Emotion and Cognition in Political Information-Processing

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The role of mood in the 1994 congressional election, symbolized by the increasing use of negative advertisements, has rekindled fears that passion will overwhelm reason in American politics. Leaders long have manipulated emotion for their benefit. Politicians know we vote for leaders whom we like and who make us feel good (Abelson, Kinder, Peters, & Fiske, 1982; Kelley & Mirer, 1974). This explains why candidates kiss babies; utilize balloons, bands, and banners at political rallies; and fund raise over lunch or dinner.

Often the influence of affect upon voting behavior occurs without one's awareness. A pleasant emotional experience, even one as subtle as an enjoyable dinner, can lead to greater approval of the people and slogans presented during the meal. In one test of this phenomenon (Razran, 1940), subjects were unable to recall which slogans were presented during a meal and which were presented during the control condition. A more recent experiment reveals that showing the facial expression of a leader in the background of newscasts can elicit attitude changes that last for at least 24 hours (Sullivan & Masters, 1994). As both experiments demonstrate, nonconscious or preconscious factors can greatly influence memory and attitude formation. In particular, recent work in neuroscience shows clearly that emotional arousal can shape cognition without an individual's being aware of the process (Lewicki, 1986).

Knowledge of the neural basis of emotion can be beneficial in understanding how attack commercials and other emotional appeals elicit attitude changes (Ansolabehere, Iyengar, Simon, & Valentino, 1994; Guskind & Hagstrom, 1988; Hart, 1994). Our paper summarizes recent theories of the brain, showing how they shed light on the interaction of emotion and cognition in political communication. We then use this theoretical framework to interpret polling analyses of voting behavior, experimental studies of emotional responses, and changes in attitude after watching leaders on television.

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 Journal of Communication 46(3), Summer. 0021-9916/96/$5.00

Because of the diverse nature of feeling states, a discussion of mood, emotion, and affect must cross traditional academic disciplines. Neurobiologists study the physiological aspect of affect, social and cognitive psychologists study the cognitive component, and ethologists study the behavioral component. Each component is relevant to political behavior; yet without cross-disciplinary integration it is much like the Indian fable in which several blind men investigate an elephant, each developing a different picture because each examines a different part of the elephant (Lewis & Michalson, 1983). Only by integrating these diverse disciplines can we understand how various environmental contexts alter the interaction of emotion and cognition. "The august simplicity of the elephant ceases the moment we look under the skin" (Lorenz & Leyhausen, 1973; p. xiv). The same holds true for donkeys.

By looking under the skin we discover the complexity of the brain and find that emotion and cognition are independent—and interdependent. Before defending this statement, we must give a more specific definition of emotional and cognitive systems. The emotional processing system evaluates the significance of a stimulus to the organism (Ledoux, 1984). Even though the terms affect, mood, and feeling refer to functionally different and neurally distinct components of this evaluation, for the sake of this paper, we generally will use the term emotion to denote the process of stimulus evaluation. Cognitive processing refers to the computation, transformation, and categorization of sensory input, including transformation of memory storage and retrieval (Branscombe, 1987). More simply, it denotes the thoughts, beliefs, and propositions about an attitude object (Breckler, 1993). Based on these definitions and recent neuropsychological developments presented below, it is no longer possible to argue that emotion is always a result of cognition, or that feelings are always independent of and prior to cognition.

The Independence (and Interdependence) of Emotion and Cognition

Conceptually, the central nervous system can be viewed as a triune structure, or three brains in one (MacLean, 1949). These three functional divisions correspond to retained anatomical features of our distant evolutionary ancestors, the cold-blooded reptiles and early mammals (MacLean, 1990). The *protoreptilian* formation, located in the human brain stem, performs the homeostatic functions reptiles need to survive, such as breathing, sleeping, or procreating.

A second major structural area is the *limbic system*, which developed in the evolutionary transition from reptiles to mammals. These structures endow mammals with affective capabilities. The limbic system is responsible for the behavioral differences between reptiles, who often eat their young, and mammals, who care for their offspring. This difference may explain why we choose the animal species we do as pets: Snakes and reptiles are cold-blooded in more than one sense, whereas dogs, cats, and other mammals offer humans a better opportunity to establish empathic relationships.

The third principal structure is the *neocortex*, which has reached its greatest

size in primates. Organized around localized modules with distinct functions, the neocortex responds in parallel to diverse features of sensory input. While the enlargement of the neocortex endows humans with such capabilities as reason and thought, it also controls the processing of nonverbal visual and auditory stimuli, other sense impressions, and motor behavior. Much of such sensory processing does not require one's active attention. Even at the cortical level, therefore, we are often unaware of the actual information processes that determine how and what we perceive, feel, and think (Gazzaniga, 1985, 1994).

Because this tripartite view of the brain closely parallels the three psychological principles postulated in Plato's *Republic* or Freud's psychoanalytic theories, it should be relatively easy to understand, even for those who have not studied the latest neuroscience. The danger of such analogies, however, is that they may create the belief that each functional area was added on top of the last, like layers in a cake. Reason and passion do not exist in separate realms; in the normal brain, they are produced by separate systems that are interacting and interdependent. For scholars studying communication processes, the nature of the interaction has been the principal interest—and the question remains, is emotion produced solely by cognition, does emotion modulate cognition, or are both propositions correct?

In light of contemporary neuroscience, it is now possible to answer questions that have puzzled political observers since antiquity. One of the key methods in this research concerns behavioral deficits caused by damage to specific brain structures. For three main reasons, it will be useful to focus on visual images. First, the visual pathways in the brain have been the focus of extensive research over the last decade. Second, ever since Darwin, it has been known that facial displays of emotion play a central role in the social behavior of mammals, especially humans. Finally, although television has transformed modern politics, the precise nature of its effects has often been the subject of controversy. Moreover, because there are neurological disorders that disrupt the processing of faces or facial expressions, it is possible to assess the cognitive effects of different components of visual and auditory cues of emotion.

Damage to a specific part of the system for visual perception and object recognition can lead to the disorder called *prosopagnosia*, the inability to verbally recognize or identify faces. Although prosopagnosic patients can recognize an individual by his or her gait or voice, they cannot consciously identify an individual by his or her face. In general, a prosopagnosic patient's visual system functions normally, allowing him or her to read and even recognize the visual features of faces, such as gender or age (Tranel, Damasio, & Damasio, 1988). Yet, when presented with pictures of their parents, close friends, or even themselves, as well as pictures of famous people such as politicians and actors, prosopagnosic patients are totally incapable of verbally identifying any of the faces.

In prosopagnosia, however, the patient's skin conductance response does differentiate between familiar and unfamiliar faces (Tranel & Damasio, 1985). Therefore, while cognitive processes of recognition and identification are not occurring at the level of conscious awareness, the prosopagnosic patient is

experiencing an affective response to the stimulus. Furthermore, prosopagnosic patients are frequently capable of recognizing facial expressions of emotion, thus indicating the separation between the emotional and cognitive processing systems. Prosopagnosia thus provides clear evidence that a deficit in cognitive function does not produce a deficit in emotional perception and processing.

Brain damage can also cause the inverse of prosopagnosia, the inability to distinguish between emotions expressed in the human face while retaining the ability to recognize and identify faces. Kurucz, Feldmar, and Werner (1979) described the case of a patient who was able to recognize the faces of both famous and familiar individuals, but was incapable of discriminating between facial expressions of happiness, anger, or sadness, in spite of being able to recognize the movement of the facial musculature corresponding to these expressions.

The fact that similar behavioral deficits can arise from damage to different areas testifies to the complexity of the brain. Damage to the *amygdala*, a structure critical to emotional processing and learning, impairs an individual's ability to recognize facial expressions of fear. As with the patient described in the previous paragraph, this individual could still determine personal identity from faces (Adolphs, Tranel, Damasio, & Damasio, 1994). In both patients, perception of emotion was disturbed, while cognitive function was not.

If communication between the cognitive and emotional systems occurred sequentially, damage in one system would lead to impaired function in the other system. Since prosopagnosics produce emotional responses to faces, presumably one does not have to recognize President Reagan and identify him as a Republican before one produces an emotional response.

When a disturbance in either of two systems does not influence the other one, neuroscientists speak of a double dissociation (Tranel, Damasio, & Damasio, 1995). Such double dissociation between processing facial identity and facial affect provides strong evidence that emotional and cognitive processing occur in separate systems. Because the brain processes information in parallel, meaning that cognitive and emotional processing occur simultaneously rather than sequentially, cognition can elicit emotion and emotion can influence cognition. Therefore, one's beliefs about a political leader and one's feelings toward him are integrated in attitude formation and adjustment.

A Neuropsychological Model of Political Information Processing

Based on the neuroscientific evidence that emotional and cognitive processing occur separately and in parallel, it is conceivable that emotion and cognition can have independent effects upon attitude.[1] Therefore, cognitive appraisal would not be necessary for emotional responses to influence attitude. However,

[1] Attitude is an evaluation of a leader, policy, or party that is stored in memory (Judd, Drake, Downing, & Krosnick, 1991). It possesses both an emotional and a cognitive component (Edwards, 1990; Millar & Tesser, 1986).

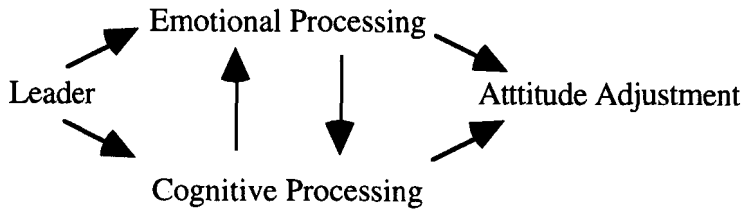

Figure 1. A neuropsychological model of information processing

this does not mean cognitive appraisal cannot produce emotional responses. Thus, an emotional response can be the result of an emotional evaluation of the stimulus as well as a cognitive appraisal of the stimulus. For example, watching Clinton on television will produce an initial emotional response to his facial expression. Concurrently, the observer recognizes his face and recalls his issue stances. This cognitive appraisal will produce another emotional response or refine the initial one. Finally, emotional and cognitive information are integrated in updating attitude.

The attitude adjustment process could be visualized with information flowing simultaneously along all routes (Figure 1). Therefore, in considering whether cognitive appraisal produces emotion, or emotion modulates cognitive appraisal, or the two systems operate separately, we conclude that all of the above are true. While neuroscience can reveal the potential structures involved in information processing, the environmental context determines the precise nature of the interaction.

With this model in mind, we review the voting behavior literature to determine if support exists for our extension of neuropsychological theory to the political domain. Evidence for this model would be a study that demonstrates an emotional influence upon attitude change that is not the result of cognitive appraisal. As the following discussion shows, isolating an independent effect of emotion upon attitude adjustment is methodologically challenging.

Emotion and Political Information Processing

Viewed as the most rational domain of the social sciences, voting theory was slow to integrate emotion. Classical studies of voting behavior focused on voter characteristics such as socioeconomic status (Lazarsfeld, Berelson, & Gaudet, 1948), party identification (Campbell, Converse, Miller, & Stokes, 1960), and issue assessments (Downs, 1957). While these studies have made valuable contributions to our understanding of voter behavior, they do not include emotion in their models. This omission is unfortunate because the handful of studies measuring the emotional component of political attitudes has shown that it adds significant "variance explanation over and above that due to trait scores and party identification" (Abelson et al., 1982, p. 626). In fact, it appears that "affective responses to candidates have greater consequence on voter

preferences than do issue or ideological assessments" (Marcus, 1991, p. 209; see also Christ, 1985; Conover & Feldman, 1986; Lodge & Stroh, 1993; Marcus, 1988; Ottati, Steenbergen, & Riggle, 1992; Ragsdale, 1991; Sullivan & Masters, 1988).

To account for these findings, several theorists have included emotion in their models of voting behavior. Lodge, McGraw, and Stroh (1989) have developed the impression-driven model of candidate evaluation. In this model, voters act as "cognitive misers," keeping a running tally of their opinion of the leader. This ongoing "evaluation tally" occurs within working memory as incoming sensory information leads to cognitive assessments and emotional responses that are integrated to form an impression of the leader. Rather than storing information concerning the leader and then recalling it to make an evaluation at the time of judgment, the evaluation occurs on-line, in real-time, as the voter is encountering the leader or information about the leader. This tally, or evaluation, is then stored in memory and the specific information that led to such an evaluation is forgotten. "Thus it is that people can often tell you how much they like or dislike a book, movie, candidate, or policy, but not be able to recount the specific whys and wherefores for their overall evaluation" (p. 401). The next time the voter encounters the leader, this tally, rather than each fact leading to this opinion, is retrieved from memory. The evaluation is then updated at the time of exposure, or "on the fly" (Lodge & Stroh, 1993, p. 237), integrating the prior impression with the new information. Affect is envisioned in this model as the summary evaluation, or the tally resulting from cognitive appraisal.

A similar model has been proposed by Rahn, Aldrich, Borgida, & Sullivan (1990). Having analyzed survey data, Rahn et al. placed emotion at the center of their candidate-appraisal model. They held that "feelings about candidates are developed as part of this candidate-appraisal process. These assessments can be conceptualized as an overall, affective summary toward each candidate that has its basis in cognitive appraisal" (p. 192). In other words, cognitive appraisal produces the emotional response. This view is only partially consistent with the neuropsychological theory presented at the outset. A different methodological approach is needed to determine if emotion, independent of cognitive appraisal, can influence attitude.

Hoping to gain greater insight into the causal influence of emotion and cognition upon presidential approval, Ragsdale (1991) applied LISREL analysis to survey data. The emotions variable consisted of emotional responses to the leader and the rational variable consisted of issue preferences and assessment of the national economic situation, as well as other political events and conditions.

Confirming the results of previous studies, Ragsdale (1991) found the emotions variable to be a better predictor of a leader's public approval rating than the cognitive variable. Ragsdale also found evidence that emotion had a significantly stronger influence upon the cognitive variable than the cognitive variable had upon emotion. Thus, emotional responses to a leader have an impact on issue preferences and on assessments of the political and economic environment. "The findings suggest that people's responses to presidents are *both* rational and emotional" (p. 58, emphasis in original). Although this result is in

accord with the neuropsychological model adopted here, the greater influence of emotion upon cognition modeled by Ragsdale could be a result of not factoring in how variables such as partisanship, ideology, and character assessment have influenced attitude. Whereas this study does provide further insight into causation, it is not feasible to disentangle the simultaneous versus sequential relationship of emotion and cognition using responses to survey questions.

A public opinion survey question might realistically replicate the actual voting context, but it does not measure attitude formation and adjustment. This study is not concerned with describing the outcomes of opinion, but rather with gaining insight into the antecedents of these outcomes. The interest here is in measuring whether noncognitively produced affect can precipitate attitude adjustment and change. Controlling the sequential influence of emotion and cognition requires a laboratory study.

An example of such a study is that of Forgas and Moylan (1987), who submitted opinion surveys to individuals exiting three different types of films—happy, sad, or aggressive. Researchers asked four questions that rated respondents' satisfaction with the prime minister and the leader of the opposition (the experiment was conducted in Australia), as well as the current state and federal governments, but failed to record party identification and other cognitive variables. Although this does prevent an understanding of how mood and prior attitude interacted in producing a response, the large subject pool (n = 980) probably yielded a normal distribution of political attitudes. Results support the hypothesis put forth here that one's affective state, or mood, can influence attitude. Individuals who had just seen an uplifting movie rated both leaders and both governments more positively than those who saw a sad or aggressive movie. Like Ragsdale's (1991) study, this result supports the neuropsychological model. Yet, in light of the robust literature on mood congruent recall (for reviews see Blaney, 1986; Morris, 1989), this finding could be a result of the tone of attitude retrieved from memory, as opposed to a modification in the attitude stored in memory.

Forgas and Moylan's (1987) study reveals the second methodological weakness of using survey questionnaires to evaluate on-line attitude adjustment. Survey questionnaires require the respondent to retrieve the pertinent information from memory (Marcus, 1991). The nature of emotion and cognition is such that recall may actually bias results in favor of emotional responses. When an individual has both a cognitive and an emotional reaction to a leader, the emotional reaction may remain long after the reason for the cognitive evaluation is forgotten (Zajonc, 1980). For example, you may see a congressman on the evening news who says something that makes you furious. If in the distant future you see him again, you may remember that he made you mad, but you are less likely to remember what he said that made you so mad. The strength of the findings that have used survey data could be a result of such a process, where the emotional reaction is remembered but the cognitive component driving it is lost. Whereas this clearly emphasizes the need to measure emotional responses, it suggests that surveys, which rely heavily on recall of pertinent information, may actually produce responses biased towards an influence

of emotion. This may explain why several theorists model affect as a summary of cognitive assessment.

As discussed previously, on-line processing of a stimulus, as the individual encounters it, is likely to involve different brain mechanisms than the processing involved in recall (Lodge & Stroh, 1993). So by using a survey format, one is measuring affective influence upon recall processing and not on-line processing, which is how attitudes are formed and adjusted.

Because attitude formation and adjustment are ongoing, dynamic processes that evolve over each presentation of the stimulus (Edwards, 1990), attitude is best studied through a process that captures this dynamic evolution. A method is needed that is analogous to taking a movie of behavior over time rather than a snapshot of behavior at one instant of time, as opinion polls do.

By both gaining experimental control over affective variables and not relying upon respondent recall of the object of judgment, Riggle, Ottati, Wyer, Kuklinski, and Schwarz (1989) induced a mood by having subjects recall pleasant or unpleasant life experiences, then had them evaluate a hypothetical candidate based on a portrait of the "voting record" provided them. There was a main effect for mood. Subjects in a positive mood responded more positively to the candidate, whereas subjects in a negative mood responded more negatively. This distribution occurred in the group that had issue stances similar to the hypothetical candidate as well as in the group possessing dissimilar issue preferences.

Although this study supports the hypothesis that affect can influence cognitive evaluations, reading a description of a hypothetical candidate's issue stances is an unusual and impersonal format of introduction to a political candidate in the television age. Also, because the subjects had no prior knowledge of the candidate, this study reflects the role of mood upon attitude formation, as opposed to attitude adjustment. Based on evidence from the work of Sullivan and Masters (1988), one can assume that emotion exerts a greater influence over attitude formation than adjustment. For less informed viewers, episodic emotional responses can be the greatest single predictor of attitude (Sullivan & Masters, 1988).

In light of the vastly different responses different brain regions can have to the same stimulus, it is important that an experiment replicate the environmental context as closely as possible. Television, as the primary source of news and political information (Comstock, 1980; Graber, 1984), is an ecologically valid means of evaluating the responses of voters to political leaders. Most Americans are introduced to and "interact" with their political leaders through this medium. Seeing a leader on television activates not only cognitions concerning his issue platform or the ideas he represents, but also emotional responses to appearance, mannerisms, and gestures. Since the televised medium is the means by which this study will activate on-line processing of political leaders, and because most television footage focuses on the leader's face, we return to a brief discussion of the brain to accent the importance of the face in social and emotional communication.

Whereas the previous discussion looked at the brain from a structural level,

this discussion focuses on the cellular level. Neuroscientists have found cells in the brain of nonhuman primates that fire only in response to faces, eliciting practically no response to other stimuli. Such cells do not fire when seeing just a nose or just an eye; the entire face must be visible (Desimone, 1991). Located slightly above these special facial recognition cells, in the brain area roughly underlying the temples, are cells that selectively respond to facial expressions (Hasselmo, Rolls, & Baylis, 1989) and other integral social cues, such as the orientation of the stimulus's gaze (Perret, Hietanen, Oram, & Benson, 1992). Both of these cell groups project to the special face cells in the amygdala, the structure critical for affective evaluation (Ledoux, 1989), and are most likely responsible for emotional and social responses to faces (Rolls, 1992).

The functional importance of cells whose chief function is to respond to faces can best be understood by comparison with other stimulus-specific cells. For example, the amygdala also possesses cells that respond primarily to food (Rolls, 1992). The fact that some neurons respond primarily to visual information concerning food is not surprising, considering this could be of great benefit to the organism. What is of great importance for the social sciences is the discovery that the brain gives similar priority to facial recognition and food, testifying to the critical role of the face in normal social behavior. In fact, Rolls (1992) hypothesizes that the reason destruction of the amygdala in a nonhuman primate results in its social isolation (Kling, 1987) is that the animal is no longer able to formulate socially appropriate responses to the facial displays of its peers.

Such special processing mechanisms at the neural level help explain the close ties between emotion and nonverbal facial displays at the behavioral level. Facial expressions have a long phylogenetic history, as is evident from the homologies between the nonhuman primate repertoire of expressions and a large component of the human repertoire of nonverbal facial displays (Eibl-Eibesfeldt, 1989). Humans often express affective states in their facial features without the intervention of cognitive processing: When we are happy, we smile; when we are sad, we frown (Ekman, Levenson, & Friesen, 1982; McHugo, Lanzetta, & Bush, 1991). When subjects were asked to imagine or remember several different emotional experiences, their facial muscles moved in accordance with the emotion being imagined (Schwartz, Fair, Salt, Mandel, & Klerman, 1976). Although modified by socially defined display rules, this process has innate roots, for example, individuals blind from birth exhibit normal facial expressions.

The decoding of most of these facial displays by the receiver is also based on innate processing mechanisms. Members of preliterate societies can reliably identify the emotional facial expressions of individuals from western societies (Ekman & Oster, 1979). It is clear to the layman that affect is communicated in nonverbal behavior. For example, while seeing people converse in a foreign language, one would not know what they are discussing, but one can often determine their emotional states and expressivity (Masters & Sullivan, 1989). If the verbal medium is the domain of cognition, then the nonverbal medium is the domain of emotion (Masters, 1989, chap. 2). "We react to gestures as to a

secret and complex code, written nowhere and known by no one, but understood by all," according to Sapir (cited in Coulomb-Gully, 1986, p. 44).

Not surprisingly, viewers automatically react to the nonverbal facial displays of leaders on television (Masters, Sullivan, Lanzetta, McHugo, & Englis, 1986). Thus, seeing a smiling leader makes one feel good. This emotional response occurs at the time of evaluation and presentation of the stimulus. Since it activates on-line processing mechanisms, it will be termed an episodic emotional response to differentiate it from an emotional response that is largely a product of recall, as occurs when a survey design is used (Masters, 1991). Naturally, part of the episodic emotional response is the product of, and thus occurs after, retrieving the evaluation of the leader from memory. In an episodic emotional response, however, the brain also integrates this recalled information with the affective analysis of the exteroceptive sensory input, which is mainly the response to the facial expression of the leader.

The studies of Masters, Sullivan, Lanzetta and others (Lanzetta, Sullivan, Masters, & McHugo, 1985; McHugo et al., 1991; Masters & Sullivan, 1993; Sullivan & Masters, 1988) were originally designed to measure the influence of a politician's nonverbal behavior upon attitudes, but one can take advantage of the close relationship between nonverbal behavior and emotion to determine how episodic emotional responses influence attitude and interact with cognitive variables.

With greater internal validity than the survey studies reported earlier, these studies have also shown the consistently strong explanatory power of emotional responses. Episodic emotional responses to a candidate's smile explain more of individual attitude changes than do cognitive variables such as party identification, issue agreement, and leadership ability (Sullivan & Masters, 1988). Naturally, this episodic emotional response is not solely the result of the leader's facial expressions. A subject's opinions and partisanship, among other cognitive variables, also influence episodic emotional responses. For example, President Reagan's smile increased positive feelings among Republicans and turned off negative feelings in Democrats. Thus, the type of display (e.g., happy and reassuring or angry and threatening) and the cognitive mindset of the individual interact. Across numerous experiments (Masters, 1989; Masters & Carlotti, 1994; Masters & Sullivan, 1993; Sullivan & Masters, 1988), responses to a leader's facial expressions have statistically significant influences upon attitude change that are over and above the influences of prior attitude.

Although this is clear evidence that an emotion that is not contingent upon cognitive appraisal can influence attitude, some critics might argue that cognitive appraisal of the facial expressions is responsible for the changes in attitude. To show that affect can influence attitude independently of cognitive appraisal, the affective manipulation has to occur prior to the onset of the stimulus and apart from the activation of cognitive appraisal.

In the present study, pilot test using a guided-imagery technique for inducing a mood (Wright & Mischel, 1982), a procedure similar to that used by Riggle et al. (1989), revealed a significant influence of emotional state upon episodic emotional responses to viewing excerpts of political leaders. Unfortunately,

using such a procedure can produce demand characteristics as subjects make the awkward switch from visualizing an emotionally evocative situation to responding to televised excerpts of leaders.

For the next pilot test, a single frame of an emotionally arousing image was inserted immediately prior to the onset of the excerpt, thus "masking" the emotional image and preventing it from activating conscious awareness (Marcel, 1983). Similar images of innate fear-producing stimuli, like snakes, skulls, and spiders, reliably generate feelings of anxiety, even when they are masked so that subjects are not consciously aware of what they have been shown (Esteves, Parra, Dimberg, & Öhman, 1994). A similar technique has been used to condition attitudes to neutral persons (Krosnick, Betz, Jussim, & Lynn, 1992) and objects (Murphy & Zajonc, 1993).

Patterning the experimental design on the studies cited above, the excerpts were presented for two seconds without the sound (for a further discussion of methodological issues concerning the use of preattentive images, see Way, 1994; Way & Masters, 1996). For each of four Democratic political leaders, five different emotionally unarousing (neutral) excerpts were drawn from newscasts, interviews, and debates.[2] In each experimental treatment, there were five consecutive pairings of the leader with an emotionally arousing slide of consistent valence, either anxiety or reassurance. The slides were selected from the International Affective Picture System (Lang, Öhman, & Vaitl, 1988) and the experiment performed by Krosnick et al. (1992). As with the previous studies of politicians' nonverbal behavior, subjects recorded their perceptions of each leader, their emotional responses to him, and their attitudes towards him both before and after viewing the entire set of excerpts (Sullivan & Masters, 1988).

Viewing neutral excerpts of President Clinton paired with subliminal, anxiety-arousing images significantly decreased subjects' perceptions and emotional responses (Figure 2 and Table 1). Therefore, the emotional state created by the preattentive image significantly altered how the subject perceived and responded to President Clinton. Despite the fact that attitudes toward President Clinton were well established, the negative preattentive images led to a more favorable shift in attitude (two-tailed t-test, $t = -2.08$; $p = .051$).[3]

The implications of this finding are twofold: (a) Preconscious emotion can

[2] Prior studies of political responses to emotional cues have used leaders from opposing parties in both the United States (Masters & Sullivan, 1993; Sullivan & Masters, 1988, 1993) and France (Masters & Sullivan, 1989a, 1989b). We sought to control the status of the leader rather than party. Because the Democrats held the White House at the time of the study, we limited stimuli to members of President Clinton's party. The leaders shown, in order of presentation, were Ernest Hollings, Reubin Askew, President Clinton, and Walter Mondale.

[3] Increases in Clinton's approval ratings were driven by Republicans, whose average thermometer increased from 33.8 to 44.6, and Independents, whose increase was from 56.3 to 69.3, rather than Democrats, whose average rating dropped a point from 69.3 to 68.1. Only for the Republicans, however, did the change approach significance (two-tailed t-test, $p = .057$). Although the sample size for this study is small, a replication (Way & Masters, 1996) has reproduced this effect and shown that it does *not* occur after a positive preattentive cue.

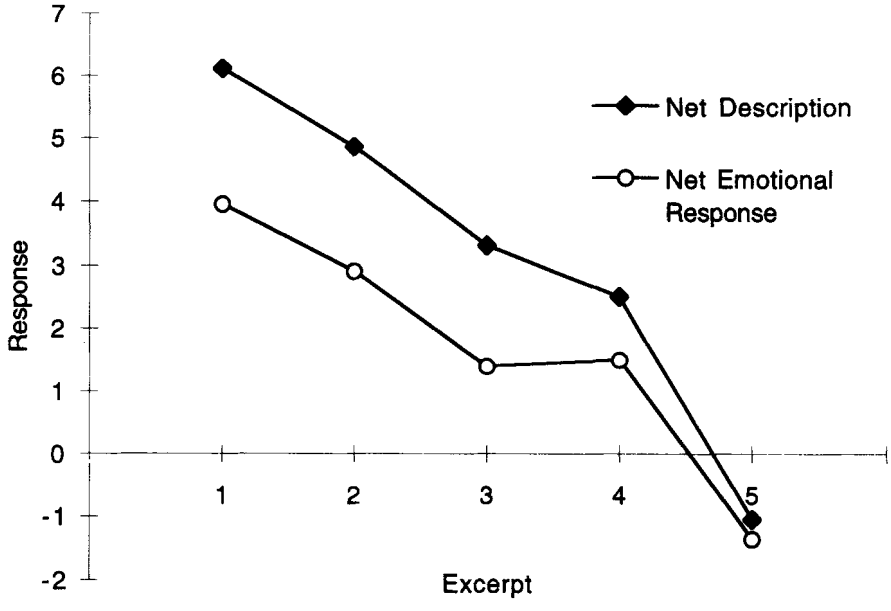

Figure 2. Descriptive ratings of emotional responses to viewing neutral excerpts of President Clinton preceded by a negative subliminal image. (Net measures could range from +12 to -12, *N* = 20.)

modify attitudes, and (b) the direction of attitude change may not necessarily be valence consistent. Since the emotional manipulation occurred prior to the excerpt of the leader, cognitive appraisal cannot be the main cause of the attitude change. It appears that the emotional state activated by the preattentive image modifies the perception and cognitive appraisal process. Regardless of the precise cause, this experiment provides support for the hypothesis that emotional influences upon attitude adjustment are not necessarily contingent upon cognitive appraisal.

Voting models that view emotion as the end result of cognitive appraisal (Lodge & Stroh, 1993; Rahn et al., 1990) cannot account for the results of this study. Since these models view emotion as a summary of cognitive appraisal, emotion can only influence attitude in a direction consistent with cognitive appraisal. By conceptualizing the cognitive and emotional systems with separate influences upon attitude, it is easier to understand how attitude could become more favorable while cognitive appraisal remains unchanged or becomes more negative. Such a phenomenon may occur in times of national crisis and widespread anxiety, such as during the Gulf War, when critics become more supportive of the President. The so called rally-round-the-leader effect may therefore resemble our study, in which all subjects felt increasingly anxious, but only Republicans' attitudes changed, becoming more favorable to President Clinton.

The discrepancy between the mood-congruent attitude change seen in previously described studies, whether the context was nonpolitical (Riggle et al.,

Table 1. Mean Descriptive and Emotional Responses to President Clinton, by Excerpt

President Clinton	Net Description (Mean)	Net Emotion (Mean)
Clip 1	6.1	3.95
Clip 2	4.85	2.9
Clip 3	3.3	1.4
Clip 4	2.5	1.5
t-test of Clip 1 vs. Clip 5	$p = .0001$, *t*-value 8.38	$p = .0001$, *t*-value 5.09

1990) or social (Krosnick et al., 1992), and the mood-*in*congruent attitude change seen in our study could be explained by the different experimental designs. To preserve ecological validity, our experiment presented actual political leaders as attitude objects, as opposed to hypothetical candidates, in a naturalistic manner. Further replication of these findings is underway, examining the interaction of preconscious emotion with the viewer's attitude, the leader's status, and the emotional evocativeness of the excerpt.

Whereas this paper has focused only on the independent and interdependent roles of emotion and cognition in attitude change, other variables also influence attitude. Because this paradigm possesses high ecological validity, other attitude influences such as gender, personality, and media condition (excerpts with or without audio) are currently being evaluated. Do men and women integrate their affective state prior to the excerpt and their cognitive appraisal of the leader in the same manner (Masters & Carlotti, 1994)? Based on recent brain imaging studies, there is reason to believe that they do not (Gur et al., 1995). Because neurotic individuals' perception of greater threat in their environment operates at a preconscious level (Öhman & Soares, 1993, 1994; Mogg, Bradley, Williams, & Mathews, 1993), do they respond to the leaders more positively or more negatively? Or conversely, do primary psychopaths, individuals who lack the neurological mechanisms underlying normal fear responses (Patrick 1993, 1994; Hare & Schalling, 1978), respond to threatening images presented below the threshold for conscious awareness?

The final issue under investigation concerns the relative power of the preattentive images to influence attitude. The fact that preattentive images have been broadcast over a national network (BBC; Underwood, 1994), and that the attitude changes among subjects in our study occurred after they watched only 10 seconds of President Clinton, arouses concern over the potential for the mass manipulation of attitudes. Such fears are most likely unwarranted not only because the mood-incongruent effects could backfire on conniving political consultants, but also because the neutral excerpts were shown for 2 seconds without the sound. In a pretest of this study, excerpts shown with the sound

nullified the influence of the preattentive image (Way, 1994). Although this issue requires further examination, psychophysiological responses to leaders' facial displays shown without preattentive cues are stronger when excerpts are shown without the sound (Lanzetta et al., 1985). In addition, preliminary analyses of further experiments with this paradigm indicate that the emotional evocativeness of the political leader's nonverbal behavior has a greater influence upon episodic emotional responses than the preattentive images do.

A glance at the daily headlines reveals the rapid expansion of neuroscience into the realm of human behavior, whether it be the use of brain imaging techniques to explore gender differences in cognition or the search for drugs more effective than Prozac. Increased understanding of brain function enhances the ability to control and manipulate behavioral outcomes. Those with knowledge of the brain will have power, and, with this power, will come great responsibility.

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