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Author(s): Milton Lodge, Marco R. Steenbergen and Shawn Brau

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THE RESPONSIVE VOTER: CAMPAIGN INFORMATION AND THE DYNAMICS OF CANDIDATE EVALUATION

MILTON LODGE *State University of New York, Stony Brook*
 MARCO R. STEENBERGEN *Carnegie Mellon University*
 SHAWN BRAU *State University of New York, Stony Brook*

We find strong support for an on-line model of the candidate evaluation process that in contrast to memory-based models shows that citizens are responsive to campaign information, adjusting their overall evaluation of the candidates in response to their immediate assessment of campaign messages and events. Over time people forget most of the campaign information they are exposed to but are nonetheless able to later recollect their summary affective evaluation of candidates which they then use to inform their preferences and vote choice. These findings have substantive, methodological, and normative implications for the study of electoral behavior. Substantively, we show how campaign information affects voting behavior. Methodologically, we demonstrate the need to measure directly what campaign information people actually attend to over the course of a campaign and show that after controlling for the individual's on-line assessment of campaign messages, National Election Study-type recall measures prove to be spurious as explanatory variables. Finally, we draw normative implications for democratic theory of on-line processing, concluding that citizens appear to be far more responsive to campaign messages than conventional recall models suggest.

How much of what kinds of campaign information citizens can recollect about parties, candidates, and issues at the time a decision is called for is the keystone of virtually all contemporary models of individual political behavior and the cornerstone as well for our assessment of the competence of the democratic citizen. The underlying assumption throughout the literature of individual political behavior is that citizens have a storehouse of political information they can draw on to inform their political behavior, whether in reply to survey questions, in political conversations, or in the voting booth.

In the study of electoral behavior, for example, our very best models of issue voting treat candidate evaluations as a function of the respondent's recall of self and candidate proximities on the issue scales (Enelow and Hinich 1984), while our discipline's most predictive model (arguably, Kelley and Mirer's [1974] "simple act of voting") shows a strong correlation of candidate evaluation with the voter's net recollection of likes and dislikes. Our models of political behavior outside the polling booth are often memory-based, too (see Price and Zaller 1993), as are our normative expectations about the scope and depth of political knowledge that the democratic citizen can and should bring to mind to act purposefully (see Barber 1973; Berelson 1952; Berelson, Lazarsfeld, and McPhee 1954; Kessel 1988; Neuman 1986; Smith 1989; Weissberg 1974; also see Hanson and Marcus 1993).

All well and good were it not for a most troublesome incongruity—to wit, citizens do not measure up to model specifications. Fifty years of survey data

portray a rather bleak picture of the American citizen as one who is not nearly as aware as our models suppose and less informed than normative theories proscribe (see Hanson and Marcus 1993; Kinder and Sears 1985). More often than not, when voters are asked on election day about parties, candidates, and issues they are found to be ill informed—the majority of respondents unable, for example, to cite more than two or three likes or dislikes to the National Election Study (NES) open-ended questions and probes (see Smith 1989). And for many of these "good" citizens their responses are, to put it kindly, "diffuse" (Gant and Davis 1984).

That citizens often cannot remember many details of election campaigns is not being contested here, as the evidence is overwhelming. However, we challenge the longstanding assumption that the citizen's failure to recall campaign events is necessarily or even primarily a function of political inattentiveness, political ignorance, or (worse yet) irrationality. In contrast to conventional wisdom, we do not interpret the failure of J.Q. Public to recollect basic political facts (Delli Carpini and Keeter 1991; Erskine 1963), or recognize ideological language (Converse 1964), or recall a candidate's characteristics (Abramowitz 1975), or even remember candidate names (Neuman 1986) as a sure sign of an uninformed citizenry acting "in the dark." Rather, we propose here and will test empirically a "bounded rationality" model of candidate evaluation and vote choice that turns the memory-based assumption on its head in arguing that citizens can be (and in fact typically are) responsive to campaign information—their overall evaluations reflecting their assessment of all the information they

are exposed to—but are unable, for good reasons, to recollect accurately the considerations that entered into their evaluations.

Recall and the Enigma of the Informed Voter

We propose and find empirical support for a solution to two paradoxes that plague contemporary studies of electoral behavior: (1) the paradox of the informed voter, whereby voters (in the aggregate) oftentimes appear to be choosing the “right” candidate and supporting the “correct” issue stands but apparently without the conceptual or factual wherewithal to make such informed judgments (Page and Shapiro 1992), and (2) the paradoxical discrepancy between survey and experimental research findings, where we typically find in survey research a strong, positive correlation between the mix of pros and cons in memory and the direction and strength of evaluation (Kelley 1983) but can rarely find a direct memory-to-judgment link under experimental conditions (Lodge, McGraw, and Stroh 1989).

Consider two studies that we think point us in the right direction. The first, an experiment by Watts and McGuire (1964), looked at people’s recollection of the arguments of a persuasive message over a six-week period. Watts and McGuire found (as do most replications; see Anderson and Hubert 1963; Hastie and Park 1986) *no* systematic effect of recall on the persistence of induced opinion change. Apparently, messages do not lose their effect on people’s opinions once the content of the messages is forgotten. Thus it is that voters may be strongly affected by campaign information without such responsiveness being captured in their recollections. This finding is commonplace under laboratory conditions where exposure to the content of messages is known and the researcher can directly compare what information subjects are actually exposed to and what they can later recall (Hastie and Pennington 1989; Lichtenstein and Srull 1987).

Consider next Graber’s conclusion to her longitudinal study of the 1976 presidential campaign that “the fact that so little specific information can be recalled from a [news] story does not mean that no learning has taken place. The information base from which conclusions are drawn may be forgotten, while the conclusions are still retained. This seems to happen routinely. Voting choices, for instance, often match approval of a candidate’s positions even when voters cannot recall the candidate’s positions or the specifics of the policy. In such cases, media facts apparently have been converted into politically significant feelings and attitudes and the facts themselves forgotten” (Graber 1984, 73). Again, campaign messages and events can exert an influence on voters’ attitudes independently of their recall of the considerations that entered into their judgments, apparently long after the triggering campaign events have been forgotten.

The issue, then, is not how many campaign events or candidate positions voters can recall accurately

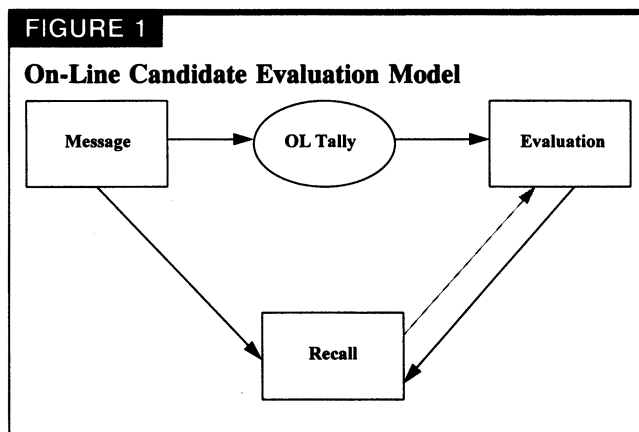
at the time they are called on to express a belief or preference but, instead, how *responsive* the citizens’ overall evaluation and vote choice is to the political information they considered throughout the campaign. More specifically, how much of what kinds of campaign information do citizens integrate into their summary assessments of candidates and how well does their overall assessment of the candidates reflect their evaluation of all the campaign information they attended to?

As every standard text in cognitive psychology points out (Eysenck and Keane 1990; Lachman, Lachman, and Butterfield 1979), a basic limitation of human information processing is the fallibility of memory: people forget . . . a lot. Memory fades over time and while this process may be faster for some people than others and for some types of information than for others, the inevitable outcome is that people’s recollections decrease in number and get fuzzier over time. Thus it may well be that the citizen’s inability to recall basic political facts reflects limitations of the human mind rather than unsophistication of the democratic citizen. Our criticism, then, is not just directed against memory-based models of the vote choice but, more broadly, challenges the memory-based assumption underlying contemporary analyses of political behavior in general and, still more broadly, the negative normative conclusions routinely drawn from the citizenry’s failure to recall campaign events.

How can information exert an enduring influence on people’s opinions despite their inability to retrieve these considerations from memory? One suggestion is that the message-judgment relationship is mediated by a mechanism other than recall. Indeed, Graber (1984) hints at some such process when she claims that voters draw conclusions from campaign information while forgetting its contents. In essence, what she describes is what has come to be called “the on-line model of information processing,” which traces its origins to social psychology (Anderson 1991; Hastie and Park 1986; Hastie and Pennington 1989) and has recently been extended to the domain of political impression formation (Lodge, McGraw, and Stroh 1989; Mackie and Anuncion 1990).

A Model of Voter Responsiveness

A schematic depiction of our expectations for an on-line (OL) model of the responsive voter is presented in Figure 1. According to this model (see Lodge and Stroh 1993), when one’s goal is to form an overall impression of some person, place, or thing, most people most of the time appear to act as bounded rationalists in simplifying the judgmental process by drawing politically relevant conclusions from the information at the very moment they encounter it and then and there, when the message is before their eyes, so to speak, spontaneously culling the affective value from each specific candidate message, and immediately integrating these assessments into a “running tally” that holds the individual’s



summary evaluation of the candidate (as depicted by the solid arrow in Figure 1 from Candidate Message to OL Tally). This OL tally, sometimes called an "affect-integrator," is then immediately stored in long-term memory and the considerations that contributed to the evaluation are quickly forgotten (hence the weak—grey—path from Recall to Evaluation). Then, later, when called on to make a judgment—to a pollster or in the voting booth—it is this summary impression, not recollections of the original campaign information, that comes to mind to guide the decision (as anticipated in Figure 1 by the strong, direct connection from OL Tally to Evaluation). From this OL perspective, "responsive voters" will decrease their general evaluation of a candidate when confronted with negative information and increase their candidate evaluations when made aware of information that they judge to be positive.¹

Essentially, then, the OL model posits a strong indirect effect of attention to campaign messages on judgment, mediated by the OL Tally. Moreover, there is not necessarily a strong relationship between the pros and cons that actually enter into the evaluation at the time of exposure and one's recollections of these considerations. The forgetting of the facts—long the bane of memory-based models—is of little consequence to the OL model, since the affective value of campaign messages has already been integrated into the evaluation and vote decision. Thus it is that voters can oftentimes tell you how much they like one candidate or another but not be able to tell you many of their reasons why. Or else (this being the reason, we think, for the strong correlation between recall and evaluation in most surveys like the NES), having forgotten many of the considerations that entered into their overall evaluation, when called on to report the *whys* and *wherefores* for their evaluation, respondents are prone to search memory for supporting "evidence" and dredge up commonsensical rationalizations for their preferences (as suggested by the solid arrow from Evaluation to Recall in Figure 1; see Brody and Page 1972; Kunda 1990; Lau 1982; Nisbett and Ross 1980; Rahn, Krosnick, and Breuning 1994; Wilson and Schooler 1991). From this perspective, what citizens are likely to recall about

the candidates is their global affective assessment of them, not the specific considerations that actually entered into the evaluation. At best, the citizen's recollections will represent a biased sampling of the actual causal determinants of the candidate evaluation (Anderson and Hubert 1963). At worst (this, we think, being a plausible explanation for marked differences between survey and experimental findings), the correlation between survey and judgment is the result of reversed causality, the causal arrow often going from evaluation to memory.

If the OL model is correct, citizens can be attentive and still not recall much if any campaign information. This model of political information processing has serious implications for how we view the connection between campaign events and political judgment. Inherent in the logic of on-line information processing is a radically different notion of what an informed citizenry means. Rather than measuring the citizen by what he or she can recall from the campaign, as memory-based models tend to do (see Kessel 1988), we ask the normatively more interesting question whether citizens actually incorporate campaign information in political judgment and choice. If, on attending to campaign stimuli, citizens were to first establish and thereafter update their OL tally in response to new information and finally bring this summary evaluation to bear on political judgments, we would claim that the citizens are responsive to and informed by campaign information.² On the other hand (this being the alternative hypothesis to be tested in this study), if the citizen's political judgments were found to be but tangentially related to the campaign information he or she was exposed to, then we too would be forced to say that citizens are uninformed.

EXPERIMENTAL DESIGN AND PROCEDURE

This study was designed to provide direct comparisons of the OL versus memory-based models of candidate evaluation *over time*, so that a *dynamic* picture of the candidate evaluation process may be obtained. The study addresses two critical questions: (1) Does the relationship typically go from *message to recall memory to evaluation* (as memory-based models suggest), or is the candidate evaluation process more aptly represented by the path from *message (to OL tally) to evaluation*? and (2) How strongly are message and evaluation related, that is, *how responsive are citizens to campaign information*?

Any attempt to disentangle the impact of memory on political judgment must necessarily measure the actual content of candidate messages and look at recall over the more realistic time spans of electoral campaigns. In our view, past research, both experimental and survey, has generally succeeded in satisfying one of these requirements but not both. The strength of the experimental approach is that it allows

us to isolate memory effects by controlling the content of messages to which subjects are exposed, thereby getting a direct test of the message-judgment relationship. Unfortunately, an all-too-typical shortcoming of this approach—ours among them (Lodge, McGraw, and Stroh 1989)—has been to look at the relationship between message and recall after only short, single-session time intervals on the order of five or ten minutes, rather than the more relevant day-, week-, and month-long time spans of campaigns. Conversely, in survey research longer time delays are more common (with most NES data based on postelection interviews), but here there is no way to determine what information citizens were actually exposed to (Price and Zaller 1990). This forces researchers to rely on one or another self-reported measure of attention to campaign messages and leaves us with no measure of the order, timing, content, or complexity of the messages. As a result, it is impossible to obtain an accurate estimate of the impact of memory on political judgment.

In the present study we combine the strict control over exposure to campaign messages available to experimenters with the realistic time spans found in surveys by introducing time delays of 1 to 31 days in a $t_1 \times t_2$ design to test the memory-judgment relationship over time. In addition, we obtained a finer-grained analysis of the message-judgment and memory-judgment relationships by considering two factors that are known to influence their size. First, we manipulated the partisan consistency of the candidate profiles that we presented to our subjects, so as to examine our "responsive voter" model when a candidate is somewhat at odds with one's partisan expectations. Second, for half the subjects, we set up a condition in which we tested the OL model against an idealized memory-based model by encouraging subjects to think more deeply about the candidates and their policy positions, hereby mimicking a basic condition of rational voter models.

Sample

A nonrandom sample of 356 nonstudent adults from Long Island, New York, was interviewed by trained college students in the spring of 1991. Fifty percent of the subjects were male, 92% white, and 71% were college graduates or had had some college. The samplewide median income was \$25,000. More pertinent for our analyses, the sample was about equally split in terms of their partisan affiliation, with 27% of the subjects reporting identification with the Republican party, 33% with the Democratic party, and the remainder calling themselves independents or reporting no party affiliation.

Experimental Stages

The experiment consisted of three core stages. First, subjects completed a self-administered questionnaire under supervision of our interviewers. The questionnaire asked subjects to evaluate information that

would show up in the candidate messages that the subjects read later in this stage of the experiment. Second, a variable $t_1 \times t_2$ delay of 1 to 31 days followed exposure to the campaign information. Finally, a telephone interview took place in which recall data and candidate evaluations were obtained. Of the 356 individuals who completed the t_1 questionnaire, 211 were successfully contacted for the t_2 call-back portion of the experiment, making for a panel attrition rate of 40%. More specifically, the experiment consisted of the following parts.

Stage 1(a): Political Beliefs and Preferences. The subjects were recruited to participate in a study that had the ostensible aim of evaluating two competing candidates running for the U.S. Congress. In part (a), subjects read a randomized series of 66 information items that described various policy statements (e.g., "A candidate who supports the death penalty for drug-related murder") or candidate characteristics (e.g., "A candidate who served in the U.S. Navy (1963–1967)"). Subjects were asked to evaluate each policy statement and candidate characteristic on a five-point scale, ranging from "very positive" to "very negative." For each policy statement, subjects were also asked to indicate whether Democrats or Republicans would be likely to support it, this to tap partisan stereotypes in our subjects. This information was later used to assess the prototypicality of the candidates to which we exposed our subjects.

Stage 1(b): Attitude Survey. After evaluating the candidate characteristics and policy statements, subjects were asked for basic demographic information, as well as their party identification, ideological persuasion, political interest and efficacy, and knowledge of contemporary political figures (measured by the recognition of each politico's party affiliation). This section of the survey concluded with a series of questions concerning the importance of the general policy domains (e.g., abortion, crime, the federal deficit) on which the candidates would later make specific policy recommendations. Note that, in addition to providing data on basic subject characteristics, this step also served as a distractor task between the earlier assessment of information and the upcoming exposure to the campaign messages.

Stage 1(c): Information Exposure (Campaign Fact Sheet). After completing the attitude survey, subjects read a one-page facsimile of a campaign fact sheet (reproduced in Appendix A) which presented the party affiliation, seven-issue positions, and nine personal attributes of two congressional candidates (Dave Wagner (R) and Tom Messinger (D), both hypothetical). The format of the fact sheet was modeled on the way candidates are summarily compared on election eve in the local area newspaper, *Newsday*.

The fact sheet included a within-subject manipulation of the candidate profiles. Whereas the Republican candidate adopted consistently Republican stands on the issues (as established in pretests), two

of the seven policy stands of the Democrat were somewhat atypical of Democratic candidates. For instance, unlike the prototypical Democrat (but like Tsongas in the 1991–92 primaries) our candidate sought to cut programs to balance the federal budget and (like Clinton) supported the death penalty. As such, he “issue-trespassed” (Norpoth and Buchanan 1992), adopting positions along Republican lines. Thus the candidates were not mirror images of one another: the Democratic candidate deviated on two of seven issues from New Yorkers’ stereotypic image of a Democrat. A manipulation check, based on the typicality ratings of the issues for each party in part (a), confirmed the slightly skewed portrait of the Democratic candidate and the prototypicality of the Republican. Our hypothesis is that the somewhat incongruent profile of the Democrat makes him a more complex (and, we think, more realistic) candidate. As a result, the evaluative process should be more difficult for the Democrat than for the Republican candidate, since subjects are denied a simple stereotypic assessment and can less easily rationalize a set of partisan-rooted recollections.

Stage 1(d): Processing-Depth Manipulation. At this point, after having read the candidate fact sheet, half of the subjects (selected randomly) were thanked and dismissed. The remaining 178 subjects received a series of 50+ questions designed to prod them into thinking more about the candidates and their issue stands. These subjects were asked to evaluate the two candidates on a five-point scale that ranged from “very positive” to “very negative,” to list their likes and dislikes of each candidate, render 24 trait inferences (Kinder 1986), and make a vote choice. Depending on the number of arguments each subject gave for supporting or opposing a candidate, anywhere from 50 to 62 supplemental questions were being answered.

In having these subjects mull over the campaign information and reconsider its implications, we should expect a deeper level of information processing, which should in turn bolster the memory traces for the campaign message. As a consequence, there should be less forgetting (Craik and Lockhart 1972) and, if memory-based processing works as advertised, a stronger recall-judgment relationship. Conversely, the OL model would predict *minimal differences* between the simple and depth-processing conditions and a message-evaluation effect stronger than the recall-evaluation effect in *both* conditions, as we posit that when forming general impressions of people, places, and things, people quickly forget the considerations that entered into an evaluation once the affective value has been culled from the message.

While the depth-processing manipulation provides a strong test of the OL model, it was also intended to parallel two different types of citizenship that have been described in the literature. When asked explicitly to think about the campaign information and mull over their reasons for supporting one candidate over the other, we suppose subjects took on the role of the

citizen that normative theorists have sketched—an individual who processes campaign information in depth to arrive at an informed decision reflecting serious consideration of the pros and cons of a candidate’s issues stands. Such in-depth processing is the most elementary requirement for rational citizenship (Barber 1973). In contrast, subjects who were not prodded by the 50+ questions probably did not engage in in-depth processing. Consequently, their behavior should correspond more closely to what is typically described in empirical analyses of citizenship as a citizenry that pays only cursory attention to politics (Berelson 1952; Berelson, Lazarsfeld and McPhee 1954; Lippmann 1991; also see Kinder and Sears 1985) and relies on factors outside of the campaign to forge candidate evaluations (Berelson, Lazarsfeld, and McPhee 1954; Campbell et al. 1960).

Stage 2: Delay. Upon completion of the stage 1 questionnaire all subjects were randomly assigned to one of the 31 $t_1 - t_2$ delays. All subjects were told they would be reinterviewed and left their number for a call-back. When the set time had expired, subjects were contacted by a new interviewer. If contact could not be established, the subject was rotated to the next day and another subject was contacted in lieu. One consequence of this procedure is that the number of call-backs for the different delays is not uniform, as it turned out to be easier to contact people on weekdays than weekends. Nonetheless, we were able to obtain t_2 observations for all possible delays.

Stage 3: Subject Recall and Candidate Evaluation. In the call-back telephone interview, subjects were asked to give their evaluations of the two candidates on a five-point scale, ranging from “very positive” to “very negative.” For the subjects who had not been asked the 50+ questions in stage 1(d) this was the first time they offered an evaluation of the candidates. After voicing an evaluation of each candidate, all subjects were asked if there was anything positive or negative they could remember about each candidate, with each query followed by an “Anything else?” probe. The format of the recall questions was essentially that used in the NES, except that we gave our subjects the names of the candidates if they were unable to recall which candidate was the Democrat and which one the Republican.

Stimuli: Campaign Fact Sheet

The campaign information that our subjects received was rather rich in content and tried to mimic real-life campaign stimuli. When presenting their issue positions political candidates (and newspaper summaries) often make a general policy statement, which is then embellished with specific recommendations that moderate the policy statement or elaborate on it. For instance, a political candidate might argue that he “is opposed to abortion” but then qualify his stand by adding “except in the case of rape and incest.” Or a politician might say that she is “tough on crime” and

then elaborate her policy statement with a call for mandatory jail sentences for, say, drug king-pins.

We call the core policy statements *gists* and the details *specifiers*. All 14 issue positions in the two-candidate fact sheet were *complex statements* combining a gist with one or more specifiers. For instance, the position of the Democratic candidate on the issue of crime and drugs reads as follows (the gist always presented as the first sentence or phrase of the policy statement, with one or more programmatic specifiers following): "Tom Messenger supports federal laws which crack-down on drugs and crime. He favors the death penalty for murderers, mandatory sentences for drug king-pins, and a mandatory waiting period and background check to purchase a firearm. Tom also supports treatment programs for drug addicts."⁹

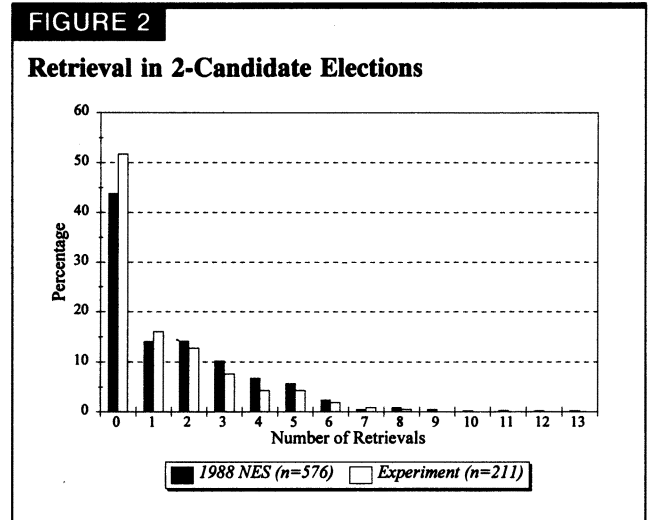
An important question to be resolved in the upcoming analyses is whether candidate evaluations are responsive just to the issue gists or whether evaluations reflect subjects' assessment of the candidates' complex statements—the gist and specifiers. Recall that in stage 1(a) we had all subjects rate the gists *and* complex policy statements separately so that we could analyze the impact on evaluations of the full message as well as the impact of the gists only. Our OL model posits that the OL tally is responsive to the gists *and* specifiers of campaign messages but that, over time, first the specifiers and then the gists will be forgotten. If so, the OL model would portray the voter as responsive, while a memory-based model would picture the very same voters as unaware and ignorant.

RESULTS

What do the experimental data tell us about memory for campaign facts and their role in the candidate evaluation process? And what do the data tell us about the direct impact of the campaign message on candidate evaluation, that is, the impact that is not mediated by campaign recollections? To determine the effects of campaign messages and recall of these messages, we propose to look first at memory decay—how much of what kinds of information is forgotten over time and how quickly?—then analyze the predictive power of message and recall on candidate evaluation, and conclude with a causal analysis of the candidate evaluation process that is patterned after Figure 1.

The Nonpersistence of Memory

When we look at how much our subjects could recall from the campaign messages that they had received, our results are entirely consistent with the dominant finding in studies of individual political behavior (Delli Carpini and Keeter 1991; Erskine 1963; Neuman 1986; Smith 1989): *citizens forget . . . a lot*, with about 54% of the subjects unable to recollect a single issue that either of the candidates had addressed.³ The modal number of recalls for the issue gists was zero,



with 60.7% of the subjects unable to recall a gist—correct or incorrect⁴—for the Republican candidate and 62.1% unable to produce gist recollections for the Democrat. Recall for the specifiers was worse still, with close to 80% of the subjects not able to recollect even one specifier (again, correctly or incorrectly) for either of the candidates.⁵

This dismal level of recall of campaign information by our subjects is *not* different from what researchers typically find in surveys about real-life candidates. For instance, when we contrast the recalls in our experiment with those for congressional candidates in the 1988 NES, we find a striking congruence. As Figure 2 demonstrates, in both samples the modal number of recalls is zero, with very few people providing more than two recollections of the campaign. Indeed, the recall patterns are so similar that there is no statistical difference between them ($\chi^2 = 12.497$, d.f. = 12, *ns*).

Voters, then, appear to forget much of the campaign information to which they were exposed. This, however, is not to say that the level of forgetting is constant: some voters under certain conditions will forget more than others. Among the factors that seem to be most instrumental in determining the level of memory decay are political sophistication (Fiske, Kinder, and Larter 1983; McGraw and Pinney 1990) and the depth of information processing (Craik and Lockhart 1972).

We tested these effects using the between-subjects depth-of-processing manipulation of stage 1 of the experiment, as well as a median split of the Subjects in terms of their political knowledge—a standard measure of political sophistication (Zaller 1990).⁶ Because recall is also influenced by the time delay after exposure, delay was introduced in the analysis as a covariate. We also included age as a covariate, because past research has shown (and as the senior author can attest) that recall performance deteriorates with age. Separate analyses were performed for the complex statements and for the gists alone.

Repeated-measures ANCOVAs show that the covariates had the strongest impact on the combined⁷ gist recalls for both candidates ($F[2, 205] = 11.64, p = .000$). The strongest effect came from delay ($b = -.031, \beta = -.289, p = .000$), with age exerting a somewhat smaller influence ($b = -.011, \beta = -.194, p = .005$). The effect of the covariates on recalls of the complex statements for both candidates were somewhat weaker ($F[2, 205] = 4.57, p = .011$), in large part because the impact of delay was much smaller. Its effect ($b = -.012, \beta = -.159, p = .023$) was rivaled by the effect of age ($b = -.012, \beta = -.165, p = .021$).

For the gists, there was also a significant main effect for the depth-of-processing manipulation ($F[1, 205] = 4.23, p = .041$), with subjects exposed to the 50+ follow-up questions to the campaign fact sheet able, as predicted, to recall more than other subjects (the respective means being 1.06 and .74 information items, respectively). No significant effect of the depth-of-processing manipulation was found for the complex statements. Apparently, recall of campaign specifics is not enhanced much by asking people to think about and elaborate on the campaign information.

A more systematic effect on recall was exerted by the structural differences between subjects in their knowledge structures. For the complex statements, one's level of general political knowledge exerted a highly significant effect ($F[1, 205] = 5.87, p = .016$), with subjects high (above the median) in knowledge showing twice the number of recalls of subjects low in knowledge (the respective means are .57 versus .29 recalls for the two candidates). Political knowledge also had an effect on gist recall. Although this effect was only marginally significant ($F[1, 205] = 2.93, p = .088$), its size was similar to that found for the depth-of-processing manipulation.

While these results are informative about the factors that affect recall, their real significance is that memory for campaign information was universally weak. Conceivably, subjects could recall up to 14 issue gists but not even the extensive battery of questions and probes that made up the depth-of-processing manipulation brought recall anywhere near this upper limit. Similarly, while political sophisticates recalled twice the number of issues of nonsophisticates, their average recall was still well below a single information item. In conclusion, the recall of campaign information appears dismal even under the best of circumstances, that is, when the information is processed by knowledgeable citizens or is processed in depth.

With recall being so low, an important question becomes what it is that is being recalled. If citizens fall short of possessing a storehouse of campaign information, does what is being recalled at least provide an adequate basis for sound political judgment? Our data, like that of the NES, are not very reassuring of the quality of voters' recollections. First, issues were not recalled because of their salience to our subjects: the null hypothesis that the message is, on average, as important as the recalled information or more

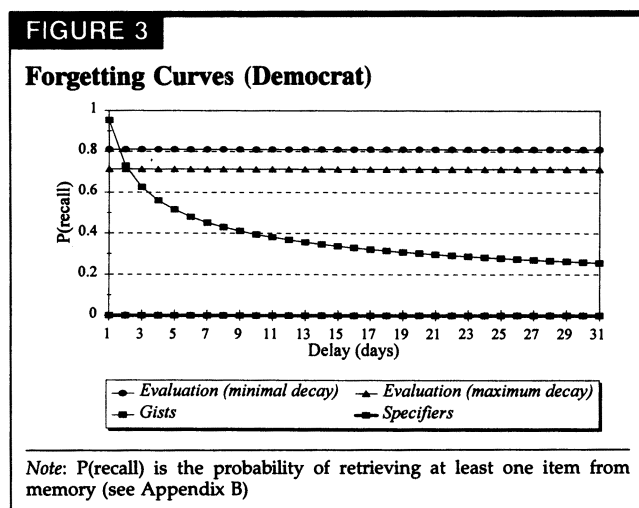
important could not be rejected.⁸ Thus, recall appears to be a fairly indiscriminate process, which may easily result in the recollection of issues that are not of great importance to the voter. Second, while the evaluation of the message and the recalled information were positively correlated, the association was rather weak: $r = .268$ for the Republican and $r = .274$ for the Democrat. Hence, what voters recall is, in terms of issue evaluations, not necessarily a fair sample of the full message.

In the light of this evidence, a vote choice that is informed by the campaign issues seems to be out of the question if we assume that candidate evaluation is memory-based. Fully 71% of our subjects would not be able to make an informed choice, either because they could not recall anything about the two candidates or because they could only provide recalls for a single candidate and could hence not make issue-based candidate comparisons. For the subjects who could recall something (anything, right or wrong) about both candidates ($n = 61$)—and could conceivably thereupon make comparisons—voting would be based on no more than two issues about half of the time.

The memorial wherewithal of voters can be questioned even further if we consider the dynamics of memory, that is, how recollections change over time. In the ANCOVAs we postulated recall to be a linear function of delay. As a first approximation this is not a bad assumption, but better recall models are available. A model that has received particularly strong support in the psychological literature is the *power decay model*, which assumes recalls to decline over time through a power function, such that recollections of campaign messages fade quickly after short time delays and more slowly after longer delays (see Appendix B).

As shown in Figure 3, application of the power decay model shows a precipitous decay in subjects' recalls of the issue gists for both candidates, with most of the forgetting occurring within one week after exposure to the campaign fact sheet. For example, considering only those subjects who were randomly assigned to the 50+ questions in the depth-of-processing manipulation (and thus have slightly better recollections), the power decay model predicts that within two days after exposure 25% of these subjects would be unable to recall any gists and after six days, the number of recalls would have dropped to zero for half of the subjects (see Appendix B). For the complex statements, recall declined even more steeply, with most of the forgetting occurring within one day after exposure. Moreover, when the recalls of all subjects were considered, still steeper forgetting curves were obtained (results not reported). The conclusion to be drawn from these analyses is clear: *memory for campaign messages not only fades but fades quickly, the half-life of the message typically being less than a week.*

The evidence so far clearly casts doubt on the viability of memory-based assumptions in models of electoral behavior. An obvious question, however, is



whether an on-line processing assumption fares any better. To shed light on this issue we would have to look (albeit indirectly) at the decay of the OL tally in memory—"indirectly" because the OL tally is a latent variable and, as such, unobservable. It is possible, however, to gauge memory for candidate evaluations, which may serve as proxies for the OL tally.

In determining memory for candidate evaluations we make the assumption that, with some degree of error, changes in candidate evaluation reflect an imperfect memory for the OL tally.⁹ One possibility is to claim that subjects have forgotten the OL tally if they were capable of providing a candidate evaluation at t_1 (the time of exposure) but not at t_2 . A second option is to attribute any change in candidate evaluation to decay of the OL tally. While the first criterion probably underestimates the amount of decay in the OL tally, the second criterion probably overestimates it because opinion change may take place for reasons other than forgetting.¹⁰ The two criteria, then, provide a lower and upper bound on the decay of the OL tally. When we use these two bounds, the top two forgetting curves in Figure 3 result. These curves tell a very clear story: a majority of the subjects who provided both t_1 and t_2 candidate evaluations did indeed recall which of the two candidates they liked or disliked. Thus, while memory for the campaign issues declined steadily to low levels, memory for the overall evaluation of the candidates was remarkably robust and stable over time.

In sum, these analyses demonstrate that memory for campaign messages is weak: citizens forget a lot of campaign information rather quickly. By all normative standards—*were we to rely on recall*, the citizen would appear to be rather unaware of what goes on in political campaigns. At best, he or she may remember a thing or two about the candidates and their issue stands but it is clear (from the forgetting curves) that by the time a vote has to be cast much of the information that was attended to has faded from memory.

New Evidence on the Democratic Citizen: Voter Responsiveness

The evidence we have presented so far in essence replicates and expands received wisdom about the American voter. Voters, it would appear, lack the ability to recall essential campaign facts, even (as we have shown here) after short periods of time. And in keeping with received wisdom, one could easily infer from our evidence that voters, unable to recall the most basic issue positions of the candidates, are not politically sophisticated and (so the logic goes) that campaigns are inconsequential because little if any campaign information sticks in voters' minds. However, we counsel caution in drawing such a negative conclusion about the democratic citizen, for we hope to show that it is not the citizen who is at fault but, rather, the memory-based assumption.

We begin our reconsideration of the qualities of the democratic citizen by challenging the implicit assumption in memory-based models that recall is a critical mediator between campaign stimuli and candidate evaluations (see Price and Zaller 1993). We contend that campaigns can have an effect that is quite independent from recall. Instead of being mediated by citizens' recollections of the campaign specifics, this effect is mediated by the OL tally, which integrates the affective evaluation of all the campaign information the citizen is attentive to.

Although we do not have a direct measure of the OL tally itself, we do know what campaign information our subjects were exposed to and their prior evaluations of this information. We can thus correlate subjects' candidate evaluations with their affective responses to the issue positions that the candidates expressed in the campaign fact sheet, which we now label the *candidate message*. To the extent that candidate evaluations are strongly related to candidate messages, we would say that our subjects are responsive to the information in the campaign, *regardless of whether they can actually recall the campaign contents*. On the other hand, should it be shown that message exerts a substantively small effect on candidate evaluation, we would have to conclude that voters are unresponsive to the campaign and would join the ranks of those who question the quality of electoral decision making of democratic citizens. In the ensuing analyses we will move from simple through more rigorous tests of alternative on-line and memory-based models of the responsive voter.

The Role of Message in Candidate Evaluations. A first impression of the impact of message on candidate evaluations can be obtained by considering the zero-order correlations between these variables. Table 1 presents these correlations, with message operationalized as the average of a subject's evaluation of *all* the policy stands (gists and specifiers) taken by each candidate in the fact sheet. The message-evaluation correlations, while not overwhelmingly strong, are significant and in the right direction.¹¹

TABLE 1
Message, Recall, and Candidate Evaluation
(Pearson Zero-Order Correlations)

RELATIONSHIP	ALL SUB- JECTS	DEPTH-OF- PROCESSING MANIPULATION	
		ABSENT	PRESENT
Democrat	(n = 158)	(n = 84)	(n = 74)
Message-evaluation	.2846***	.1891*	.3700***
Recall-evaluation	.2377***	.1691	.2620**
Republican	(n = 160)	(n = 85)	(n = 97)
Message-evaluation	.3796***	.3623***	.3958***
Recall-evaluation	.1932**	.1391	.2622**

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

If the size of the message-evaluation correlations seems unimpressive, we should keep in mind that the recall-evaluation correlations are weaker still. Recall was operationalized here in a manner similar to message, namely as the average of the evaluations of all gists and specifiers that a subject retrieved from memory for a candidate.¹² If subjects could not retrieve any issue for a candidate the recall score was set to the neutral point.¹³ Doing so, we find a rather weak recall-evaluation correlation for the Republican and a somewhat stronger correlation for the Democrat. In both cases, however, the correlation falls short of that observed between message and evaluation.

One circumstance under which one might expect the recall-evaluation correlation to exceed the correlation between message and evaluation would be when voters are stimulated to think hard about the campaign information, as did our subjects in the in-depth-processing condition. As Table 1 columns 2-3, indicate, the recall-evaluation correlation does indeed improve when in-depth processing is encouraged. However, even under these most favorable conditions for memory-based processing, the correlation between recall and candidate evaluation does not surpass the correlation between message and candidate evaluation. Thus, even under circumstances that are most congenial to the preservation of campaign information in voters' minds, candidate messages are more strongly correlated with the subjects' overall candidate evaluations than is the affective value of their recollections of campaign events.

Although the correlations are suggestive of the importance of message in the candidate evaluation process, stronger evidence can be obtained by considering recall and message simultaneously in a regression analysis. This analysis also includes party identification (PID) as a predictor of candidate evaluation, as partisanship captures important influences on the vote that are relatively independent of the campaign and its issues. Table 2 reports the regression results, with all variables scaled to a 0-1 range to make their regression coefficients directly comparable.

The results in Table 2 confirm the importance of message in the candidate evaluation process. Not only is message a significant predictor of candidate evaluation, but its impact is substantial, rivaling the effect of PID for the Democratic candidate. Because this candidate's policy stands were somewhat at odds with our subjects' stereotypical image of a Democrat, they added substantially to whatever information the partisan label revealed. Apparently, our subjects were responsive to the somewhat discrepant nature of the Democratic candidate and did not rely solely on their partisan feelings to guide their candidate evaluation.

Another striking result of the regression analyses in Table 2 is that recall does not play much of a role at all. Once we control for the impact of message, recall either becomes statistically insignificant or has a much diminished effect on candidate evaluation.¹⁴ The importance of message for candidate evaluations is illustrated by the fact that the fit of the model deteriorates significantly when message is eliminated as a predictor. Comparisons of the three-variable regression analyses reported in Table 2 and the more common regression of recall and PID on evaluation show how critical message is: $F[1, 141] = 8.674, p < .01$, for the Democratic candidate; and $F[1, 143] = 8.177, p < .01$, for the Republican. In contrast, eliminating recall from the regressions in Table 2 does not greatly affect the model fit: $F[1, 141] = 3.287, p < .10$, for the Democrat; and $F[1, 143] = .608, ns$, for the Republican.

Two important conclusions may be drawn from the regression results. First, in contrast to what political scientists often assume (Kelley 1983; Price and Zaller 1993), recall is not a necessary condition for political

TABLE 2
Message, Recall, PID, and Candidate Evaluation
(OLS Regressions)

PREDICTOR	CANDIDATE EVALUATION	
	DEMOCRAT <i>B</i>	REPUBLICAN <i>B</i>
Message	.384*** (.130)	.299*** (.105)
Recall	.149* (.082)	.055 (.069)
PID	-.330*** (.053)	.407*** (.057)
Intercept	.472*** (.093)	.131** (.059)
Adjusted R ²	.291	.378
Standard Error of Regression	.190	.190
n	145	147

Note: All variables are scaled in the 0-1 range. Estimated standard errors appear in parentheses.
 * $p < .10$.
 ** $p < .05$.
 *** $p < .01$.

information to be influential on the judgments and decisions that democratic citizens make. On the contrary, once the impact of message is considered the effect of recall is greatly reduced. We emphasize this point because it helps account for why experiments and surveys produce different results about the impact of recall on evaluation. Surveys cannot control for message; consequently, much of its effect is absorbed by recall. By taking message explicitly into account, as we did in our experiment, recall plays a lesser role. Thus, the strong showing of recall in surveys may well be a statistical artifact, that is, a product of researchers not specifying the logically prior effect of message on the judgmental process.

Of greater importance than the methodological implication of considering message are the substantive implications for democratic theory. In contrast to the thrust of much empirical work in electoral behavior, we trumpet V. O. Key's dictum: "Voters are not fools." From the on-line perspective, voters are seen as actively bringing their evaluation of the campaign issues to bear on their political evaluations and choices, this being especially apparent when a candidate deviates a bit from partisan expectations. In our view, the regression analyses in Table 2 can be readily interpreted in a straightforward way: voters are responsive to political campaigns. No matter how little voters may recall from the campaign, our evidence suggests that *if* attentive to campaign issues and events, they use this information to inform their candidate evaluations.

Caveats. Although we view our results as convincing evidence for voter responsiveness, several questions might be raised. First, it could be argued that the limited effect of recall is a methodological artifact of how we coded missing data to the neutral midpoint of the evaluation scale. By assigning the numerous subjects without retrievals to a neutral point we may have greatly reduced the variance of our recall measures for both candidates (see Little and Rubin 1987), thereby stacking the deck against finding significant recall effects. This does not prove to be a problem, as the variances of the recall measures exceeded those of message. Nonetheless, we reestimated the candidate evaluation models for the subgroup of subjects who had at least one retrieval for a given candidate. Doing so hardly affects the results reported in Table 2. Indeed, the results (unreported) for the Republican candidate are almost unchanged. The results for the Democrat show a weakening of the effect of message but *not* to the advantage of recall. In fact, the recall effect becomes somewhat weaker when we consider only those subjects who could recollect at least one pro or con for the Democrat, and it is overshadowed by the effect of message. We consider this evidence that our results concerning the limited role of recall are not a statistical artifact.

A second concern that could be raised is that our findings are an artifact of the way we constructed message and recall. This is a substantively more interesting issue, because it directly pertains to the

way we believe information is integrated. So far, we have postulated a simple additive rule, whereby the evaluations of all information items are equally weighted and then summed. However, this is only one of many possible information integration rules, albeit one that is rather prevalent in political science. Hence it is legitimate to ask whether our results would look different if we were to use a different integration rule.

Although this is not the place to discuss the many ways in which voters can combine campaign information (see Taber and Steenbergen 1994), we did replicate our analyses employing an information integration rule that is most favorable toward recall, namely Kelley and Mirer's (1974) "simple act of voting," which (as noted earlier) is a straightforward memory-based model. This rule postulates that voters classify the issues that they recall into likes and dislikes. For each candidate, the voter subtracts the dislikes from the likes to arrive at net liking scores. The candidate with the largest number of net likes is the preferred candidate, with PID acting as a tie-breaker in the case where two candidates receive the same net liking score.

Table 3 reports the results for the Kelley-Mirer information integration rule, as applied first to recall and then (by extension) to message, operationalizing this as the between-candidate difference in net liking scores for all the statements in the candidate fact sheet. Since recall and message are on different scales we report both unstandardized and standardized regression coefficients. The dependent variable in the analysis is the difference in evaluation between the Democratic and Republican candidates.

The results for a recall-only model, which are reported in the first two columns, are congruent with what Kelley and Mirer (1974) find, namely, significant recall effects and critical effects from PID as a tie-breaker.¹⁵ In addition, there is a strong effect from recall tie. If recall and PID are set to 0, so that the recall tie dummy is 1, our subjects favored the Democratic candidate (intercept is 2.086 + .443). If recall is not 0, so that there is no recall tie, the baseline evaluation of the candidates was about neutral (intercept is .443).

The role of recall dwindles, however, when we include the difference in net liking scores for candidate messages. As Table 3, columns 3-4 demonstrate, the results for the Kelley-Mirer information integration rule mimic the results in Table 2, showing a significant and substantively sizable effect from message and an insignificant effect from recall ($p < .15$). Note also that the standardized regression coefficient for message is considerably higher than for recall. This finding not only illustrates the robustness of the message effect across different information integration rules but also offers an interesting commentary on Kelley and Mirer's (1974) model. The strong memory-based effects that their model suggests do not appear to be very robust: as soon as message is entered as a control variable, the importance of recall as a determinant of candidate evaluation fades.

TABLE 3

Message, Recall, PID and Candidate Evaluation: Kelley–Mirer Model (OLS Regressions)

PREDICTORS	RECALL ONLY		RECALL AND MESSAGE	
	B	β	B	β
Message [Net Likes(Dem) – Net Likes(Rep)]	—	—	.076*** (.017)	.339
Recall [Net Likes(Dem) – Net Likes(Rep)]	.296*** (.079)	.283	.125 (.083)	.120
Recall Tie	2.086*** (.482)	.643	1.420*** (.484)	.438
Message Tie	—	—	1.380 (2.395)	.119
PID * Recall Tie	-.806*** (.137)	-.857	-.616*** (.138)	-.655
PID * Message Tie	—	—	-.503 (.620)	-.168
Intercept	.443** (.179)	—	.082 (.191)	—
Adjusted R ²	.269		.348	
Standard Error of Regression	1.385		1.308	
n	152		152	

Note: Dependent variable is difference in candidate evaluations between the Democrat and Republican. Estimated standard errors appear in parentheses.

** $p < .05$.

*** $p < .01$.

While the critical role of message in candidate evaluation appears to be robust, skeptics might question our assumption that the voters are responsive to the entire message rather than parts of it. Specifically, the question is whether voters only use their gist evaluations to judge political candidates or whether they also bring the candidates’ elaborations and qualifications into play. The answer to this question is important for determining exactly how responsive voters are to political campaigns.

We assessed the extent of voter responsiveness through a model comparison test. In a first model we predicted the evaluation of each candidate by the average evaluation of that candidate’s complex statement (both gists and specifiers). The second model eliminated the specifiers, that is, the average evaluation of all specifiers to an issue gist, allowing us to compare the fit of this gist-only model with the full model. In both models, PID was entered as a control variable. Eliminating the specifiers significantly decreases the model fit significantly: $F[7, 110] = 2.113$, $p < .05$, for the Democrat; and $F[7, 123] = 1.855$, $p < .10$, for the Republican. It appears, then, that our subjects took the entire message into account in their candidate evaluations and not just the general themes.

**The Candidate Evaluation Process:
A Causal Model**

The results up to this point provide strong evidence for our theoretical claims. First, voters do seem to incorporate campaign information in their candidate

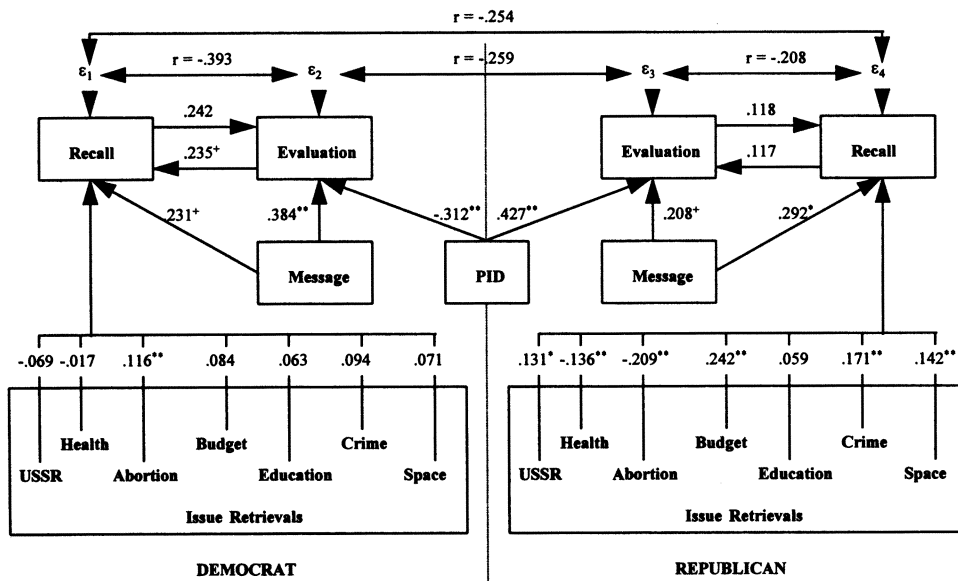
evaluations; that is, they are responsive. Second, recollections of the campaign play at best a modest role in the candidate evaluation process and are clearly subsidiary to the impact of message. So far, however, our analyses have fallen short of considering the model proposed in Figure 1. That is, we have so far given recall and message the same causal status, although we know that message is logically prior to recall. Moreover, we have so far assumed that recall causes candidate evaluation, while our theory suggests that voters’ recollections may actually be the product of these evaluations. This implicit acceptance of a basic premise of memory-based candidate evaluation models may have resulted in the overestimation of recall effects.

Figure 4 displays a model that more closely corresponds to the theoretical notions set forth in Figure 1, adding the distinctive feature that it considers both candidates simultaneously. The candidate evaluation portion of this model is similar to the regression analysis in Table 2: candidate evaluation is modeled as a function of recall, message, and PID.

The recall portion of our model reflects three possible mechanisms that can generate the affective value of voter recollections. First, recall can be driven by whatever issues a voter happens to retrieve from memory for a given candidate. This mechanism does not assume a particular evaluative direction in the retrieval of issues. No assumption is made, for example, that retrievals are more likely for issues that were evaluated consistently with subjects’ candidate evaluations. Indeed, the correlation between the issue retrieval dummies (0 = no retrieval, 1 = retrieval) and

FIGURE 4

Causal Candidate Evaluation Model



Note: n = 144. Model fit: Normal theory $\chi^2 = 57.847$, df = 46, $p = .113$; Robust $\chi^2 = 62.469$, df = 46, $p = .053$; Comparative Fit Index (CFI) = .998. All variables scaled in 0-1 range. ** $p < .01$, * $p < .05$, † $p < .10$.

candidate evaluations tends to be low and is, except for one out of 14 cases, statistically insignificant. (The average polychoric correlation between candidate evaluation and issue retrieval is .143 for the Democrat and -.090 for the Republican).

The two other mechanisms that may drive recall are directional in nature. One of these mechanisms postulates that recall is a function of candidate message. Specifically, recall is assumed to absorb the evaluative implications of the campaign, such that retrievals are a fair sample of the campaign items to which voters were exposed. Alternatively, we postulate a rationalization effect whereby recall is driven by candidate evaluation. If existent, we expect this effect to be positive, meaning that retrieval is biased in favor of items that are affectively consistent with one's overall evaluation of the candidate.¹⁶ Notice that this biased retrieval effect competes with the first recall effect that we described.

Three further comments are in order for the model depicted in Figure 4. First, no effect from PID on recall was specified, since both variables are hardly correlated ($r = -.061$, ns, for the Democrat; $r = .119$, $p < .10$, for the Republican). Second, the model contains correlated errors ($\epsilon_1, \dots, \epsilon_4$) between the recalls and evaluations of each candidate, between the recalls for both candidates, and between the evaluations of both candidates. Finally, all variables in Figure 4 are scaled in the 0-1 range, so that unstandardized parameter estimates are directly comparable.¹⁷

The model in Figure 4 fits the data adequately (as indicated, in particular, by the Comparative Fit Index) and reinforces the main findings of our previous

analyses. That is, we find a sizable and statistically significant effect of message on candidate evaluation, while the effect of recall is substantively small and not significant. Figure 4, however, also shows that it can be quite misleading to assume that recall is causally prior to candidate evaluation. Although only marginally significant, Democratic candidate evaluation has a sizable and positive effect on the recall for this candidate, indicating the presence of a biased retrieval mechanism. Note that this effect is similar in magnitude to the effect of message on recall, suggesting that retrieval may be as much the product of voters' judgments of a candidate as it is the product of their processing of campaign messages. As a consequence, recall may be a very poor proxy for measuring how voters respond to campaign information.

It should be noted that we only find an effect of candidate evaluation on recall for the Democratic candidate. Note that unlike the Republican candidate, who espoused a consistent party line, the Democrat "trespassed" on Republican turf on two of his seven issue positions. Consequently, this candidate was not only liked by subjects who identified themselves as Democrats but also by about 36% of the Republican identifiers, who favored these Republican policies (sometimes more so than the Democrats). The latter group, in particular, may have felt a need to rationalize their positive evaluations of a Democrat, hence recalling issues that were consistent with their candidate evaluation. No such similar need existed for Democratic identifiers with respect to the Republican candidate, since only 10% of the Democrats liked this candidate. This may account for the

insignificance of biased recall for the Republican and the stronger showing of the first recall mechanism that we postulated, namely, recall based on whatever issues voters retrieve from memory. Of course, it only reinforces our main conclusion if our subjects were so sensitive to the stereotypicality of candidates: voters are responsive to the features of a campaign.

CONCLUSIONS

Our results point in two directions. First, voters appear to be responsive to the campaign information that they receive, even in the low-stimulus election that we presented to our subjects. Second, this responsiveness is not reflected in voter recollections of the campaign. Even after a short delay voters are unable to recall many of the campaign facts and this includes circumstances in which the number of facts is small and the conditions for memory-based processing favorable. These results have important methodological, substantive, and normative consequences.

Methodological Implications. Methodologically, our findings suggest that it is easy to overstate the role of memory in political judgment when all that is available are survey data. Models of the vote choice typically find strong effects of recall on candidate evaluations in survey data. Surveys, however, can neither measure directly nor control for what information voters are actually exposed to during the campaign. Consequently, they are unable to determine the direct impact of campaign events on political judgment and choice.

Our findings suggest that proper control for campaign exposure will dramatically reduce the effect from recall to the point that it is unclear that the recollection of campaign events matters much at all. The required controls, however, can practically only be obtained in an experimental setting where the researcher has the ability to systematically influence the amount, type, and timing of the information that subjects receive. Hence, we believe that statistical inferences about the role of recall in political judgment are better made with experimental than with survey data.

Substantive Implications. Substantively, our results provide commentary on three topics central to the study of electoral behavior: (1) our understanding of the bases of voting behavior, (2) our understanding of campaigns, and (3) our understanding of political information processing.

In terms of the bases of electoral behavior, our results give further credence to earlier criticisms of memory-based models of candidate evaluation (Lodge, McGraw, and Stroh 1989; Lodge and Stroh 1993). Here, in looking at recall over more realistic time intervals and under circumstances ideally suited to memory-based information processing, recall played at best a modest role in the candidate evalu-

ation process, after message had been controlled for. We view this as evidence that we should integrate message-based models of vote choice into the analysis of electoral behavior.

An emphasis on the content and structure of candidate messages (see Rahn, Aldrich, and Borgida 1994) might well lead to a more positive appreciation of the role of campaigns and media effects. If recall were the only mechanism through which campaign information could affect political judgment and choice, then our data suggest that campaigns are inconsequential for most voters. However, we find that campaign messages have a substantial impact on evaluations independent of recall. The way in which this influence was brought about in our experiment mimics Lazarsfeld, Berelson, and Gaudet's (1948) understanding of campaign effects. That is, we measured prior attitudes about a range of issues and assumed that these attitudes would be mobilized by the campaign as candidates addressed the issues. Our results indicate that this type of campaign effect can be very strong, adding sustaining evidence to prior work on the importance of campaigns (Bartels 1993; Marcus and MacKuen 1993).

Finally, our results suggest a very different model of information processing than is oftentimes assumed in political science. Our discipline relies too heavily on—and often draws the wrong conclusions from—the assumption that political information can only exert an effect on political judgment if citizens remember it. To cite Price and Zaller, "For many—and quite possibly most—survey research purposes, news stories that are encountered but not comprehended and *retained* have little importance because they have few detectable consequences for the person's store of information, attitudes, opinions, or behaviors" (1993, 135; emphasis ours).

In contrast to Price and Zaller (and many other scholars) we believe there are many circumstances (political campaigns being a case in point) under which memory does not play a critical mediating role. We have demonstrated that campaign facts can exert an influence over political judgment even for subjects who could recall few if any of these facts. The mechanism that we propose for these campaign effects is a version of the on-line model of information processing: the campaign raises issues that mobilize issue opinions that voters subsequently integrate, along with other factors like PID, into a running affective tally for each candidate. In this process recollections do not play a decisive role, short of the requisite that the OL tally be recalled.

Normative Implications. In our view, the most important conclusion to be drawn from this research lies in the normative domain. Much has been said about the failure of citizens to live up to democratic standards (see Hanson and Marcus 1993). Often these standards have been stated in terms of how much political information citizens can recollect in reply to knowledge questions or open-ended questions about their likes and dislikes of candidates, parties, and

issues. Our findings run counter to this outlook: we suggest that information holding is but one standard of good citizenship and not necessarily an appropriate or important one (see Graber 1984). Rather than judge the citizen as we would a student taking an exam, we think it far more valid to judge the citizenry in terms of how much impact this information has on their judgments. What is important is not so much whether citizens can recall a little or a lot of information but that their political judgments and choices reflect their evaluation of the information. Because recall is, as we have seen, not a critical mediator of campaign information, the question about the impact of information is quite independent from the question of recall.

This being the case, some recasting of research questions is called for. If the issue is not how much information people can recollect about the candidates but how much of what kinds of information they

actually entertain over the course of the campaign, then we need to focus on what campaign information is available and the conditions under which citizens will make the cognitive effort to mull over this information and expend scarce attentional resources to integrate the affective value of messages into an overall impression of candidates and issues. From this bounded rationalist perspective, a critical question for democratic theory focuses on the information integration rules people use to increase or decrease their OL tallies. Only when this question is answered can we then ask whether responsive voters are also reasonable people.

APPENDIX A

In stage 1c, subjects read the campaign fact sheet presented in Table A-1.

TABLE A-1

Candidate Fact Sheet

	DAVE WAGNER, REPUBLICAN	TOM MESSINGER, DEMOCRAT
Background	Born: February 11, 1944. Hometown: Erie, Pennsylvania. Education: A.B., University of Pennsylvania; LL.B., Washington University. Career Highlights: U.S. Navy (1963–1967), City Councilman (1972–1974), Assistant Director of State Budgeting (1982–1986), and State Senator (1986–present). Married to Ruth, two children—Betty and Mary.	Born: March 4, 1943. Hometown: Greensburg, Pennsylvania. Education: B.A., M.B.A. Slippery Rock School of Business. Career Highlights: U.S. Air Force (1962–1965), County Commissioner (1968–1974), State Assemblyman (1976–1984) and State Secretary of Commerce (1986–present). Married to Gladys, three children—Frank, Beth and Peter.
Soviet Union	America should provide technical assistance to the newly independent Soviet republics in order to improve the internal distribution of food and establish an economy based on private-ownership. Dave also favors granting most-favored-nation trading status to the newly formed governments.	The United States ought to help the Soviet Union continue its democratic and economic reforms. This includes food shipments, low-interest loan guarantees, and diplomatic recognition of the independent republics.
Health care	Dave believes the government is not the solution to the nation's health care crisis. He opposes programs that force businesses to provide health care to their workers. Instead, Dave advocates limits on damage awards in medical lawsuits, more competition among medical professionals, and responsible health habits.	Tom supports the establishment of a federal health insurance program by requiring businesses to insure their workers or contribute to a government health-insurance fund. The program would include prenatal and infant check-ups, screening for common cancers, and regular physical examinations.
Abortion	Dave Wagner wants to prohibit abortions in all cases, except those threatening the mother's life. He also advocates the counseling of pregnant women about adoption, education programs that emphasize sexual responsibility and abstinence, and over-turning the Supreme Court's <i>Roe v. Wade</i> decision.	Tom supports the abortion rights of women. He also supports the prevention of unwanted pregnancies, counseling pregnant women on their medical options, including abortion, and rules allowing Medicaid to pay for abortions for poor women who are victims of rape and incest.
Budget deficit	Raising taxes is an anti-growth policy, and gives our economic competitors an unfair advantage. Instead, the government should cut unnecessary programs and improve efficiency in order to comply with the Deficit Reduction Act.	To meet the deficit-reduction targets, the government should improve its efficiency and eliminate non-essential programs. Under no circumstances should the government raise taxes to balance the budget.

(continued on next page)

TABLE A-1 (continued)

Candidate Fact Sheet		
	DAVE WAGNER, REPUBLICAN	TOM MESSINGER, DEMOCRAT
Education	Dave supports the reform of our nation's education system. He advocates merit-based salary increases for teachers, nation-wide standards in basic school subjects, and school voucher-systems, which give parents the right to choose the best school for their children.	Tom favors an expansion of federal education programs. This includes the establishment of nation-wide testing for high-school student competency, giving parents the right to choose the best school for their children, and the creation of federally financed "magnet-schools."
Crime and drugs	Dave favors an aggressive war against crime and drugs in our neighborhoods. This includes the interdiction of drugs before they cross our borders and police crack-downs on casual drug-use. Furthermore, he supports the confiscation of drug-offender possessions and the death penalty for drug-related murder.	Tom supports federal laws which crack-down on drugs and crime. He favors the death penalty for murderers, mandatory sentences for drug king-pins, and a mandatory waiting period and background check to purchase a firearm. Tom also supports treatment programs for drug addicts.
Space program	The United States should expand NASA's space program. This includes the construction of new space shuttles and the eventual establishment of a permanent base on the Moon.	Tom favors the re-ordering of our priorities in outer space. He wants to cut the space station budget, and use unmanned rockets to lift satellites into orbit.

APPENDIX B: THE STATISTICAL ANALYSIS OF MEMORY DECAY

Cognitive and experimental psychology have had a long tradition of describing the functional form of forgetting over time. Researchers have adhered traditionally to Ebbinghaus' (1964) seminal work on forgetting curves, which relied on logarithmic functions. However, recent evidence, based on a wide variety of experimental conditions and response modalities, suggests that a power decay function provides a better and more general description of memory decay (Wixted and Ebbesen 1991; see also Wickelgren 1974). This decay function is commonly formulated as $y = \alpha t^\beta + \epsilon$ over the domain $t \in <0, \infty>$. Here y is a recall performance measure (e.g., the number of items from a list that can be recalled), ϵ is a disturbance term, t is the delay between exposure to information and its recall, and $\beta \leq 0$ is a decay parameter that determines the decay rate [$dy/dt = \beta(y/t)$]. Given the form of the decay rate it is clear that the power decay model implies that memory decay slows down as the delay increases or as the amount of information in memory decreases.

The final parameter of the power decay model is $\alpha \geq 0$. This is a scaling parameter that ensures that y is not automatically 1 when t equals 1. This would be undesirable, because y can be measured on many different scales, depending on what recall performance measure is used and how much information subjects were exposed to. A substantive interpretation of α is that it gives the recall performance after a time delay of one unit (e.g., a day).

The power decay model is usually applied to recall performance measures that assess how much information is retained in memory. Information-based performance, however, may be problematic to analyze statistically when only one information item was attended to. In that case y is a dichotomous variable (subjects either recalled or did not recall the information item), and all the standard problems with analyzing dichotomous variables (e.g., heteroscedasticity) will enter the analysis. Solutions for these problems are readily available for linear models that are estimated through ordinary least squares, but equivalent solutions for nonlinear models are less straightforward.

To overcome the statistical problems involved in analyzing the power decay model for dichotomous recall-performance measures, we constructed an alternative measure that is both intuitive and easy to handle in statistical analysis. We define recall performance as the *proportion* of subjects who were exposed to some information set of one or more items and who could recollect one or at least one

item after t units of delay. This definition permits the estimation of forgetting curves in cases where only one item is subject to memory decay, as in the case of candidate evaluations.

Given the generality of the power decay model, we believe that a definition of y in terms of proportions of subjects is appropriate. This definition causes no special problems statistically. The power decay model for proportions can be estimated through standard nonlinear regression algorithms, subject to a specific loss function. We employed a sequential quadratic programming algorithm that minimizes the sum of squared residuals (Thisted 1988). Estimation was subject to the normal constraints— $\alpha \geq 0, \beta \leq 0$ —as well as the additional constraint, $\alpha \leq 1$, that was imposed to secure that the predicted values of y are in agreement with the probability axiom that proportions cannot exceed 1. The estimates were weighted to accommodate the fact that y is a statistic (i.e., a proportion) that may be based on different sample sizes for each t .

TABLE B-1

Memory Decay Models (Nonlinear Regressions)

MODEL (SUBJECTS WITH IN-DEPTH PROCESSING)	ESTI-MATED α	ESTI-MATED β
Recall Democratic candidate		
Evaluation (upper bound on memory decay)	.714*	-.015
Evaluation (lower bound on memory decay)	.811*	.000
Gists (≥ 1 gist)	.953*	-.382*
Specifiers (≥ 1 specifier)	.247	-.219
Recall Republican candidate		
Evaluation (upper bound on memory decay)	.730*	-.127
Evaluation (lower bound on memory decay)	.839*	-.016
Gists (≥ 1 gist)	.955*	-.369*
Specifiers (≥ 1 specifier)	.358	-.233

* $p < .05$ (based on bootstrapped standard errors).

Notes

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1. Whether the rules for integrating information into a summary judgment are normatively correct or not is a different question. See Taber and Steenbergen (1994) for a description and analysis of various decision rules for integrating information into vote choice.

2. The notion of voter responsiveness was introduced earlier by Pomper (1975) to distinguish voting behavior that is attentive to the issues of the day from behavior that is driven only by long-term or stable factors such as race and party identification. Our usage of the term is essentially in line with this definition, although our approach is quite different from that by Pomper.

3. When both issues and candidate characteristics were considered the percentage of recalls increased somewhat, although not by very much. In keeping with most voting models, we will consider only issue recalls in the remainder of this paper. However, had we included recalls of candidate characteristics as well, our results would have essentially been the same.

4. Memory-based models of candidate evaluation are generally oblivious about whether recalls are factually correct or not. For this reason we analyzed the recall data without regard for their validity.

5. Specifier recalls were only counted when a subject also recalled the corresponding gist, that is, when a subject recalled the complex issue position. This restriction was imposed because specifiers only make sense in the light of an associated gist.

6. The political knowledge scale consisted of six items concerning the party affiliation of national political figures. Each item was scaled from -1 (incorrect response) to 1 (correct response), with 0 indicating *don't know*. The items form a moderately strong stochastic cumulative scale under Mokken's scale model ($H = .54$), with a decent reliability of .754 (Sijtsma, Debets and Molenaar 1990). Although the political knowledge items are themselves memory-based, we are confident in using them as independent variables, because the memory task involved is rather distinct: the knowledge questions rely on recognition, whereas recollections of the campaign information were obtained through cued recall.

7. The combined recall for both candidates was one type of dependent variable that was analyzed in the repeated-measures ANCOVAs. The other dependent variable was the difference in recalls between the two candidates, which permits an analysis of the within-subjects manipulation of partisan consistency. Since no significant effect of this manipulation was found, we will only report the results for the combined candidate recalls.

8. Considering Average Importance of Message (Sum of Importances for All Issues ÷ Number of Issues) - Average Importance of Recalls (Sum of the Importances for All Recalls ÷ Number of Recalls), we obtained the following test results: $t(76) = 1.567, p = .94$ for the Republican; $t(66) = 1.006, p = .84$ for the Democrat.

9. This assumption is reasonable for two reasons. First, the campaign fact sheet was the only information that we disseminated to our subjects, so that changes in candidate evaluation cannot be attributed to the intake of new information about the candidates. Second, because the race between the candidates was low-stimulus (many of our subjects admitted to have little interest in the race) it is questionable that our subjects spent much time in rethinking the candidates' issue

positions. Hence, cognitive responses to the information are an implausible mechanism for producing changes in attitudes toward the candidates.

10. One reason for opinion change, of course, is measurement error. To reduce this problem we assessed change in candidate evaluation in terms of collapsed versions of the candidate evaluation scales, distinguishing only between negative, neutral, and positive feelings toward a candidate. Opinion change was defined as the movement from one affective category to another.

11. *Candidate evaluation* always refers to the judgments of the candidates that subjects gave in the t_2 portion of our study.

12. Because we now define recall in evaluative terms, we will no longer use it to describe the act of retrieving information from memory. This is now referred to as *retrieval*.

13. This procedure implies that subjects without recalls are equated with subjects who recall items that they feel neutral about or subjects who recall a mix of items that neutralize each other. We view this as imminently reasonable, since a lack of recalls should have the same effect as neutral recalls, namely that voters cannot decide which candidate they like best on the basis of their issue recollections.

14. Analyses with recall and PID as the sole predictors of candidate evaluation show a significant recall effect for the Democratic candidate ($b = .221, p = .007$). A similar analysis for the Republican candidate reveals an insignificant effect of recall, but its effect size is almost twice as large as that in the analysis reported in Table 2.

15. In this analysis we adopted the methodologically unconventional method of specifying an interaction with PID without including PID itself in the regression. Although this specification preserves the tenets of the Kelley-Mirer information integration rule, we did reestimate the model including PID as a main effect. Doing so, we find that the interaction of PID and recall ties becomes statistically insignificant, while the main effect of PID is highly significant. However, with respect to the relative impact of message and recall, nothing substantial changes in the patterns reported in Table 3.

16. A positive effect of candidate evaluation on recall can imply one of two things. First, there may be biased retrieval. Second, voters may have unbiased retrieval but change the affect for retrieved items so as to be consistent with their candidate evaluation. We have precluded this latter mechanism by using the affective values for gists and specifiers that were measured before our subjects were exposed to the candidates.

17. The model was estimated through EQS version 4.0 using generalized least squares. Because of a lack of normality of the endogenous variables conditional on the exogenous variables normal standard errors and test statistics are incorrect. Therefore, robust standard errors were obtained, while the Bentler-Satorra scaling correction was applied to obtain a correct model test (see Bentler 1992).

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Milton Lodge is Professor of Political Science and Shawn Brau is a graduate student at State University of New York at Stony Brook, Stony Brook, NY 11794-4392.

Marco R. Steenbergen is Assistant Professor of Political Science, Carnegie Mellon University, Pittsburgh, PA 15213.