Motivated Reasoning and Voter Decision Making:
Affect and Evaluation

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Abstract

Voters *feel* about political candidates at least as much as they *think* about them. And yet we know relatively little yet about how an affective sense about a candidate – global evaluation – interacts with information voters learn about candidates. Motivated reasoning suggests that when an initial evaluation of a candidate is established, that evaluation acts as an anchor against which any new information has to struggle to be accounted for properly. Thus instead of operating as efficient Bayesian updaters, calculating correctly how new information should balance against existing feelings, studies show voters stick to their existing affect, at least for a while. The problem is we do not really know how this process works. In particular at some point a voter who encounters enough negative information about a previously liked candidate – or good stuff about a disliked one – may finally adjust global evaluations to be more in line with "reality". But at what point? This paper reports the results of a study using dynamic process tracing designed to put subjects into the position of learning bad things about a good candidate and good things about a bad one. The results show evidence of motivated reasoning, but the process is eventually attenuated as incongruent information finally breaks through pre-existing affect.

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Rational choice theorists have long argued that judgments should be adjusted by

Bayesian updating, where new information is accurately evaluated and used to adjust prior

evaluations in a predictable and sensible way. Thus, negative information should cause posterior

beliefs to move away from priors, while positively evaluated new information should strengthen

existing beliefs (Green and Gerber, 1999). Political psychologists, though, generally believe the

updating process is not especially rational, and that people are motivated to maintain prior

beliefs, perhaps in the face of quite a lot of countervailing information. A chain of research

beginning with Festinger's (1957) description of cognitive dissonance, and Heider's (1958)

balance theory posits that cognition is not unbiased; that people instead have various cognitive

and emotional motivations to see the world in particularistic ways. Recent work examining

theories of affective intelligence (Marcus, Neuman, and MacKuen, 2000) and cognitively driven

motivated reasoning (Lodge and Taber, 2000) seek to give prominence to the role of affect and

emotion in information processing (cf. Lau & Sears, 1986.)

Perhaps the most important question arising out of this work is the extent to which

processing is biased by affect; that is, are people truly rational Bayesian updaters accurately

perceiving the direction of new information and revising their beliefs, attitudes, and behaviors

accordingly? Or are people more likely to wish to stick to their guns, to support their prior

beliefs, and thus to allow affect to interfere with updating? Research to date is mixed and

incomplete. While Green and Gerber (1999) argue that most, if not all, findings that purport to

show bias can be explained in the Bayesian model, an impressive array of studies in multiple domains suggest otherwise. From the earliest studies showing housewives rationalizing decisions already made (Brehm, 1956) to Tversky and Kahneman's (1974) seminal work on heuristic biases, to Steenbergen's (2001) recent reports of a conservatism bias in information updating, a wide array of "mistakes" and "biases" have been documented. Redlawsk (2002) shows evidence of motivated reasoning in the updating of candidate beliefs, as voters who encounter at least one affectively incongruent piece of information about a preferred candidate are likely to rate that candidate more highly than those encountering no such incongruent information at all.

This paper seeks to add to our understanding of how existing affect towards candidates plays a role in the evaluation of new information and how affective reactions to that information figure in information acquisition and learning. Building on Lodge and Taber's (2000) motivated reasoning, the study reported here uses dynamic process tracing (Lau and Redlawsk, 1997, 2001a, 2001b; Redlawsk, 2002, 2004) to present voters with a campaign in which their expectations are often violated. A liked candidate becomes steadily less attractive while a disliked candidate begins taking positions very close to the voter's own. The result should be conflict between initial evaluation and new information, as well as the generation of affective responses for each piece of new information.

Motivated Reasoning

Motivated reasoning relies on a model of cognitive and affective memory focused on two parts: long-term memory and working memory (Steenbergen and Lodge, 1998.) Memory itself is viewed as organized as a network of concepts connected in a series of associations (Anderson, 1983). Spreading activation (Anderson, 1983; Collins & Loftus, 1975) is the mechanism that

causes memories to become available to conscious thought. This associative network model speaks to both the general organization of memory in its consideration of nodes and links as well as to the process by which memories are activated. It does not, in and of itself, address the question of how affect is connected to cognition. The most compelling theoretical model for motivated reasoning is that of hot cognition (Abelson, 1963) which argues that affect is directly and inexorably linked to cognition. Thus, all social concepts are represented in memory not just by their cognitive tags but also with a direct connection to their affective value. The affective value, which may be positive or negative, weak or strong, is stored with the cognitive concept and is always automatically activated when the concept itself is activated (Lodge & Taber, 2000.)

Motivated reasoners make an immediate evaluation (like/dislike) of each piece of information they encounter, maintaining an on-line tally which summarizes the current affect towards the object, such as a political candidate (Hastie and Park, 1986; Lodge, McGraw, and Stroh, 1989; Redlawsk, 2001.) Thus, the memory node for the candidate contains not only cognitive information but also this affective tally, and the tally is updated immediately upon the acquisition of new information. Structurally, affect and cognition are inseparable. When new information is encountered, the affect associated with relevant existing knowledge interacts with affect towards the new information to form a virtually instantaneous assessment of the new information based not on cognitive evaluation but rather on the interplay between the on-line tally and the affective value of the new information.

Studies of motivated reasoning to date have provided great insights. But they generally have not been as useful if we are particularly interested in how voters perceive candidates during political campaigns. Existing studies have focused primarily on the psychology of motivated

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reasoning, examining sub-second response times to various stimuli, or on how motivated reasoning operates in the realm of issues (Lodge and Taber, 2000, Lodge, Taber, and Galonsky, 1999a, 1999b). Neither approach provides the richness of data needed to get at the role of affect in candidate evaluation *during* a campaign.

In order to understand how motivated reasoning effects candidate evaluation and choice an approach is needed that provides control over the information environment while monitoring the process from beginning to end. Political judgment is not just about attitudes and not just about one point in time. Instead it is a process that flows over time as information comes and goes. We need to be able to trace this process as it happens. Such a methodology does exist, and has been used to great effect in many disciplines outside of political science. The method is *process tracing*.

Dynamic Process Tracing

Process tracing designs start with the assumption that decision-making is best studied by collecting data while the decision is actually being made (Ford, Schmitt, Schectman, Hults, and Doherty, 1989; Jacoby, Jacard, Kuss, Troutman, and Mazursky, 1987.) The major research technique for process tracing studies of decision-making is the information board, which presents subjects with an *m x n* matrix of information. Subjects choose among several alternatives (columns of the matrix) which differ on one or more attributes (rows.) As the choices are made, the researcher records the information search and evaluation processes evident in the subject's choices. The data thus generated provides a detailed "script" of the information search, allowing researchers to examine how information is used in decision making. The information board has been used to a large extent in marketing research studies, where its alternative by attribute arrangement matches well with the way products are displayed on grocery store shelves.

A few scholars have used variants on the information board to look at voting behavior (Herstein, 1981), political decision-making (Riggle and Johnson, 1996; Avery and Riggle, 2000), and information search (Huang, 2000; Huang and Price, 1998) in a political environment. However, most studies purporting to look at the role of information in attitude formation and candidate evaluation have not made use of this technique. Unfortunately, the traditional information board suffers from a significant flaw that limits its applicability to political decision making. By its nature, the information board is *static* with all alternatives and attributes readily and equally accessible. Subjects can usually spend as much time as they wish learning about alternatives with no risk of missing any. The political environment, however, is not so neat and organized. Politics is messy; information comes and goes somewhat chaotically. Alternatives whether policy options or candidates do not sit neatly on a shelf, waiting to be examined and compared. And citizens certainly do not have the ability to devote unlimited time to comparison-shopping. What is needed is a way to mimic the chaos of the political environment while maintaining the ability to trace information search and decision making as it happens.

Richard Lau and I have revised the traditional static information board, modifying it into a dynamic, ever-changing simulation mimicking the flow of information during a political campaign (Lau and Redlawsk 1992, 1997, 2001a, 2001b; Redlawsk and Lau 1995; Redlawsk, 2001, 2002, forthcoming.) Where the static board allows subjects to have access to all available information at all times the dynamic board emulates the ebb and flow of a political campaign over time. The essential feature of the static information board -- the ability to trace the decision-making process as it happens -- is retained while information about candidates comes and goes. In order to mimic the sometimes confusing and often-unmanageable campaign environment the dynamic information board has the potential to overwhelm subjects with information. Further, a

real election campaign contains a "here today, gone tomorrow" quality to its information flow and so does the dynamic information board. Finally, where the standard information board makes all types of information equally accessible, from positions on arcane issues to party identification, the dynamic approach models the relative ease or difficulty of finding certain kinds of information at different times during a campaign.

The flow of information in the dynamic information board is dictated by the flow of information during "real world" presidential campaigns (Lau, 1995.) Early in the election information about candidate attributes predominates, including polls ("horserace" information) and personal characteristics. As the election continues, information flows change, so that more issue positions are presented, as well as endorsements of the candidates by various interest groups. In the dynamic information board new statements appear at the top of the screen in one of six colored boxes. These statements flow down the screen, and then disappear, to be replaced by other statements. Subjects access this information by clicking on a statement such as "Rodgers' Position on Haiti" and reading a "card" on the computer screen listing the information.

Using this dynamic process tracing methodology a unique dataset has been collected incorporating observations of the information processing techniques employed by subjects as they negotiate an election campaign. Data have been collected on what subjects learn about each candidate, how long they spend processing each discrete piece of candidate information, their likes and dislikes about each candidate and issue, and more, all collected unobtrusively as subjects engage in political information processing. At the end of the campaign subjects report their memories about the candidates, their global affect towards the candidates and the affective value of each memory they can recall. As a means of testing propositions derived from motivated
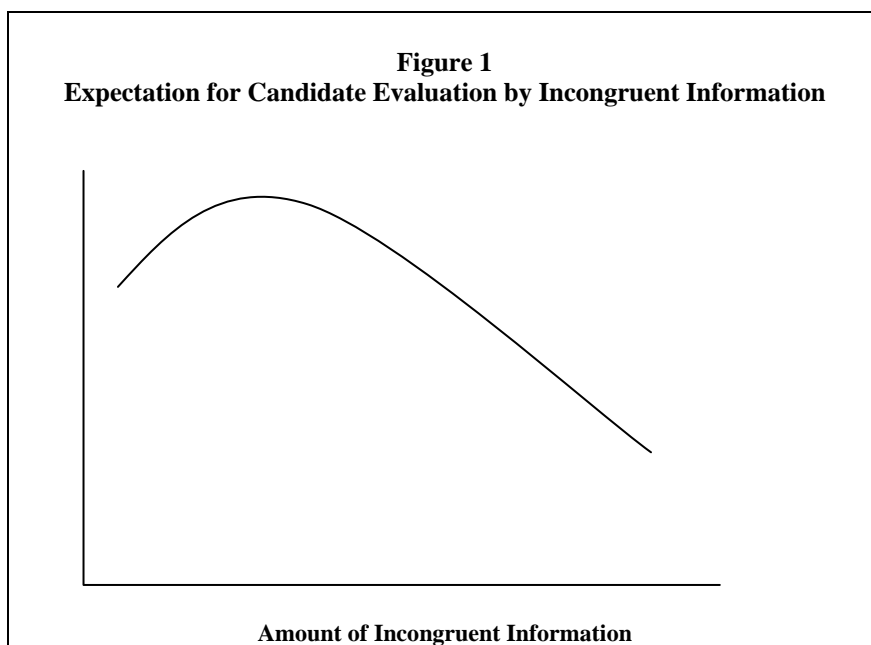
reasoning the dynamic information board provides excellent insight into what voters are actually doing during a campaign.

Questions & Expectations

Motivated reasoning includes assertions that are readily (and perhaps best) tested in the environment of the dynamic information board. One of the more interesting findings of motivated reasoning is an attitude strengthening effect (Lodge and Taber, 2000; Redlawsk, 2002). Pre-existing evaluations appear to condition the evaluation of new information so that prior affect is improperly updated. Thus learning something "bad" about a liked alternative often generates a stronger preference for the alternative than existed before the new information was acquired. Lodge and Taber (2000) have shown this effect for issues about which citizens care deeply, while Redlawsk (2002) has documented the effect for candidate evaluation during a campaign. But neither study addresses the question of when enough is enough. That is, at what point does the weight of the new negative information overwhelm the original evaluation? Presumably at some point a voter may realize she is simply wrong in maintaining her prior beliefs. The question is where is the tipping point? In this study the amount of affectively incongruent information is systematically manipulated, so that some subjects never learn anything incongruent with their initial evaluations, while others encounter quite a lot. Plotting these experimental groups against their post-campaign evaluation of their preferred (and perhaps rejected) candidate should result in the pattern shown in Figure 1.

Some other interesting implications arise from motivated reasoning. Motivated reasoners should take longer to process information that is incongruent with their expectations (Redlawsk, 2002.) And the effect of the failure to adequately update evaluations should be visible in the placement of candidates on the issues. Those learning some incongruent information should be

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less accurate in their perception of a candidate's position than those encountering no incongruent information. But if the presumption that voters eventually learn too much to ignore is correct, those encountering a great deal of incongruent information should be more accurate than those encountering only a little. Ultimately the accuracy of candidate issue placement should follow the inverse pattern from what is shown in Figure 1, with accuracy initially declining and then at some point increasing.

Figure 1
Expectation for Candidate Evaluation by Incongruent Information

Amount of Incongruent Information

This paper reports on a study designed to test these implications of motivated reasoning, not only for a liked candidate, but also for one who is disliked. While previous work provides expectations for liked candidates as described above, it is not at all clear what to expect for a disliked candidate. It is possible that the motivation to maintain negative affect will operate exactly as it does for positive feelings. But it is also possible that voters will be even less likely to adjust beliefs about an initially disliked candidate, since that candidate has already been rejected.

Data and Methods

Experimental Design

Data for this study were collected using a dynamic process tracing experiment designed to simulate a presidential primary election campaign. Because the basic design of the dynamic experiment has been detailed in a number of other places (Lau & Redlawsk, 1997; 2001, Redlawsk 2001, 2002) only a short summary will be provided here. During the simulated campaign subjects have the opportunity to learn a wide range of information about an assortment of candidates in order to determine what they need to know to cast their vote. However, the information available about the candidates is not under the complete control of the subject. Instead it flows over the course of the campaign, mimicking the "real world" processes where information comes and goes, and is not always easily accessible. For control purposes subjects know nothing about any of the candidates when they start; thus whatever information they can learn comes entirely from what is made available during the simulated campaign. This allows the experimenter to finely tune the environment to design specific tests of information process hypotheses such as those discussed in this paper.

This design has been used in a number of experiments examining issues such as correct voting (Lau and Redlawsk, 1997), the use of cognitive heuristics (Lau and Redlawsk, 2001), the role of memory in voter decision making (Redlawsk, 2001), and how information processing strategies effect the ability of voters to learn about candidates (Redlawsk, 2004.) The current study follows on an earlier effort to test motivated reasoning about candidates that provided some basic insights using data collected for other purposes (Redlawsk, 2002.)

In this study subjects began by completing a relatively standard political attitudes questionnaire. They then participated in a 20 minute primary election with four candidates from

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their party running for the presidential nomination. In all cases subjects faced either four

Democrats or four Republicans only, with no candidates from the other party. During the twenty

minute primary information on the candidates, from personal qualities, to issue positions, to polls

and endorsements, became available in a controlled fashion designed to mimic information flow

during a typical campaign.[1] At the beginning of the campaign subjects knew nothing about the

candidates since all were fictitious, and all subjects were told that their ultimate goal was to learn

whatever they thought they needed to know to decide which candidate to support in the primary.

As the campaign progressed the computer recorded every piece of information that was available

and what was actually examined.

      Following the campaign subjects voted and then evaluated all four candidates on a

standard feel thermometer. After this a memory test was administered in which subjects were

asked to record everything they could recall about each candidate. For half of subjects this test

was unexpected; the other half had been warned they would be tested in the instructions read

before the campaign.[2] The experimenter then went over each memory with the subject to code

for affect, asking the subject whether the memory made him or her feel anxious, enthusiastic, or

angry. Next the subject recorded all the things that could be remembered that were "liked" about

the candidate he or she voted for in the primary and all the things that were "disliked" about that

candidate, and provided the experimenter with the reasoning behind the choice that was made.

Following these tasks subjects were shown, item by item, the title of each piece of information

they examined (though not the content) and asked a series of questions. The first was whether the

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[1] The order and amount of information was based on a study by Lau (1995) that examined the kind and frequency of information about candidates presented in newspapers during the 1988 presidential campaign.
[2] This manipulation was included to examine whether on-line processors (Lodge, McGraw, and Stroh, 1989) looked different from memory processors (Redlawsk, 2001) in how they responded to affectively incongruent information. Few differences were found in these data and none of consequence. While this manipulation is always included as a control in the analyses, it will not be commented upon further in this paper.

subject recalled examining the item. If not, then no other questions were asked and the experimenter moved to the next item. If the item was remembered, the subject was asked whether it had been clicked on by mistake and then asked to recall the affect associated with the item in the same way as for memories – did the item make the subject feel anxious, enthusiastic, or angry.[3] Finally the subject was debriefed and any questions answered. A total of 117 subjects (primarily undergraduate students) were successfully run through the experiment during fall 2001 and spring 2002 and each was paid $10 for participating. Figure 2 summarizes the experimental procedure.

The flexibility of the dynamic environment means the current study can focus specifically on how voters respond to information that is affectively congruent or incongruent with their expectations. The information available to subjects was manipulated so that instead of candidates taking the same positions for all subjects, candidate positions on issues were systematically varied relative to subjects' own positions on the same issues as expressed in the pre-experiment questionnaire. Subjects began the experiment choosing whatever information they wished to learn about the candidates. After five minutes the experiment was interrupted by a "Gallup Poll" which asked "if the election were held today, which candidate would you vote for?" Subjects then saw a screen listing the four candidates in their primary and chose one. Subjects were then required to rate all four candidates on a standard feeling thermometer, after which they were returned to the campaign screen to continue learning about candidates.

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[3] Across all 117 subjects an average of 8% of all items were reported as chosen "by mistake". Usually this happened when the subject immediately accessed an item after having just looked at the same item. Some subjects had slightly more difficultly than others with the mouse, accidentally clicking on items when they didn't intend to do so.

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Figure 2
Experimental Procedures

1.    Complete Online Questionnaire                    30-40 minutes
      Vote preference, Political Knowledge, Interest,
      Activity, Issue Positions and Attitudes, Group and
      Political Person Feeling Thermometer evaluations.

2.    Participate in Practice Session                  5-10 Minutes
      Designed to familiarize subjects with the working
      of the dynamic information board.

3.    Campaign Simulation                              20 Minutes
      Participate in a Primary Election for chosen party,
      Learn about candidates, Vote, Evaluate all candidates

4.    Memory Test                                      10-15 Minutes
      Subject lists everything remembered about each
      of the four candidates; Indicate affective reactions to
      these memories to the Experimenter.

5.    Decision Process and Likes/Dislikes              10 Minutes
      Subject describes how the decision to support one
      candidate was made, lists likes and dislikes for the
      chosen candidate.

6.    Information Review                                20-30 Minutes
      With experimenter, review the title for each piece of
      information examined for each subject, indicating
      whether the item can be recalled, and if so whether
      it was accessed by mistake and the affective reaction
      to the information.

7.    Debrief and Dismissal                            5 Minutes
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Following the poll, the issue positions taken by the candidates most and least preferred in

the poll (based on the vote and feeling thermometer ratings) were manipulated depending upon

random assignment to one of four cells. Four one quarter of subjects, all subsequent issue

positions taken by these two candidates conformed to the subject's own expectations. That is, all

issues for the most preferred candidate matched as closely as possible the subject's own

preferences for those issues, while all issues for the least preferred (rejected) candidate were as

far away as possible from the subject's own preferences. This maintained congruency between

issue positions taken by those candidates and the expectations the subject had developed about

those same candidates. The remaining three experimental conditions varied the percentage of information that was congruent with expectations at 75%, 50%, or 25%. In all cases the candidate most preferred and the candidate rejected in the poll were manipulated simultaneously.[4] It is important to note that the specific issues that were manipulated varied from subject to subject since the manipulation was dependent on which issues subjects actually chose to examine. Also, because the number of issues examined for any given candidate varied by subject – and was almost invariably more for the preferred candidate and less for the rejected candidate – the actual percentage of congruent/incongruent information never met the specific percentage targets. Figure 3 summarizes this manipulation.

This congruency manipulation was designed to test basic propositions of motivated reasoning by first having voters establish preferences (recorded by the five minute poll) and then systematically violating those preferences (for three of the four groups; confirming preferences for the fourth group) thus providing a clear opportunity to test whether, over the course of the campaign, encountering incongruent information has implications for information processing and evaluation, and whether the amount of such information makes any difference.

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[4] While the campaign environment contains a wide range of information, including group endorsements, candidate personality traits, polls, and candidate background characteristics, in addition to issues, as a practical matter it was only possible to manipulate the issue positions. Subjects were asked their opinion on 27 issues in the pre-experiment questionnaire using a standard 1-7 scale. Candidate positions on these issues were determined by expert ratings (pre-study) of a range of positions on each of the issues. Eight possible positions ranging from extremely liberal to extremely conservative were available for each of the issues. When a subject chose to examine a particular issue the system determined 1) which experimental manipulation was in force, 2) which candidate was being selected, 3) the subject's own position on the issue and then matched an available issue position to the candidate based on the congruency/incongruency manipulation then in effect. So if a subject was in the all congruent condition and chose the preferred candidate, the position displayed was as close as possible to the subject's own. If the subject chose the rejected candidate in the same condition, the position shown was as far away (Euclidian distance) as possible from the subject's preference. In the other conditions a counter kept track of how many issues had been viewed for each of these candidates and displayed a congruent or incongruent issue position as appropriate. The two candidates neither preferred nor rejected in the poll were not manipulated and thus took positions that may or may not fit the subject's own preferences in any given case.

Figure 3
Information Congruency Manipulation

Manipulation	Preferred Candidate	Rejected Candidate
All Congruent Information	100% of Issues as close as possible to subject own position	100% of Issues as far as possible from subject own position
75% Congruent Information	75% of Issues as close as possible to subject own position; 25% as far as possible	75% of Issues as far as possible from subject own position; 25% as close as possible
50% Congruent Information	50% of Issues as close as possible to subject own position; 50% as far as possible	50% of Issues as far as possible from subject own position; 50% as close as possible
25% Congruent Information	25% of Issues as close as possible to subject own position; 75% as far as possible	25% of Issues as far as possible from subject own position; 75% as close as possible

Operationalization of Key Concepts

The manipulation of information congruency provides a key independent variable,

measured either by individual pieces of information (each manipulated item is either congruent

or incongruent with the initial global evaluation of the candidates) or summarized across all

information for each subject. For the latter, the analyses that follow mostly use a quartile-based

measure of congruency, based on the percentage of all issue information examined that was

affectively congruent, rather than the simple indicator of the subject's assigned manipulation.

While using the manipulation coding makes little difference in the results, it is more accurate to

place subjects into quartiles based on how much congruency/incongruency they actually

experienced, versus what was planned. The difference occurs, as noted earlier, because subjects

chose for themselves what information to examine, and only issue information was manipulated.

A series of measures are available to examine learning and candidate evaluation. One simple measure of learning is the amount of information actually examined for a candidate. Presumably the more one examines, the more one can learn. But this is complicated by the time limitation of the campaign; of necessity spending more time on one candidate means spending less on others. Thus in most cases analyses using this measure include both the amount of information examined for the particular candidate and the overall amount of information examined for all candidates. A second – and probably more direct – measure of learning comes from several questions asking subjects to place the preferred and rejected candidate on a liberal-conservative scale, and on four specific issues. Because the actual positions of the candidates are known, the difference between subject placement and the candidate's position is readily calculated, and provides a measure of how accurately subjects perceived the candidates. While four issues were queried in the post-experiment questions in practice only the issue of affirmative action can be used, since not only is the subject's own position and perception of the candidate's position needed, but also the issue itself must have been accessed during the campaign. Of the four issues – environment, taxes, affirmative action, and defense spending – only affirmative action has enough non-missing values on all three of these variables.

Global candidate evaluation is measured by a feeling thermometer. The thermometer was anchored at 100 with the phrase "Extremely Favorable", at 0 with the phrase "Extremely Unfavorable" and at 50 with the phrase "Neither Favorable nor Unfavorable". The question simply asked for the subject's "feelings" about each candidate. Subjects evaluated candidates on the thermometer both during the five minute poll and after casting a vote at the end of the election. Thus there are two measures of evaluation for each candidate – after only a few minutes has passed and just a few pieces of information (generally about 3 or 4) have been examined and

again after the subject has learned all that is possible given the time limitations. Both the separate measures and a measure of the net change in evaluation from poll to vote will be used.

In addition to the broad candidate evaluation measures and the known congruency/incongruency of issue information, subjects were asked several different times to provide affective reactions to the candidates and the information the subjects examined. The first affective evaluation came almost immediately after the vote was cast, when subjects were asked to describe how they felt about the preferred and rejected candidates on a number of affect indicators. The three analyzed in this paper are the extent to which each candidate made the subject feel anxious, enthusiastic, or angry since these are the three generally focused on in affective intelligence work.[5] Available response options were "Extremely", "Somewhat", "Not Very", and "Not at All". These global evaluations parallel those asked in the National Election Studies after the election is over. A second measure of affective reactions came following the memory test, when the experimenter reviewed each memory listed by the subject and asked whether that memory made the subject feel "Anxious", "Enthusiastic", or "Angry" about the candidate. Finally, during the process of reviewing the title of each piece of information examined for the candidates in the order in which it was examined, subjects were given one more opportunity to express affective reactions to the information they examined. As the title of each item was displayed the experimenter asked a series of questions, beginning with whether the subject recalled looking at the information. If so, the subject was asked to recall whether the specific piece of information represented by the title made him or her feel anxious, enthusiastic,

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[5] In addition, subjects were asked how hopeful, proud, afraid, bitter, uneasy, contemptuous, and disgusted the candidates made them feel. A factor analysis of these responses generally reveals two factors with eigenvalues over 1.0. Hopeful, proud, and enthusiastic load on one factor, while anger, fear, anxiety, bitterness, unease, contempt, and disgusted load on the other. A third factor with an eigenvalue of 0.900 exists, if extracted fear and anxiety load separately on this factor, while the other remain as they were.

or angry about the candidate. This was done for all information examined by the subject, both issues and non-issues, and for all candidates.

Thus this study provides multiple indicators of affective reactions to the information subjects learned about the candidates. Standard global evaluations are available, much like those discovered during surveys. But importantly there is also an affective tag associated with most memories (some the subject identified as affectively neutral) and with many of the individual items examined during the campaign. While all of these measures rely on subject recall of affect rather than a direct measure, analyses below will show relationships between these affective responses and the congruency/incongruency of the information examined, such that they appear to be reasonably accurate recollections on the part of subjects.[6]

Because the dynamic information board collects process tracing data, the data collected include each piece of information examined, with the sequence in which it was chosen, how long it was examined, its information type, congruency, whether it was remembered, and the affect in generated both in the review of information examined and in memory. This paper focuses on only the preferred (liked) and rejected (disliked) candidates and only on information examined after the poll was taken at five minutes into the campaign. Thus the detailed information examined before the poll or at any time for the other two candidates, is dropped from the dataset. What remains provides both data summarized by subject and a dataset containing an entry for each subject for each piece of information examined. Most analyses that follow proceed by looking separately at the liked and disliked candidates based on the five minute poll since it

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[6] Of course the most preferred way of measuring affective response would be to be able to capture it immediately as subjects view each piece of information rather than relying on recall. Within the context of the dynamic information board this is difficult to do without cluing the subject into the purpose of the study. It might be possible, for example, to ask subjects to provide an affective reaction to each piece of information as it is examined, but this intrusive approach would likely interfere with the processing of the information. Alternatively using some sort of physiological response measure might be fruitful. Some subjects during this study were connected to a Galvanic Skin Response (GSR) device to measure physiological changes know to occur during affective responses. Unfortunately the data thus collected are extremely noisy and to date have not provided any fruitful information.
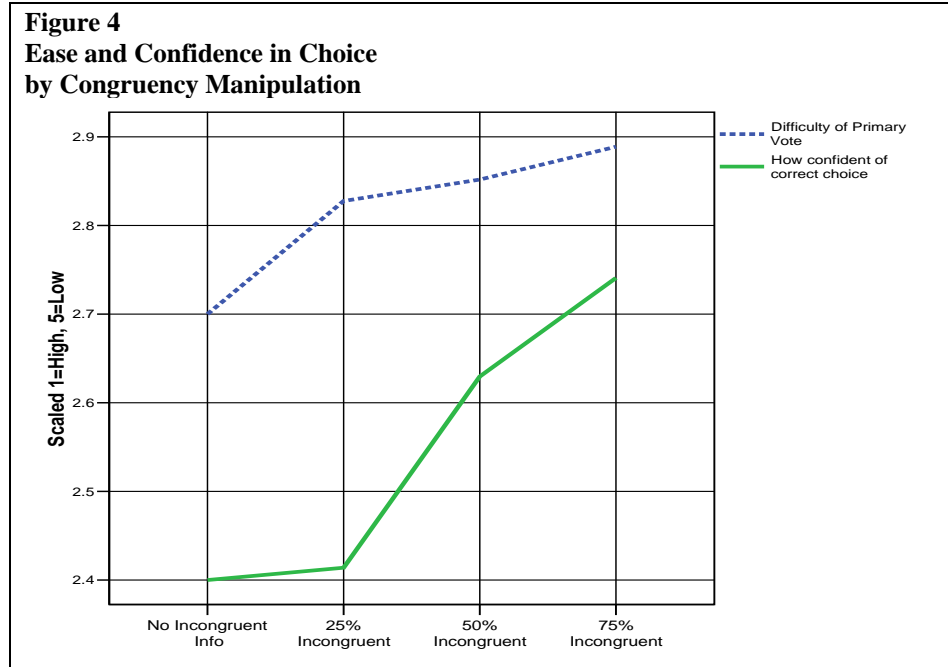
makes sense to expect different results in learning about the candidate most preferred compared with the one initially rejected.

Findings

Analyses of the results of this study will proceed in two parts. First, it is important to establish that the congruency manipulation worked as planned, by generating affective reactions in subjects. Second, motivated reasoning expectations about candidate evaluation and the accuracy of issue perceptions are examined.

Congruency and Affect

The key manipulation in this study – information congruency – should have created an environment for some subjects where their initial beliefs about the candidates they faced in the primary election were sorely tested by the end of the campaign. For three-quarters of all subjects at least some of the information they learned about their most and least liked candidates was simply not what they expected at all. But for the other quarter of subjects it was smooth sailing throughout, learning nothing (at least of issues) that would cause them to revise their initial preferences. At a minimum we would expect this to create some difficulty for those subjects who get unexpected positions from their candidates. In the post experiment questionnaire, subjects were asked to rate how difficult it had been to make their vote decision and how confident they were that the decision was the correct one. Figure 4 shows these ratings by the congruency manipulation. As expected, those learning more incongruent information about the candidates were both more likely to indicate that they found the decision difficult and were less confident that they had made the right choice, compared with those facing nothing unexpected.

Figure 4
Ease and Confidence in Choice
by Congruency Manipulation

It is generally assumed that the greater the distance between a subject and a candidate on issues the greater the likelihood of a negative affective reaction. This assumption has been a core belief for research that has not been able to measure specific affective reactions (Redlawsk, 2002.) Fortunately this can be tested directly in this study since the congruency of information is known, the initial candidate preference is known, and affective reactions are reported by subjects. Showing a strong relationship between issue congruency and affective responses provides evidence that the congruency manipulation works as expected and that the recall of affect is reasonably accurate for the issues used here. We should expect to see the same pattern for the preferred and rejected candidates. In general a greater issue distance between the subject and the candidate on any given issue should dampen enthusiasm and increase anxiety and perhaps anger.

Several different approaches reveal findings exactly as expected. The subject-candidate issue distance is clearly correlated with affective reactions to the candidate when an issue is recalled either in the information review task or in the memory task. Table 1 summarizes the bivariate correlational findings at the specific issue level of analysis. The greater the issue distance between the candidate and the subject the less likely the subject will report enthusiasm for the candidate on that issue. Conversely, the greater the distance the more likely the issue made the subject anxious or angry, with anger showing a stronger relationship. The pattern holds for both information review (left panel) and the items recalled from memory (right panel). The same results (for the information review only) are shown graphically in Figure 5, plotting the likelihood an issue will generate an affective reaction by the distance between the subject and candidate on that issue.

Figure 5 shows an interesting pattern that might be called "stickiness" in the affective responses, especially for the preferred candidate. As would be expected, issue-distance in the first quartile (that is, very close correspondence between the subject's own position and the candidates) are very likely to generate enthusiasm (nearly 60% of all issues in this group generated an enthusiastic response from the subject) while they are much less likely to generate anxiety (under 30%) or anger (fewer than 10%). Interestingly this does not change for items in the second quartile – they generate basically the same response, and if anything, slightly more enthusiasm. For the preferred candidate it is only when a candidate position on an issue becomes especially distant from the subject's position (3rd and 4th quartiles) that enthusiasm finally wanes and anger and anxiety increase (though it takes the 4th quartile distance to generate greater anxiety.) Given motivated reasoning – the well-documented tendency to discount or avoid negative information about a liked alternative (Redlawsk, 2002; Lodge and Taber, 2000) this

pattern makes sense. Given a pre-existing preference for the candidate, voters give that candidate

some real room to maneuver before they begin to find an issue position troubling.

Table 1
Bivariate Correlations, Subject-Candidate Issue Distance
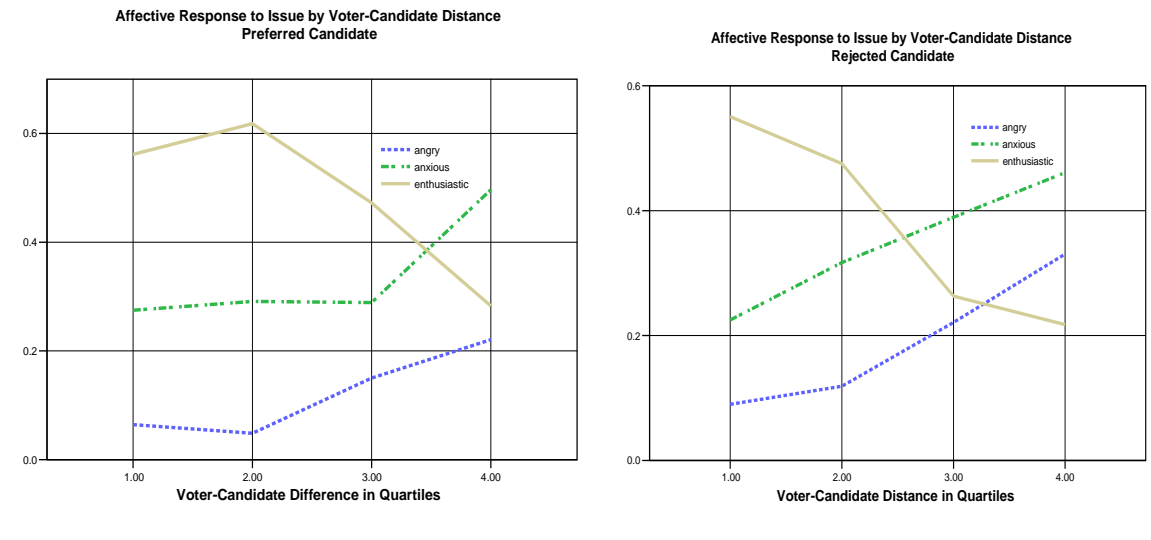**and Affective Response, Analyzed by individual issue**

Items recalled in Information Review

	enthusiastic	anxious	angry
Rejected Candidate	-.277	.187	.229
Sig.	.000	.000	.000
N=400			
Preferred Candidate	-.264	.173	.258
Sig.	.000	.000	.000
N=661			

Items Remembered

	enthusiastic	anxious	angry
Rejected Candidate	-.371	.172	.324
Sig.	.000	.080	.001
N=104			
Preferred Candidate	-.440	.298	.320
Sig.	.000	.000	.000
N=221			

Figure 5
Subject-Candidate Issue Difference
And Affective Response to Information
Items recalled in Information Review

But the same is not true of the candidate rejected in the early poll. Reading backwards –

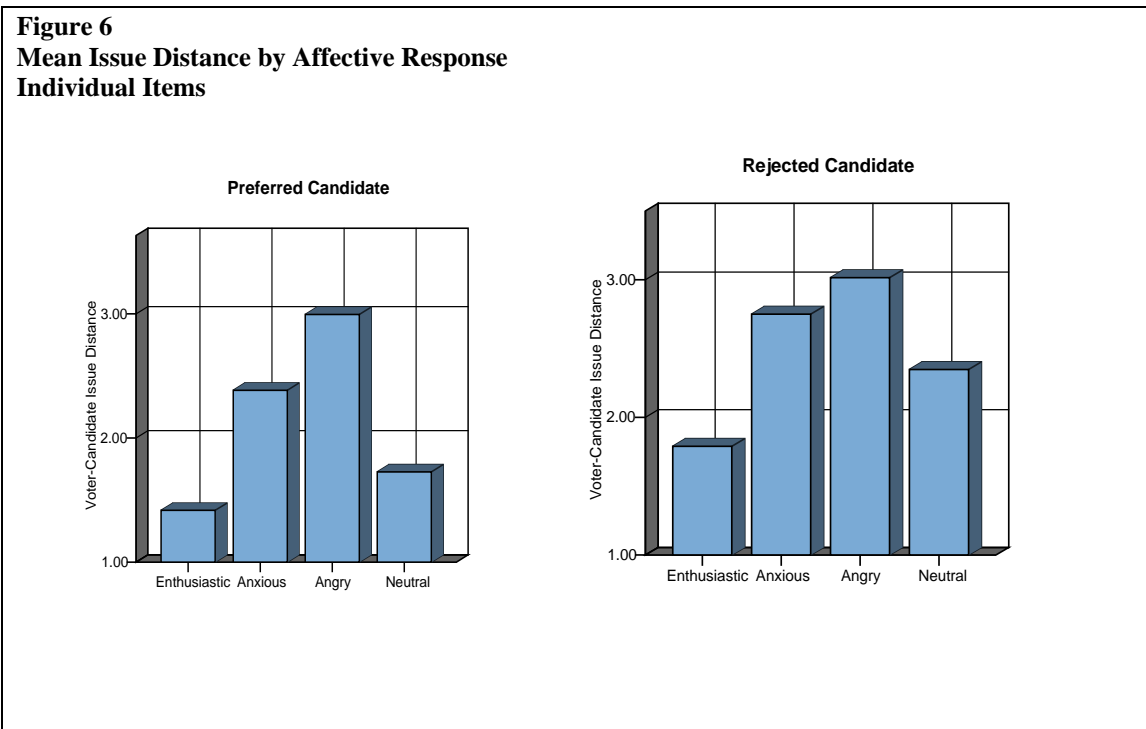since the fourth quartile represents information most congruent with expectations for the disliked

candidate; i.e. great distance between the subject and the candidate on an issue – the same level of "stickiness" is not present. Moving from more distant to closer results in a fairly consistent change in enthusiasm, anxiety, and anger. Pre-existing (negative) evaluations do not seem to get in the way of recognizing a particular issue position as close or distant and generating the appropriate affective response. Thus the motivated reasoning effects that occur with a liked candidate do not appear to operate at this level to the same extent with a disliked candidate.

These data show evidence that the affective responses given by subjects to individual issue items are reasonable and represent an ability to accurately recall affective responses to information when promoted either by the title of the issue or by specific memory for the item. Another way to look at the individual item data is to consider the mean subject-candidate issue distance for each of the three specific affective reactions. In general we would expect that issues recalled as generating enthusiasm should show a minimal distance between the candidate and the subject. On the other hand, issues that make voters angry should show quite a large distance between the candidate and the voter. Anxiety is probably invoked somewhere in between – not close enough for enthusiasm but not far enough to make one angry at the candidate. Figure 6 displays the relationships found in this study.

Affective responses to the preferred candidate again appear as expected. Items that generate enthusiasm are on average no more than 1.3 units distant from the subject (using a standard 7 point scale and calculating Euclidian distance between subject and candidate.) But items averaging 3 points distance generate anger. Why three points? That distance is enough to place the candidate and subject on opposite sides of the political spectrum, or at least for those holding the most extreme positions (1, 7) placing the subject dead in the center (4). Apparently any less distance simply makes the voter anxious (mean about 2.4) but not angry at their
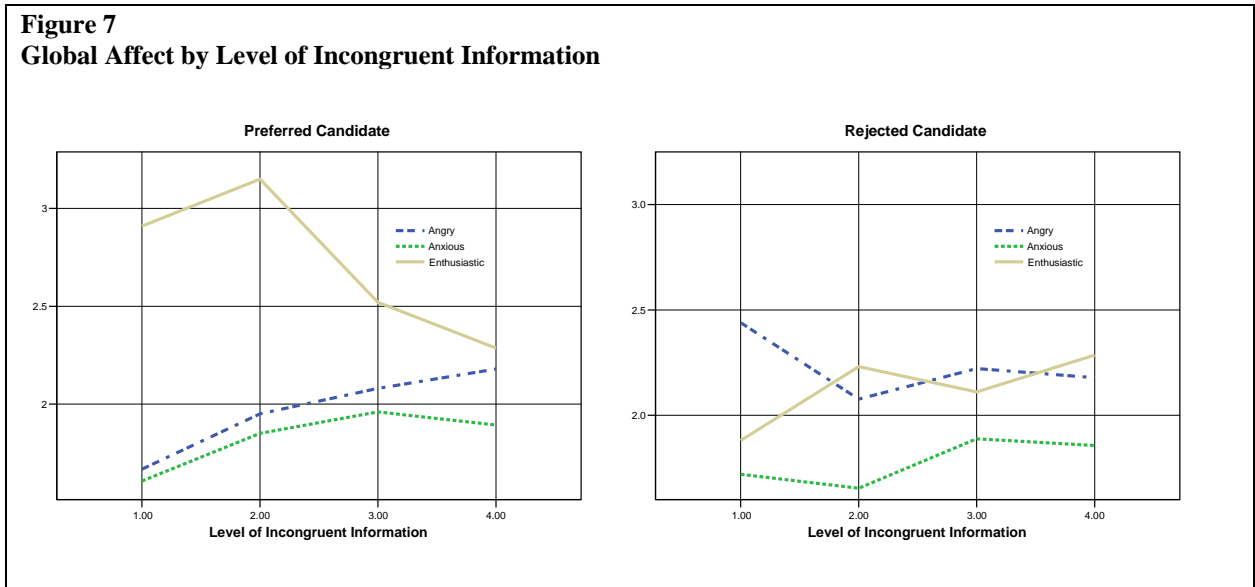
preferred candidate. With the rejected candidate the pattern looks similar, but an interesting

finding emerges. Apparently voters can become enthusiastic about the issue position of a rejected

candidate at a further distance than for a preferred candidate. The mean distance for an item

generating enthusiasm for a rejected candidate is at about 1.8, compared to 1.3 for the preferred

candidate. Finding a rejected candidate to be even within reasonable range of one's own position

can generate at least some enthusiasm for that candidate.

Figure 6
Mean Issue Distance by Affective Response
Individual Items

One final way to look at the relationship between information congruency and affect is to

consider the global affective evaluations reported by subjects after they voted for a candidate.

Affective evaluations of both the candidate preferred in the poll and the one rejected were

solicited, regardless of which candidate was actually voted for at the end of the campaign. As

noted earlier evaluations were asked for a wide range of affective reactions; however the focus

remains on enthusiasm, anxiety, and anger. The responses are on a four point scale, transposed to

indicate a high score for more of the affect and a low score for less. Figure 7 graphs these global

affective responses against the overall amount of incongruent information encountered during

the campaign, again in quartiles.

Figure 7
Global Affect by Level of Incongruent Information

Here for the first time we see substantial differences in the pattern between the preferred

and rejected candidates. For the preferred candidate, all three global affective evaluations mostly

operate as expected. Enthusiasm goes down while both anger and anxiety increase as the amount

of incongruent (read negative) information increases. However, another hint of motivated

reasoning shows itself as well, as those getting roughly 25% incongruent information are actually

slightly more enthusiastic about the preferred candidate than those for whom all information is

affectively congruent. This tracks with the findings previously reported in Redlawsk (2002) and

by Lodge and Taber (2000) that some amount of inconsistency might be successfully

counterargued and might actually increase positive feelings for a candidate. However,

enthusiasm quickly wanes as incongruency increases even more. And even if enthusiasm

remains for a liked candidate with a small number of incongruent positions, both anxiety and anger increase slightly nonetheless.

For the disliked candidate, however, the global affective evaluations do not correlate clearly with information congruency. So even though affect for individual items behaves as expected (Figure 5) global evaluations do not. Candidates rejected early on in the campaign do not generate much global enthusiasm even as they become closer to the voter (more affectively incongruent information encountered.) Nor are there any consistent patterns in global assessments of anger or anxiety. While individual pieces of information may generate a reaction, overall the rejected candidate remains rejected and perhaps not given a whole lot of thought.

Motivated Reasoning Effects

The analyses so far, while intended primarily to show that the affective responses of subjects behave in ways that indicate their reasonableness, also show some of the effects that would be expected if voters acted as motivated reasoners more committed to reinforcing pre-existing beliefs than to correctly updating their evaluations to reflect new (inconsistent) information. Two global indicators of motivated reasoning are available here. One is the feeling thermometer rating at the end of the election. If voters correctly update their assessments of candidates then there should be a clear linear relationship between evaluation and the amount of congruent and incongruent information encountered about that candidate. Second, accuracy in placing candidate's issue positions might be related to motivated reasoning. Voters who correctly evaluate new information should be able to place candidates relatively accurately, but if motivated reasoning leads to a rejection of new inconsistent information, or at least a counterarguing process against it, accuracy in issue placement might well suffer.
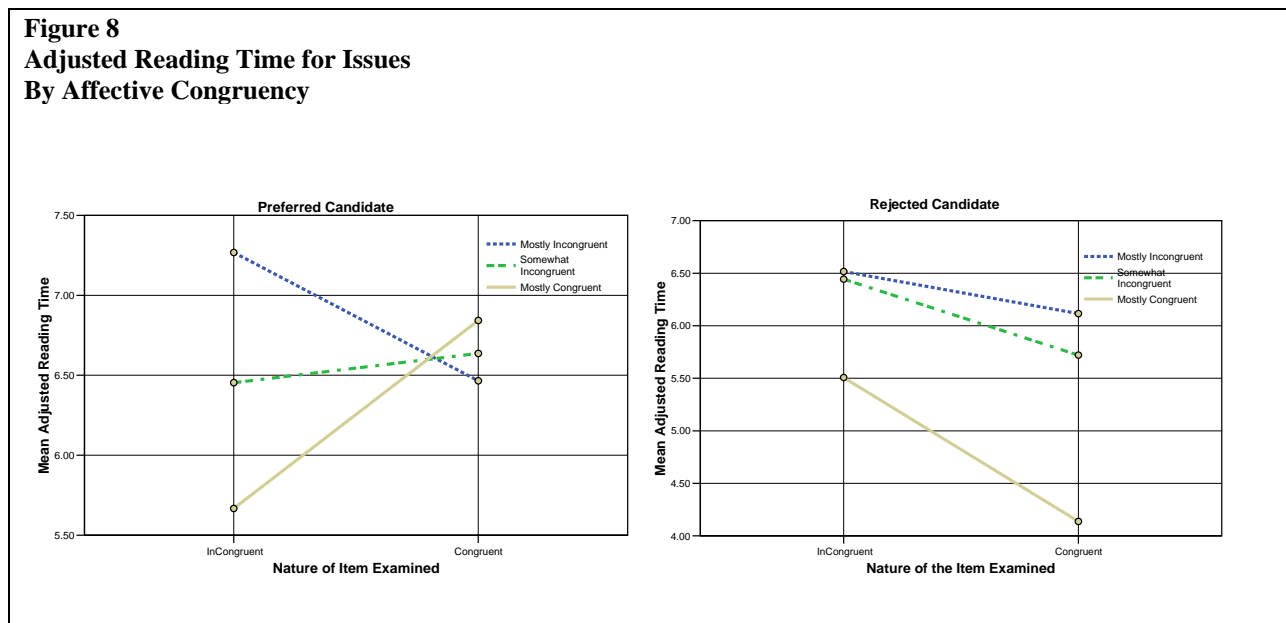
The process tracing system provides data on each item examined, including the amount of time spent reading the item. One implication of motivated reasoning is that affectively incongruent information may be more difficult to process than congruent information (Fiske and Taylor, 1991, Steenbergen and Lodge, 1998.) This difficulty may be reflected in the amount of time required to read a particular piece of information, adjusted of course for the length of the item and the reading ability of the subject (Redlawsk, 2002.) Affectively incongruent information may be more attended to, at least for a preferred candidate, than congruent information which can be absorbed easily because it carries no surprises.

Turning first to this latter indicator, an analysis of variance (Anova) of adjusted reading time for issue information by affective congruency was performed including subject political sophistication, education level, the number of words in each issue position; a measure of the subject's reading ability, and whether a subject chose an item by mistake as factors and controls.[7] The results are presented graphically in Figure 8 separately for the preferred and rejected candidates. Some expectations are met, but there are also some surprises here. First, as expected there are strong main effects for affective congruency for rejected candidates (F=9.164, p<.1, n=664) such that subjects spend more time processing incongruent information (in this case that means issue positions with *close* subject-candidate agreement since the candidate is disliked) than congruent information. This pattern matches expectations for motivated reasoning. There is

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[7] The adjusted processing time measure was calculated using the time required to read an information card beginning when a subject clicked to access a piece of information and ending when the subject clicked on a button to return to main screen. The raw measure thus contains both actual reading time and the physical time required to move the computer mouse and click on the button. To adjust for this, the raw reading time measure was regressed within subjects on the number of words in the candidate information card. The resulting constant represents the mean time required for each subject to read a card with zero words, thus approximating the time needed to handle the task of accessing the DONE button. For each subject this constant was subtracted from the raw reading time for each piece of information accessed. Political sophistication is an index of political behavior, political interest, and political knowledge, all collected as part of a pre-experiment questionnaire. Reading ability is measured by the amount of time subjects took to read the provided instructions, as recorded by the computer. This analysis parallels Redlawsk (2002) which found incongruent information for a liked candidate took longer to process, as would be expected by motivated reasoning.

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also a main effect for the amount of congruent information encountered overall (F=8.422, p<.1) such that independently of the congruency of a specific issue, subjects who face more incongruent information overall (50% and 75% incongruent) take longer to read both affectively congruent and incongruent issues.[8] There is no interaction effect, however. In sum, processing information for rejected candidates shows clear and strong motivated reasoning effects, where subjects take longer to consider affectively incongruent information than presumably easier-to-process issue positions that meet expectations.

Figure 8
Adjusted Reading Time for Issues
By Affective Congruency

But findings for the preferred candidate are more nuanced. Unlike an earlier analysis of incongruency (Redlawsk, 2002) no main effects are found for the consistency of an item, that is, subjects overall did not take longer to read an incongruent item than a congruent one whether for a preferred or rejected candidate (F=.199, n.s., N=774.) Likewise there is no main effect for the
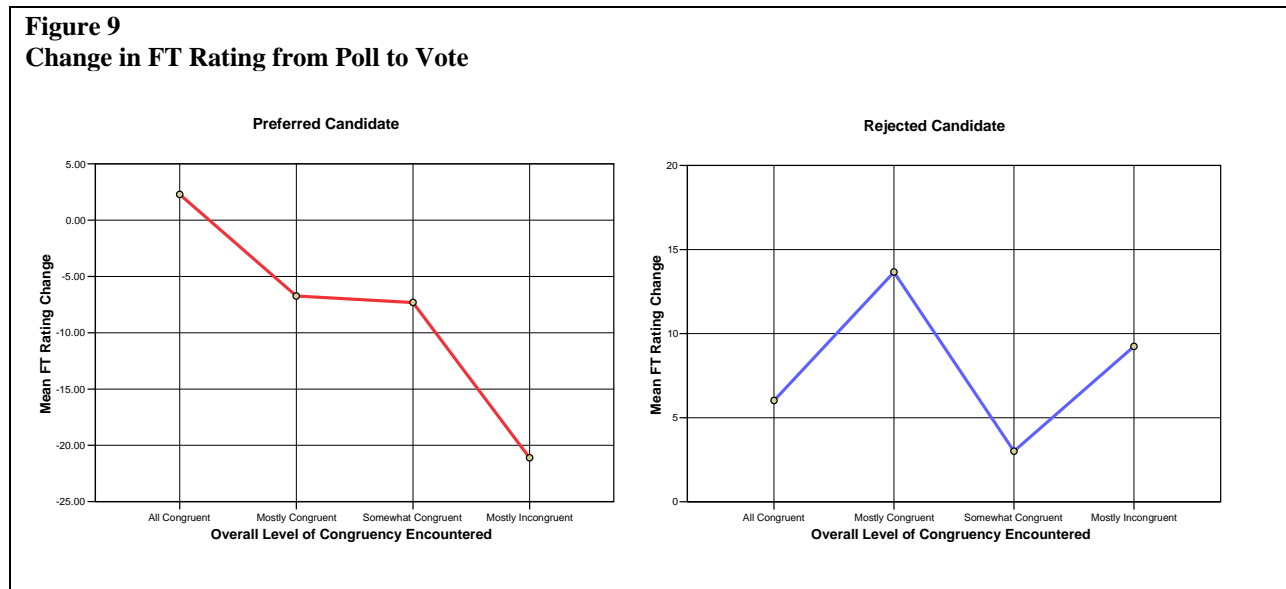
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[8] Because this analysis focuses on the congruency of individual items and because subjects in the "No Incongruency" condition by definition did not encounter affectively incongruent information, those cases are dropped from this analysis and the focus instead is on only subjects encountering at least some incongruent information.

overall level of incongruency (F=.379, n.s.) However, as Figure 8 shows, there are interaction effects between the two. Although not quite reaching statistical significance (F=1.773, p=.17) the pattern is instructive. At the middle level of incongruency (about 50% of all items examined) there is no difference in processing between congruent and incongruent issues. But at the highest level of incongruency ("Mostly Incongruent"), subjects spend more time processing incongruent – that is unexpected – information for their preferred candidate. Only at this level are the findings in Redlawsk (2002) supported. Subjects encountering just a small amount of incongruent information about their preferred candidate appear to more or less ignore it; spending less time on that information than on congruent issues. Apparently it takes a lot of negative information about a preferred candidate to generate the expected additional attention to that information that motivated reasoning predicts. This dovetails fairly well with Figure 7 showing that global affect for the preferred candidate is "sticky", not adjusting until substantial amounts of incongruency are encountered.

The analysis now turns to summary variables by subject rather than the detail by-item results. Both at the time of the poll (five minutes in the campaign) and after voting, subjects were asked to rate the candidates on a standard feeling thermometer. Previous research (Lodge & Taber, 2000; Redlawsk, 2002) has shown an attitude strengthening effect where encountering negative information actually results in a strong positive evaluation of a preferred candidate or issue. Recall from Figure 1 that the expected result is that instead of appropriately adjusting evaluations downward in this case evaluation may go up, or at least not be adjusted down. Whether this effect should also occur for a disliked candidate (in the opposite direction) is not clear from prior research. The expectation here is that subjects in this experiment who encounter relatively little incongruent information will show this same strengthening effect, while those

encountering a great deal of incongruency will be more accurate in changing their evaluations. Figure 9 presents graphically the results of a Multivariate ANOVA analysis predicting both the rating of the preferred candidate and the rejected candidate at the time of the vote by level of congruency encountered.

Figure 9
Change in FT Rating from Poll to Vote

The most obvious finding in Figure 9 is that the pattern of change in evaluation for preferred and rejected candidates is quite different. There is no evidence that encountering "good" information about a disliked candidate significantly increases evaluations of that candidate. Once again, instead, the sense is that voters, having rejected a candidate, do not pay all that much attention afterwards, and do not process information for that candidate accurately. Recall that in the "Mostly Incongruent" condition about 75% of the issue positions encountered by a subject for the rejected candidate are exactly the positions taken by the subject herself. So if updating were accurate, we would expect a clearly increasing evaluation.[9]

Turning to the liked candidate, the pattern is similar to what was anticipated (Figure 1) but not quite where expected. Subjects in the "Mostly Congruent" condition rate the candidate

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[9] It may be worth noting that the mean evaluation of rejected candidates at all levels of congruency is higher at the time of the vote then at the original poll, though the difference is small.

significantly lower (p<.1) than those who never encounter any incongruency, in opposition to the expectation of attitude strengthening. But then evaluation "sticks" and subjects encountering twice as much negative information ("Somewhat Incongruent") about the preferred candidate rate the candidate at roughly the same place as the "Mostly Congruent" group. Finally, once information becomes overwhelmingly negative, subjects actually make a large adjustment to their original evaluation. Updating of the global candidate evaluation thus does not proceed on a straight line path, as would be expected by Bayesian updating. But at least in these data we do not see attitude strengthening either. This contrasts with the finding that the global enthusiasm for a candidate is sticky – its pattern does match that of Figure 1 (see Figure 7.) At the same time anxiety and anger do increase more directly; perhaps the net of enthusiasm and anxiety/anger is what is being captured in the feeling thermometer evaluation. Or perhaps the attitude strengthening effect cannot be detected because even by 25% incongruent information its effects have been overwhelmed by a realization that something is amiss. However, more work will be needed to determine if this is the case.[10]

Following the vote, subjects were asked to place candidates on several issues, including affirmative action, the defense budget, the environment, and taxes. Because the actual positions of the candidates are known, an accuracy rating can be determined, measured as the absolute value of the distance between the candidate's actual position and the subject's perception of that position. Of course, for this to be useful a subject has to have actually examined the position of the candidate on the issue. As it turns out the affirmative action issue is the only one in which there are enough cases available for analysis, with 68 (of the original 117) cases available. The

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[10] One other interesting result appears. Subjects who learn only good things about a liked candidate do NOT increase their evaluation of that candidate from the poll to the vote. Given that the initial rating is at best based on three or four pieces of information, while the final rating is based on 15 to 20, this seems surprising. So while Bayesian updating on the negative side appears to occur to some degree, no updating on the positive side appears, perhaps because of a ceiling effect, since initial ratings of the positive candidate average around 77 on the 100 point scale.
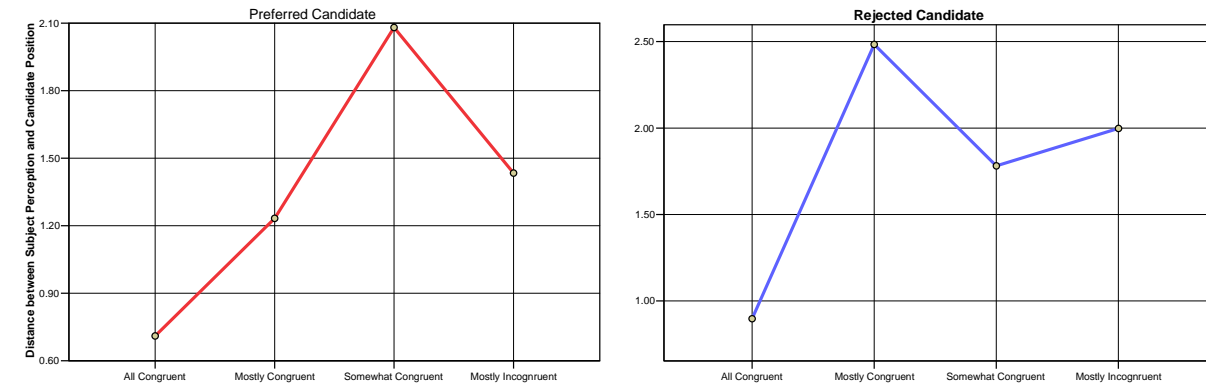
question is whether the amount of incongruent information about a candidate influences the perceptions of the candidate's issue positions. As before a sticky situation is expected, with moderate levels of incongruency generating less accurate placements, while at some point enough incongruency is encountered to cause the voter to recognize that the liked candidate is not as good as expected. At this point a move towards greater accuracy should be observed. Once again an ANOVA analysis was carried out predicting the difference between a candidate's actual position on affirmative action (on a typical 7-point scale) and the subject's perception of that position, scaled so that a lower value represents less distance, i.e. greater accuracy. In addition to the controls used earlier, a control is added for whether the candidate position on affirmative action is affectively congruent or incongruent. The results are shown in Figure 10. The pattern is similar for both preferred and rejected candidates. Subjects are most accurate when all the information they encounter is congruent with their initial evaluation of the candidate. As greater incongruency is encountered, placement becomes less accurate. Once the amount of incongruency becomes great enough, subjects' perceptions of the candidate's position begin to become more accurate again.

Overall results track reasonably well with the expectations of motivated reasoning. The existence of incongruent information about liked candidates – and to a lesser extent about rejected candidates – is not always correctly incorporated into evaluations and perceptions about the candidates' issue positions. The detailed item analysis of processing time provides some suggested reason for these effects. When subjects faced a small amount of incongruent information they were likely to gloss over it, spending less time reading that information than information that already corresponds to their existing beliefs. But once a threshold is met and the amount of negative information about a preferred candidate grows too large, voters start paying

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more attention – and taking longer to process – the incongruent information. The result appears to be a more accurate incorporation of that information into candidate evaluation.

Figure 10
Accuracy Placement of Candidates on Affirmative Action

Discussion

The question of how voters respond to candidates has been studied extensively over the years from many different perspectives. While some experimental work has taken place, much of what we know is survey based. In either case, however, existing studies are hampered by reliance on data collected at the aggregate (subject/respondent) level with little knowledge of the specific information that went into these evaluations or by collection of process data in an environment that does not reflect the complicated information flow of a political campaign. The data collected here represent a first step towards going beyond these limitations. The dynamic process tracing environment provides a way to capture a level of detail about what goes on in a campaign that simply has not been available in the past. Using dynamic process tracing every item examined by an experimental subject is captured thus providing a dataset that not only can include the typical

global variables – candidate evaluation, affective response, and the like – but also information about everything that went into those global variables.

The current study, despite this promise, has serious limitations and some of the findings reflect these limits. Subjects for this study were primarily undergraduate students rather than "real" people. The levels of information congruency were clearly too broad to capture the fine-grained differences in encountering just a little unexpected information compared to much more. And the only information actually manipulated in this study was the candidate issue positions. All other candidate information – personality, background, endorsements, polls – was left alone. This meant that subjects might well find themselves cross pressured between candidates who became steadily more and more unlike initial expectations and the fact that those candidates maintained very positive personalities, etc. While this may be quite realistic, for analytical purposes a significant level of control was probably lost. A more complete study would fully manipulate all types of data.

Yet there are interesting results here worth some follow up. The study as designed captured various indicators that might be expected to show effects of motivated reasoning. It is clear that as many other studies have shown, subjects in this study do not "correctly" update their candidate evaluations and affective responses when encountering information that is counter to existing affective expectations. Global affect and evaluation are "sticky" usually requiring a substantial bombardment of negative information about a liked candidate before updating adjusts appropriately. However, eventually evaluation and affect do adjust in apparently reasonable ways. On the other hand, while the patterns are different, the results show a failure to properly update for rejected candidates as well. However, in that case no amount of "good" positions by a rejected candidate improves affect towards that candidate. The implications are clear. Once an

evaluation is established, even one based on very little information, it is rather difficult to change it. People will apparently ignore, counterargue, or otherwise fail to account for new, affectively incongruent, information. As our parents always told us, first impressions do count.

These mixed results may represent limitations in the data collected for this study. But they may also suggest that within the context of an election campaign, the effects of incongruency and affect are complicated. Whichever is correct, it is clear that the best way to study a process that occurs over time – as in an election campaign – is to study it as it happens, not after it is over. The data collected through dynamic process tracing studies has the potential to provide exciting new insights that cannot be obtained by survey research or experiments that fail to account for the ongoing chaotic nature of an election campaign.

References

Anderson, John R.1983. *The Architecture of Cognition*. Cambridge, MA: Harvard University Press.

Avery, James and Ellen D.B. Riggle. 2000. The role of general versus political intelligence in political decision-making. Paper presented at the annual meeting of the Midwest Political Science Association, Chicago, IL.

Collins, A. M. and Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review* 82: 407-428.

Fiorina, M. P. (1981). *Retrospective voting in American national elections*. New Haven: Yale University Press.

Fiske, S. T. and Neuberg, S. L. (1990). A continuum of impression formation, from category based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol 23, pp. 1-74). New York: Academic Press.

Fiske, S. T. and Taylor, S. E. (1991). *Social Cognition*. (2nd Ed.) New York: McGraw-Hill.

Ford, J. K., N. Schmitt, S. L Schechtman, B. M. Hults, and M. L. Doherty. 1989. Process tracing methods: Contributions, problems, and neglected research questions. *Organizational Behavior and Human Decision Processes* 43:75-117.

Gerber, Alan and Donald Green. 1999. Misperceptions about Perceptual Bias. *Annual Review of Political Science* 2: 189-210.

Hastie, R. (1988). A computer simulation model of person memory. *Journal of Experimental Social Psychology* 24: 423-447.

Hastie, R and Park, B. (1986). The relationship between memory and judgment depends on whether the task is memory-based or on-line. *Psychological Review* 93: 258-268.

Herstein, J.A. 1981. Keeping the voter's limits in mind: A cognitive process analysis of decision making in voting. *Journal of Personality and Social Psychology* 40: 843-861.

Huang, Li-Ning. 2000. Examining candidate information search processes: The impact of processing goals and sophistication. *Journal of Communication* 50(Winter): 93-114.

Huang, Li-Ning and Vincent Price. 1998. Motivations, information search, and memory structure about political candidates. Paper presented at ICA '98.

Kunda, Ziva. (1987). Motivated inference: Self-serving generation and evaluation of evidence. *Journal of Personality and Social Psychology* 53(4): 636-647.

Kunda, Ziva. (1990). The case for motivated political reasoning. *Psychological Bulletin* 108(3): 480-498.

Lau, R. R. (1995). Information search during an election campaign: Introducing a process tracing methodology for political scientists." In M. Lodge and K. McGraw (Eds.) *Political*

judgment: Structure and Process (pp. 179-206). Ann Arbor, MI: University of Michigan Press.

Lau, Richard R., and David P. Redlawsk. 1997. Voting correctly. *American Political Science Review* 91(3): 585-598.

Lau, Richard R. and David P. Redlawsk. 2001a. An experimental study of information search, memory, and decision-making during a political campaign. In James Kuklinski (Ed.) *Citizens and Politics: Perspectives from Political Psychology*. New York: Cambridge University Press.

Lau, Richard R. and David P. Redlawsk. 2001b. Advantages and disadvantages of cognitive heuristics in political decision making. *American Journal of Political Science* 45(October): 951-971.

Lichtenstein, M. and Srull, T. K. 1987. Processing objectives as a determinant of the relationship between recall and judgment. *Journal of Experimental Social Psychology* 23: 93-118.

Lodge, Milton. 1995. Toward a procedural model of candidate evaluation. In Milton Lodge and Kathleen McGraw (Eds.) *Political Judgment: Structure and Process*. Ann Arbor: University of Michigan Press.

Lodge, M., McGraw, K., and Stroh, P. 1989. An impression-driven model of candidate evaluation. *American Political Science Review* 83: 399-419.

Lodge, M., Steenbergen, M., and Brau, S. 1995. The responsive voter: Campaign information and the dynamics of candidate evaluation. *American Political Science Review* 89: 309-326.

Lodge, M. and Taber, C. S. 2000. Three steps toward a theory of motivated political reasoning. In A. Lupia, M. McCubbins, and S. Popkin (Eds.), *Elements of Reason: Cognition, Choice, and the Bounds of Rationality* (pp. 183-213). London: Cambridge University Press.

Lodge, Milton, Charles Taber, and Aaron Chase Galonsky. 1999a. An exploration of the mechanics of motivated reasoning. Paper presented at the Annual Meeting of the Midwest Political Science Association, Chicago, IL.

Lodge, Milton, Charles Taber, and Aaron Chase Galonsky. 1999b. The political consequences of motivated reasoning: Partisan bias in information processing. Paper presented at the Annual Meeting of the American Political Science Association. Atlanta, GA

MacKuen, Michael, and George E. Marcus. 1994. Affective intelligence during a presidential campaign. Paper presented at the Annual Meeting of the American Political Science Association. New York, NY.

MacKuen, Michael, George E. Marcus, W. Russell Neuman, Luke Keele, and Jennifer Wolak. 2001. Emotions, information, and political cooperation. Paper presented at the annual meeting of the American Political Science Association. San Francisco, CA.

Marcus, George E., and Michael MacKuen. 1993. Anxiety, enthusiasm, and the vote: The emotional underpinnings of learning and involvement during presidential campaigns. *American Political Science Review* 87(September): 672-685.

Marcus, George E., W. Russell Neuman, and Michael MacKuen. 2000. *Affective Intelligence and Political Judgment*. Chicago: University of Chicago Press.

Redlawsk, D. P. 2001. You must remember this: A test of the on-line model of voting. *Journal of Politics* 63: 29-58.

Redlawsk, D. P. 2002. Hot cognition or cool consideration? Testing the effects of motivated reasoning on political decision making. *Journal of Politics* 64: 1021-1044.

Redlawsk, D. P. 2004. What voters do: Information search during election campaigns. *Political Psychology* 25(December): 595-610.

Srull, T. K. 1981. Person memory: Some tests of associative storage and retrieval models. *Journal of Experimental Psychology: Human Learning and Memory* 7: 440-463.

Srull, T. K. and Wyer, R. S., Jr. 1989. Person memory and judgment. *Psychological Review* 96: 58-83.

Steenbergen, M. R. and Lodge, M. 1998. Process matters: Cognitive models of candidate evaluation. Paper presented at the Annual Meeting of the American Political Science Association, Boston, MA.

Steenbergen, Marco. 2001. The Reverend Bayes meets J.Q. Public: Patterns of political belief updating in citizens." Presented at the Annual Meeting of the International Society of Political Psychology. Cuernavaca, Mexico.

Steenbergen, Marco, Whitt Kilburn and Jenny Wolak. 2001. Affective moderators of on-line and memory-based processing in candidate evaluation." Paper presented at the annual meeting of the Midwest Political Science Association. Chicago, IL.

Taber, Charles S., Jill Glather and Milton Lodge. 2001. The motivated construction of political judgments. In James Kuklinski (Ed.) *Citizens and Politics: Perspectives from Political Psychology*. New York: Cambridge University Press.

Thomas, David L. and Ed Diender. 1990. Memory accuracy in recall of emotions. *Journal of Personality and Social Psychology* 59: 291-297.

Wolak, Jennifer, Michael MacKuen, and Luke Keele. 2003. How the emotions of public policy affect citizen engagement, public deliberation and the quality of electoral choice. Paper presented at the Annual Meeting of the American Political Science Association. Philadelphia, PA.

Wyer, R. S., Jr. and Martin, L. L. 1986. Person memory: The role of traits, group stereotypes, and specific behaviors in the cognitive representation of persons. *Journal of Personality and Social Psychology* 50: 661-675.

Wyer, R. S., Jr. and Srull, T. K. 1980. The processing of social stimulus information: A conceptual integration. In R. Hastie, T. M. Ostrom, E. B. Ebbesen, R. S. Wyer, Jr., D. L. Hamilton, and D. E. Carlston (eds.) *Person memory: The cognitive basis of social perception*. (pp. 227-300). Hillsdale, NJ: Erlbaum.

Wyer, R. S., Jr. and Srull, T. K. 1986. Human cognition in its social context. *Psychological Review* 93: 322-359.