difference in political heuristics use.

10. After subjects voted and evaluated the candidates in each election, they were asked how difficult the choice had been for them to make. These question can be used as a manipulation check to determine if subjects perceived the static presentation format to be easier than the dynamic, scrolling format. Indeed they did: averaged across the two campaigns and all of our experiments, the choice was perceived as significantly more difficult in the dynamic, scrolling condition ($M = 2.9$) than the static condition ($M = 2.3$), $t(609) = 3.78, p < .001$

11 . The general election campaign of that same experiment included, along with the presentation format, two further manipulations of the difficulty of the choice. The first manipulation involved the ideological distinctiveness of the two competing candidates, the second whether the candidate the voter supported in his or her party's primary had "won" the nomination and was running again in the general election campaign. The ideological distinctiveness manipulation had a significant effect on heuristic use, $F(5,147) = 2.54, p < .03$, albeit one which was much smaller than the effect of the static/dynamic manipulation. The prior rejection manipulation had no effect on heuristic use, however. The details of these analyses are available from the authors upon request.

12 . The total number of candidates in the primary campaign was held constant at six, such that if there were two candidates running in the Democratic primary, there were four candidates running in the Republican primary, and vice versa. The manipulation check confirmed that subjects perceived the 4-candidate primary to pose a more difficult choice than the 2-candidate primary, $t(458) = 2.53, p < .02$.

13 . Although we would argue that poll results generally have a great deal of heuristic value, particularly in campaigns with more than two candidates, the manipulations in several of the experiments required that it be possible for any of the candidates from the primaries to win their party's primary and advance to the general election campaign. To maintain plausibility across election campaigns, it was therefore necessary for all candidates to have roughly similar popular support during the primary campaign, as indicated in polls. In practice, then, there was little heuristic value to accessing poll results during our experiments, although of course no subjects knew this going into the experiment. Hence we cannot provide any validity evidence for the

Viability Heuristic. Likewise candidate appearance can very efficiently provide a great deal of information to voters, although there is much less variance in the “type” of people running for President than there is for lesser offices (a narrowness mirrored by our experiments), reducing in practice the heuristic value of the Appearance heuristic for our experiments. Other than memory, none of the criteria examined in Table 3 were available for the Appearance heuristic.

14 . Moreover the two measures, when they are both available, produce very similar results; see Lau and Redlawsk (1997).

15 . The "objective" stands of the candidates on the issues was determined by the mean ratings of every issue stand by seven experts. The attractiveness of the candidates' appearance and personalities was determined objectively by the mean ratings of 60 pretest subjects.

16 . One possibility is Payne, Bettman, and Johnson's (1993) "optimal decision" measure.

Their optimal choice formula equals the difference between the evaluation of the chosen alternative minus the evaluation of the worse alternative in the choice set, divided by the difference between the evaluations of the best and worst alternatives, or $(Chosen - Worst)/(Best - Worst)$.

If the decision maker actually chooses the best alternative, this ratio equals 1.0; if the decision maker chooses the worst alternative, the ratio equals 0. The problem with this measure is that the best and worst alternatives in any choice set are always equated, irrespective of how difficult the choice was for the individual decision maker. To illustrate this problem, if for simplicity we reduce candidate evaluation to ideology, when a liberal is running against a conservative it is fairly easy for most voters to determine which candidate is better; but when two ideologically

similar candidates are opposing each other, the correct choice is much more difficult for anyone to determine. Moreover, while a choice between a liberal candidate and a conservative candidate is easy for liberal and conservative voters to make, it is much more difficult from the point of view of moderates. Furthermore, when there are only two alternatives in the choice set, one is always the best choice and the other is always the worst choice. Somehow both the difficulty of the choice faced by a decision maker, and the "optimality" of the decision given that choice set, must be taken into consideration.

17. This summary measure combined our indicators of the Party Schema, Ideology Schema, and Endorsement Heuristic. As discussed in footnote 13 above, in practice there was little heuristic value associated with learning poll results or candidates' appearance in our experiments, and thus little reason they should be associated with correct voting.

18. Space precludes a detailed report on correct voting in the general election campaign experiments. Suffice it to say that the results conceptually replicate those just presented from the primary election. The crucial sophistication by heuristic use interaction is significant, $p < .05$. Again, the complete results are available from the authors upon request.

19. One item available for access about every candidate was their "Basic Social/Political Philosophy." For the stereotypic candidate from each party, this item read "[Candidate's name] is usually considered a moderate on most issues." For the two nonstereotypic candidates, this item read "It is difficult to label [candidate's name] as a traditional liberal or conservative."

20. The 2-way interaction between the Nonstereotypic Candidate manipulation and Sophistication (which we did not predict) suggests that among voters who rarely use political

heuristics, politically sophisticated voters are more likely than less sophisticated voters to vote correctly when the outparty candidate is nonstereotypic.

21 . These three subjects were eliminated from the analysis. A somewhat larger number of subjects (18) responded “Somewhat Unrealistic” to this question. These subjects’ responses *are* included in the data reported here.

22 . Indeed, one could argue that it is the roll of each candidate’s campaign to provide this information, and in presidential elections the major candidates have sufficient money to do just that. But in this case there is a huge heuristic cue for many voters to *disregard* the information -- partisanship, which immediately suggests to many voters less trustworthy/objective information.