

RATS, We Should Have Used

Clinton: Subliminal priming in Political Campaigns

Joel Weinberger, Derner Institute of Advanced Psychological Studies, Adelphi University, Garden City, NY, USA; weinberg@panther.adelphi.edu

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Drew Westen, Depts. of Psychology and Psychiatry, Emory University, Atlanta, GA, dwesten@emory.edu

Address all correspondence to:

Joel Weinberger

Derner Institute

Adelphi University

Box 701

Garden City, NY 11530 weinberg@panther.adelphi.edu

Three experiments showed that subliminal stimulation, delivered over the Internet, could affect evaluative responses to unknown and well-known politicians.

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ABSTRACT

Political strategists decide daily how to depict candidates. Growing recognition of the importance of implicit processes (processes occurring outside of awareness) suggests limitations with focus groups and polling. Three experiments, inspired by national political campaigns, employed Internet presented subliminal primes to study evaluations of politicians. In Experiment 1, the subliminal word "RATS" increased negative ratings of an unknown politician. In Experiment 2, a subliminal photo of Bill Clinton weakened negative ratings of the unknown politician. In Experiment 3, conducted during former CA governor Gray Davis' recall referendum, a subliminal photo of Clinton affected ratings of Davis, primarily among Independents. Results showed that subliminal studies can be conducted in a mass media outlet (the Internet) in real time, and that campaign strategists should to supplement voters self-report.

Key Words: implicit processes, subliminal, Internet, political attitudes, campaign strategy

Political strategists must decide what ads to run, how negative they should be, whether to associate a candidate with a particular public figure (such as a sitting President), and so forth (e.g., Lau & Pomper, 2002). These decisions are generally made using some combination of intuitive judgment, focus groups, and polling (see, e.g., Carville & Begala, 2006). However, the last 15 years of psychological research in neuroscience, social psychology, political psychology, and personality psychology have raised questions about what people can and cannot report in surveys or questionnaires, even when they think they are providing accurate responses (see McClelland, Koestner & Weinberger, 1989; Nisbett & Wilson, 1977; Westen, 1998). Research across a wide variety of domains suggests the importance of distinguishing between explicit and implicit psychological processes. Explicit processes are consciously accessible and hence relatively amenable to self-reports. Implicit processes are expressed in behavior but are generally unavailable to consciousness, and so not readily measured by surveys or questionnaires (Greenwald & Banaji, 1995).

Applying this distinction to political science, voters should theoretically be able to report accurately their explicit attitudes toward abortion or gun control. They should not, however, be able to report whether a pro-life advertisement showing a partial birth abortion or a pro-gun control advertisement showing the carnage at Columbine will affect their feelings toward these issues or the candidates who champion them. Much of the effect of these kinds of messages comes through their impact on the emotional associations people form to both the target of the message (e.g., abortion) and to the messenger (see also Brader, 2006). Networks of associations of this sort are implicit. People may be unaware of which networks are active at any given time and of the way

various persuasive appeals affect them. Recent neuroimaging data have related this issue directly to political judgments. Westen, Kilts, Blagov, Harenski and Hamman (in press) reported that emotion processes circuits are active whereas “reasoning” circuits are relatively inactive when partisans are presented with politically threatening information.

These psychological principles indicate that political strategists may be led astray by focus groups or public opinion surveys. The quiet revolution in neuroscience and social and political psychology that has led to the recognition of the importance of implicit processes has also produced a number of technologies for assessing implicit attitudes or associations. Many of these will be incorporated for the first time in 2008 in the National Election Survey (American National Election Studies, 2006; <http://www.electionstudies.org>).

Subliminal Priming

Historically, the best known and most controversial way to study implicit processes was through subliminal stimulation. It rose to prominence in popular culture in the 1950s when Vicary claimed that he had subliminally influenced drive-in movie patrons to eat popcorn and drink Coke (this was subsequently discovered to be a hoax; Merikle, 2000). A best-selling popular book (Packard, 1957) alleged that advertisers routinely influence consumers subliminally.

Paralleling popular interest, many 1950s researchers used subliminal stimulation to study unconscious processes. This was called the “New Look” in perception and emphasized implicit cognitive, emotional, and motivational influences on conscious perception. It too was highly controversial (see ; Dixon, 1971, 1981; Erdelyi 1974), and research on subliminal stimulation waned substantially between the early 1960s and the early 1990s, with one or two notable exceptions (e.g., Shevrin & Dickman, 1980;

Silverman & Weinberger, 1985). Subliminal stimulation returned to the mainstream in the 1990s with the recognition of the ubiquity of implicit processes (Bornstein & Pittman, 1992; Greenwald, 1992; Westen, 1998) and with findings that showed conclusively that subliminal stimulation can influence subsequent responding (e.g., Greenwald, Draine & Abrams, 1996). This has reopened the question of whether ads can influence people's attributions subliminally or, less nefariously, whether campaign strategists can use subliminal priming and other implicit measures to assess voters' feelings toward candidates, issues, advertisements, etc. (Dijksterhuis, Aarts & Smith, 2005).

A great deal of data, going back decades, shows that subliminal stimulation can affect attributions about a target person (see Dijksterhuis, et al., 2005), including the kinds of emotion-laden attributions that affect voting behavior (Brader, 2006; Marcus, 2002; Marcus, Newman & MacKuen, 2000). Smith and Klein (1959) subliminally presented the words "happy" and "angry" then had subjects rate a supraliminal, relatively expressionless, face. Ratings were more positive following "happy." Eagle (1959) presented a picture of a young man either giving a birthday cake to or stabbing an older man. This was followed by a supraliminally presented, affectively neutral, picture of the same young man standing alone. The neutral picture was judged more negatively when preceded by the stabbing picture. Bargh and Pietromonaco (1982) subliminally presented synonyms of hostility to participants who then read a story that was ambiguous regarding the main character's hostility. The greater the frequency of hostility-related words, the more participants interpreted the character as hostile. Krosnick, Betz, Jussim, and Lynn (1992) asked participants to rate a neutral target person after exposure to either a positive or negative affect-arousing photo. Those exposed to the positive photo rated the target as

more likeable and as having more complimentary personality traits. Niedenthal (1990) presented subliminal emotional facial expressions (joy, disgust, or neutral). Participants attributed more positive traits to a subsequent cartoon character after the joyous face and more negative traits following a subliminal face evincing disgust. Those who saw the disgusted face also rated the cartoon character as more similar to disliked social groups. Devine (1989) showed that subliminally presented stereotype words negatively affected the impression participants drew about a hypothetical other. Lepore and Brown (1997) obtained similar results. Chen and Bargh (1997) showed that subliminal presentation of a Black face led to greater hostility.

From the Lab to the Mass Media

Researchers typically conduct subliminal research in laboratory settings, one participant at a time, resulting in relatively small-N, tightly controlled studies. In the studies reported here, we attempted to test whether subliminal priming is robust enough to survive the many distractions and uncontrolled variables inherent in a mass presentation by running our studies on the Internet. McGraw, Tew, and Williams (2000) have noted the potential utility of web-based studies for time-sensitive results and concluded that even reaction-time studies requiring millisecond accuracy can be conducted effectively. Perhaps the best known example of such studies involve the Implicit Association Test (IAT), which asks participants to categorize contrasting target stimuli (e.g., male-female) as good or bad and then sees which pairing is reacted to more quickly. This test has been successfully presented on the web and yielded a wealth of data (Nosek, Greenwald & Banaji, 2005). The studies reported here are the first to

employ subliminal presentation on the web, and were aimed at determining whether such stimulation could yield results with practical implications for national politics.

Our first Experiment revisited concerns about the use of subliminal messages to influence evaluative responding (in this case, towards a politician). Previous research, cited above, showed that ratings of various kinds of neutral targets could be influenced by subliminal stimulation. We wanted to see whether that would hold for a political target presented via the web. Our second experiment tested whether subliminal presentation of a well known political figure (Bill Clinton) would influence feelings toward an unknown candidate. Our third experiment tried to determine whether subliminal presentation of one known political figure (Clinton) could affect evaluations of another known political figure (former California Governor Gray Davis, during his recall election), and hence whether association with the first figure would be an asset or liability.

Experiment 1

During the 2000 presidential election, the Bush campaign aired an advertisement containing what appeared to be the subliminal word RATS (Berke, 2000). Gore supporters cried foul play. Bush supporters insisted it was inadvertent. Advertising executives were generally skeptical, likening subliminal effects to belief in astrology and alien abduction (Egan, 2000) or alligators in the sewers of New York City (Shapiro, 2000).

We tried to replicate essential aspects of the ad on the Internet by testing the effect of the subliminal word RATS on appraisals of a hypothetical, anonymous candidate. We used three control stimuli, each comprising four letters. To control for the physical structure of the stimulus, we used STAR, which is RATS spelled backwards and

has a completely different meaning. A second control condition was ARAB. Although negative attitudes toward Arabs have increased since the World Trade Center bombing, Devine (1989) has argued that for prejudice to be unconscious and therefore susceptible to subliminal stimulation, it has to have been repeated over a long period of time. Locke, MacLeod, and Walker (1994) supported Devine's hypothesis by demonstrating that immigrants in Australia did not show the automatic prejudiced responses of native-born Australians to the indigenous Aborigines. We predicted that, at the time we ran this study (September to November, 2000), prejudice against Arabs had not developed negative unconscious connotations in our sample. Finally, we presented the letters XXXX as a control for meaningfulness of stimulation. We predicted that RATS would result in a more negative evaluation of the politician than would any of the control messages.

Method

Participants

Ninety-one (91) individuals (27 males and 64 females) logged onto our website (www.thoughtscan.com) and completed the experimental task (mean age 23.74, s.d. 4.21).

Procedure

Participants (Ps) were asked to take part in a study aimed at determining how immediate impressions influenced reactions to political candidates. After completing a demographic page, Ps were asked to fix their gaze on an "X" in the middle of the screen, which would be replaced by a picture of a candidate. Ps were then presented with one of four subliminal stimuli (RATS, STAR, ARAB, or XXXX). The subliminal stimulus was

followed immediately by a photograph of a young man in a shirt and tie, presented for five seconds. This photograph functioned both as the object of evaluation (see below) and as a mask to degrade recognition of the subliminal stimulus. Following a subliminal stimulus with a supraliminal stimulus that helps to prevent conscious recognition of the subliminal stimulus is called backwards masking. (see Breitmeyer (1984) for a thorough discussion of masking.) We repeated the procedure three times in case a P blinked or was distracted during one of the presentations. We presented the subliminal and supraliminal (masking) stimuli in Quicktime. Next, we asked Ps to evaluate the supraliminal (masking) stimulus. We presented ten evaluative items on seven-point scales, ranging from *completely agree* to *completely disagree*: This candidate looks competent; This candidate strikes me as honest; There is something about this candidate that makes me feel positive; There is something about this candidate that makes me feel disgusted; There is something about this candidate that makes me feel angry; There is something fishy about this candidate; There is something about this candidate that makes me feel that I can trust him; I like this candidate; I dislike this candidate; I would vote for this candidate.

Next, we asked Ps to describe what they had seen during the subliminal stimulation, using an open-ended response format. We then asked them to choose which of seven stimuli they had been exposed to, one of which was the correct stimulus. (We also gave them the option of indicating that they had seen nothing.) We included this second cued response assessment as a more stringent test of awareness. Recognition of previously seen stimuli is easier than is recall (Dixon, 1981).A debriefing form followed.

Results

Two Ps wrote the correct word when asked what they saw (one saw STAR; one saw ARAB). One P wrote that she saw “text” but could not identify it. When Ps were asked to guess which of several stimuli had been presented, only five guessed any of the words actually shown and, of these, only three were correct. Most (52) chose the XXXX option; another 33 guessed that nothing was shown subliminally. Thus, there was no evidence for awareness of the subliminal stimulus. We therefore concluded that the stimulus was truly subliminal. A caveat is in order however. Because of the different computers, operating systems, and Internet platforms that these stimuli were sent to, we could not assess nor precisely control the exact timing of the subliminal stimulus. Thus, the speed at which the stimulus was presented was not uniform across all subjects. What we were able to do was to determine that Ps could not accurately identify the stimulus and that it was therefore subliminal. The fact that we obtained results speaks, we believe, to the robust nature of our subliminal effects. We believe this because despite what one would expect to be randomly distributed error around presentation times, we obtained predicted results and then did so two more times in Experiments 2 and 3 (see Experiments 2 and 3 for details). The ten evaluative item ratings were highly intercorrelated, so we conducted a Principal Components Analysis with Varimax rotation for data reduction purposes (see Fabregar, Wegener, MacCallum & Strahan, 1999). Consistent with a large body of research distinguishing positive and negative affect (e.g., Watson & Clark, 1984), a two-component solution, one consisting of positive, the other of negative items, best accounted for the variance. Table I reports the relevant findings.

We conducted a 4 X 2 between-subjects ANOVA for each dependent variable (*Positive Evaluation* and *Negative Evaluation*). The factors of the ANOVA were subliminal stimulus (RATS, STAR, ARAB, XXXX) and gender (male, female).

The ANOVA yielded a main effect for subliminal stimulus on the Negative Evaluation Principal Component: $F(3, 83) = 3.41, p = .02$. The means were: STAR, 0.12; ARAB, -3.10; RATS, 3.78; XXXX, -5.37. (Factor scores were multiplied by 10 to make them easier to read.) (The higher the number, the more negative the evaluation.) No effect for gender was obtained. There was also no interaction ($F_s < 1.0, p_s > .40$). No effects approached significance for *Positive Evaluation* ($p_s > .14$).

Our prediction was that RATS would show effects whereas the other stimuli would not. We conducted a planned contrast to test this hypothesis, using orthogonal polynomial weightings (3, -1, -1, -1) (Rosenthal, Rosnow, & Rubin, 2000). We only tested it for Negative Evaluations since they yielded the main effect predicted. The contrast was significant, $F(1, 83) = 11.04, p < .005$, showing that the RATS condition uniquely elicited negative ratings of the hypothetical candidate.

Discussion

As predicted, subliminal presentation of RATS led to a more negative evaluation of the hypothetical candidate. RATS did not lead to lower positive evaluations, however. Although this might simply reflect the nature of the stimulus, it might also suggest, if replicated, that negative evaluations (at least of politicians) are more easily manipulated than are positive evaluations. This would suggest that those trying to influence evaluations of others might have more success if they target negative, as opposed to positive, evaluations. Such data support the political adage that negative campaigns

(attack ads) are effective, even though voters claim to deplore them (Carville & Begala, 2006; Lau & Pomper, 2002). Attack ads are in fact widely used in political campaigns (Ansolabehere & Iyengar, 1993, 1994; Jamieson, 1992), and data support their impact. The 1992 National Election Study Survey (Wattenberg & Brians, 1999) found that people who recalled negative campaign messages were more likely to vote in an upcoming election than those who did not. Experiments 2 and 3 also looked at positive and negative evaluations, thereby testing this understanding of the results.

The failure to obtain effects with STAR rules out the possibility that the physical characteristics of RATS carried the effects. Similarly, the meaningless stimulus XXXX had no effect. ARAB also did not affect responses, supporting Devine's (1989) hypothesis that only long-held attitudes affect unconsciously stimulated evaluations.

The results show that subliminal stimulation presented via the Internet can affect subsequent evaluations of a neutral other. That subliminal stimulation affects evaluations of neutral target stimuli is not new (see e.g., Eagle, 1959; Krosnick, et al., 1992), although this had not yet been shown for an identified political target. What is new is that Experiment 1 obtained its effects using the web, despite all of its distractions and the possibly widely differing speeds of presentation of the subliminal stimulus (see above). Experiment 1 also suggests that a TV ad could have yielded subliminal effects, a subject of much controversy.

Using the web has a number of methodological and practical advantages for research generally. Methodologically, blindness of experimenters is assured. Practically, web studies opens up many possibilities for testing large and diverse samples and allow for a quick turnaround (cf. McGraw, et al. 2000).

Several caveats are in order. First, participants knew that they were participating in a study. People watching TV do not. The analogy from the Internet to TV is therefore far from perfect. Whether the two media would yield different or similar effects is an empirical question. One can argue that the presentation speed on a TV ad would be more uniform than that of an Internet study since there would not be the kinds of variations present in computer presentations. A TV presented subliminal stimulus might therefore be even more effective than one presented via the Internet. Alternatively, the lesser degree of attention afforded TV ads might lessen the impact of subliminally presented messages. Such issues await further empirical research. Next, our results do not indicate whether the Bush campaign purposely subliminally presented RATS in a campaign ad. Nor does it indicate that, purposeful or not, doing so could have increased negative reactions to Gore, given that the Ps in our study viewed an unknown politician and Gore was quite well known. In our third experiment, we addressed this latter issue by asking for evaluations of a well-known politician.

Experiment 2

Experiment 1 examined whether evaluations of a politician can be influenced by subliminal stimulation of known affective valence and suggested that, at least for an unknown politician, they can. In Experiment 2, the affective valence of our subliminal stimulus was part of what we were trying to determine, in a way directly relevant to political strategists. A well-known political figure served as our subliminal prime. We had two questions: First, we wanted to determine whether a famous person's identity could be recognized subliminally. Prior data clearly show that subliminally presented facial *expression* can influence subsequent responding (Dimberg, Thunberg & Elmehed,

2000; Niedenthal, 1990). What is less clear is whether the *identity* of a subliminally presented face can influence subsequent responding (see Stone & Valentine, 2004). Second, we wished to determine what effect this political figure would have on evaluations of the unknown politician. This would provide information about implicit attitudes towards the famous politician (the prime). As far as we know, no one has yet attempted to ascertain people's implicit attitudes towards a controversial political figure by presenting his or her image subliminally and then measuring the effects on a neutral political figure.

Of direct relevance to our hypotheses is the work of Lodge and Taber (2005) and Taber, Lodge, and Glathar (2001), who argue that all socio-political concepts and the politicians associated with them become affectively charged through repeated prior evaluations. Within milliseconds of encountering a politician or political concept, an associated affective charge is automatically activated. Lodge and Taber (2005) primed their participants with political leaders, issues, and groups and then determined how long it took them to recognize subsequently presented target words. The primes were presented quickly (300ms) but not subliminally. Target words affectively congruent with the political primes were recognized more quickly than were affectively incongruent words. This did not occur when the primes were presented for more lengthy periods of time. In terms of our study, this suggests that subliminal presentations of a political leader (the prime) should result in an affective response, given that an affective response occurs within milliseconds of exposure. These affective reactions should then affect reactions to subsequent, supraliminal stimulation (the target).

We again took our inspiration from the presidential campaign of 2000, this time from the other side of the aisle. The Democratic candidate, Al Gore, chose to distance himself from then-President Bill Clinton. Gore's campaign advisors feared association with Clinton because of the Monica Lewinsky affair (CNN Staff & Wire Reports, 2000; Henneberger & Van Natta, 2000). We wondered whether the former Vice President had erred by discounting implicit positive feelings toward Clinton, even among many who explicitly expressed negative feelings towards him. Gore's campaign strategists had made a judgment based on polling and intuition; our intuition was that they were wrong (Westen, et al., in press). To address this question empirically, we presented a subliminal photo of Clinton prior to a photo of the anonymous politician used in Experiment 1. In the control condition, we presented a subliminal photo of the unknown candidate before his supraliminal photo. This controlled for the mere fact of subliminal presentation and for the possible effects of a subliminal smiling face. Again, we used the web, presented the subliminal photo followed by the supraliminal picture three times, and used evaluative ratings similar to those used in Experiment 1.

Based on Experiment 1, we hypothesized that our effects would be manifest in negative but not positive ratings. We also predicted that the subliminal Clinton would have a salutary effect on the negative ratings. We based our predictions on the finding that despite constant disapproval of his actions, Clinton maintained high job approval ratings and continued to draw enthusiastic crowds. We also predicted that this effect would interact with party affiliation. We expected that Democrats and Independents would show the effect more strongly than would Republicans. Clinton maintained

popularity with Democrats and Independents throughout his presidency but Republicans consistently displayed strongly negative reactions to him.

Method

Participants

One hundred and eighty (180) participants (Ps) logged on (130 females, 50 males; mean age 26.65, SD 12.31); 166 (92%) completed the politician rating scales (45 males, 121 females; mean age 26.73, SD 12.21) and 154 (85.5% -- 111 females, 43 males; mean age 26.75, SD 12.47) completed the entire experiment (rated Clinton, gave ratings of their confidence in guessing the subliminal stimulus, etc.). Of these, 70 identified themselves as Democrats, 32 as Republicans, and 52 as Independents.

Procedure

We obtained permission to have our study shown on web sites that guide consumers to web studies (e.g., Rieps & Lengler, 2005) and used Internet word of mouth, focusing our efforts on Californians. As in Experiment 1, Ps were told that we were interested in determining how quick and immediate impressions could influence evaluations of politicians. Following the informed consent and demographics pages, participants were asked to fix their gaze on an X in the middle of the screen. (See Figure 1.) They were then presented with one of two sets of stimuli: a subliminal photo of Bill Clinton followed by a supraliminal (masking) photo of the anonymous politician used in Experiment 1 or a subliminal photo of the anonymous politician followed by a supraliminal (masking) photo of the same anonymous politician. The stimulation was repeated three times for each P. (Roughly half of potential participants did not complete

Experiment 1 because of problems downloading Quicktime. To increase response rate, we created the stimuli using Flash, which proved much more successful.)

We used the ten evaluative items of Experiment 1, with minor wording changes. To assess for subliminality, we asked Ps what they saw after the X but before the photo (as in Experiment 1). Next, we asked participants to choose which of four photos (as opposed to the seven used in Experiment 1) was the subliminal stimulus. The choices were Bill Clinton, George W. Bush, Andy Rooney, and Jimmy Carter. This time the forced-choice format prevented Ps from indicating that they saw nothing, to measure the accuracy of guessing. We also asked them to state the certainty of their choice (on a 7-point scale). We thereby employed a more stringent test of subliminality than did Experiment 1. Thus, although we could not be certain of the exact speed with which the subliminal stimulus was presented to each P, we could determine whether said stimulus was subliminal or not. We then asked Ps to rate how favorably they viewed Clinton (on a 7-point scale).

Results

None of the Ps correctly identified the subliminal stimulus when asked what they saw; two stated that they saw something (a picture, a shadow). When asked to choose from among four alternative photos, the breakdown was: Jimmy Carter 34 (22.1%); Andy Rooney 30 (19.5%); George W. Bush 51 (33.1%); Bill Clinton 39 (25.3%). Clinton was the correct answer 39 times; 19 (50%) guessed this correctly, and 19 of 38 (50%) guessed Clinton when he was not the subliminal stimulus. Ps averaged 1.89 (SD 1.93) on a 1-7 rating of confidence in their guesses, indicating little if any confidence; 22 (56.4%) rated themselves as completely uncertain. The 8 (20.5%) who rated themselves moderately to

completely certain were no more accurate than other Ps (50% correct). Individuals who guessed Clinton correctly were no more certain than those who guessed Clinton incorrectly (2.06 vs. 1.77; $t = 1.28$; $p < .20$). Both groups rated their choice as essentially a guess. The data thus suggest that the stimulus was subliminal.

As in Experiment 1, the ten evaluation items were highly intercorrelated. A Principal Components Analysis resulted in the same two components (*Positive Evaluation* and *Negative Evaluation*). Table II presents the relevant findings. (Experiments 2 and 3 were run simultaneously. We therefore combined the ratings of both for our Principal Component Analysis, with the proviso that the ratings of those who did not recognize Gray Davis in Experiment 3 were not included. Combining the data provided a more stable factor structure, although separate PCAs produced virtually identical findings.)

Data were analyzed via 2 X 3 ANOVAs. The first factor was experimental condition (the anonymous politician, preceded by either subliminal Clinton or a subliminal photo of himself); the second was political affiliation (Republican, Democrat, Independent). We also analyzed gender as a main effect and in interaction with the other independent variables. There were no significant effects. To increase power, we then conducted our analyses without gender as an independent variable. We report those analyses here. The dependent measures were *Positive Evaluation* and *Negative Evaluation*. Factor scores (Principal Components) in all analyses reported below were multiplied by 10 for ease of interpretation

As with Experiment 1, there was no effect of subliminal condition on Positive Evaluations ($p > .30$). There were also no effects of political affiliation or any interaction

between subliminal condition and political affiliation ($p > .60$). For Negative Evaluations, the results were similar to Experiment 1. There was a main effect for experimental condition ($F(1, 160) = 3.84, p = .05$): People exposed to the subliminal photo of Clinton were less negative than those exposed to the subliminal anonymous politician ($-1.88, SE = 1.22$ vs. $1.30, SE = 1.06$). There was also an unpredicted main effect for Political Affiliation ($F(2, 160) = 3.40, p < .04$). Post hoc (Scheffe) comparisons indicated that Independents were marginally less negative than were either Republicans or Democrats ($p < .07$ and $p < .09$, respectively). Contrary to predictions, there was no interaction between experimental stimulus and political affiliation ($F = .26, p > .75$).

Discussion

As in Experiment 1, there were no effects of subliminal stimulation on positive ratings, either alone or in interaction with political affiliation. This supports the tentative conclusion of Experiment 1 that negative evaluations of politicians are easier to influence subliminally than are positive evaluations.

Subliminal presentation of Bill Clinton reduced negative evaluations of the anonymous candidate. This supported our hypothesis that people had a generally positive implicit response to Clinton, which would be reflected in their evaluations of the anonymous politician. We did not, however, obtain the interaction between political affiliation and subliminal stimulus we predicted. It is possible that this is due to the anonymity of the person we asked Ps to evaluate. Perhaps without the context provided by presentation of a known politician as the target (i.e., activation of associated networks), mere familiarity decreases negativity. That is, association with the well-known Clinton made the anonymous politician seem more familiar and therefore more

likeable. Advertisers seem to grasp this point. They often hire celebrities to endorse their products. Even though viewers know that the endorsement is entirely mercenary, advertisers rely on the familiarity of the celebrity to enhance the likeability of the product and therefore the likelihood of purchasing it. A large research literature shows that familiarity, in and of itself, can increase liking of an unfamiliar stimulus (see Monahan, Murphy & Zajonc, 2000; Zajonc, 2001). As Zajonc (1980) put it, “familiarity breeds content.” In the political arena (as in product advertising), it is an advantage to be familiar to voters (Iyengar & Simon, 2000). In the political science literature, this is usually explained in terms of voter risk aversion (Alvarez & Franklin, 1994; Westlye, 1991). The data of this experiment cannot differentiate between these two hypotheses (risk aversion vs. pure familiarity), and they are not mutually exclusive. It is also possible that correct identification of Clinton was not the key factor underlying the lowered negative ratings. Perhaps the subliminal smiling Clinton was more affectively pleasant than the smiling unknown politician for reasons having nothing to do with his fame. Clinton’s smiling visage may simply be more pleasant. This would account for both the lower negative evaluations in the Clinton condition and for the lack of the predicted interaction effect.

Examination of the effect of a subliminal Clinton on a known politician could differentiate between identity recognition and familiarity or smiling visage. If an interaction between party affiliation and subliminal prime were obtained when a known politician was the target, it would suggest that participants could implicitly identify the subliminal Clinton prime. If Experiment 2 were replicated, that is, if there was a main effect for the subliminal Clinton but no interaction between Clinton and political

affiliation, then it would support the idea that the Clinton image was not correctly identified but represented an effective smiling face (familiarity or recognition of facial expression). Experiment 3 tried to answer this question. In addition, the use of a hypothetical and fictitious politician in Experiment 2 leaves the generality of these results to the real political arena unknown. Experiment 3, repeated the methodology of Experiment 2 but used a well-known politician as our evaluative target.

Experiment 3

Experiments 1 and 2 both employed unknown and presumably neutral targets. In the real world of national politics, targets are rarely if ever neutral and certainly never unknown. Our goal in Experiment 3 was to determine whether subliminal stimulation with a known politician could affect ratings of another well-known and affectively charged, even polarizing, politician, something that has not been examined before (cf. Dijksterhuis, et al., 2005). Political science literature suggests that results would reflect an interaction of previously held attitudes concerning both well-known politicians.

Iyengar and Simon (2000) review the resonance model, which states that voters' pre-existing political dispositions strongly predict how they will respond to political stimuli. The most strongly charged aspect of voters' political predisposition is their party affiliation. This suggests that the influence we can expect the subliminal Clinton to have on a known politician will depend on the participant's political party. Thus, we would predict an interaction effect between subliminal stimulus and political party affiliation.

We had the opportunity to test the utility of a Democratic candidate's association with Bill Clinton during the California recall election of 2003, when the question arose of whether the former President could aid the efforts of embattled Governor Gray Davis to

remain in office (Broder, 2003; Kiely, 2003). Our question was whether subliminal Clinton would affect ratings of Davis and, if so, how. As in Experiment 2, we presented a subliminal photo of Clinton before a supraliminal (masking) photo of our target. In this study however, the target was (now former) Governor Davis. In the control condition, analogous to Experiment 2, we presented a subliminal photo of Davis before his (masking) supraliminal photo (again attempting to control for the mere fact of subliminal presentation and for the possible effects of a subliminal smiling face). As in both Experiments 1 and 2, we presented the subliminal photo followed by the (masking) supraliminal picture three times and used evaluative ratings similar to those used in Experiment 1.

We predicted a main effect for positive evaluations such that Republicans would show the lowest positive evaluations of Gray Davis, Democrats the highest, and Independents would fall in-between. This prediction was based on party lines. Davis was a Democrat and so they should like him the most. For Republicans, he was the opponent so they should like him least. Independents, being less partisan, should be in the middle. We had several predictions for the negative evaluations. First, we predicted a main effect paralleling that of the positive ratings. Republicans were predicted to have the highest negative ratings, Democrats the lowest, with Independents in-between.

Our primary prediction was an interaction between subliminal stimulation and party affiliation. We predicted, based on Experiment 1, that these interaction effects would be manifested on negative but not positive evaluations. (We conducted Experiments 2 & 3 simultaneously, so that our prediction in this regard derived solely from Experiment 1.) Because Republicans were expected to have very negative

evaluations of Davis and very negative associations to Clinton, adding the disliked Clinton was expected to produce, if anything, a slight increase in their Negative Evaluation ratings of Davis. After all, how much more negative could they get on a scale of 1-7 (ceiling effect)? Conversely, Democrats were expected to exhibit moderate to low Negative Evaluations of Davis and slightly lower Negative Evaluations when Davis was associated with subliminal (popular) Clinton. After all, their negativity was already very low and could not get much lower (floor effect). Independents were expected to show the strongest effects of subliminal stimulation with Clinton. They were expected (on the basis of polling) to have negative evaluations of Davis but, we hypothesized, positive associations to Clinton. They were therefore expected to demonstrate negative evaluations in the Davis alone condition but far weaker negative attitudes in the condition preceded by the subliminal Clinton. Table III presents these predictions expressed in terms of contrast weights. As a result of these expected interaction effects, we did not predict any main effects for subliminal stimulation.

Method

Participants

One hundred and eighty one (181) Participants (Ps) logged onto the site from 9/30-10/4/03 (the week of the recall election), 149 (82%) completed the entire experiment (rated Clinton and Davis, gave ratings of their confidence in guessing the subliminal stimulus). Of these, 112 (75%) were able to accurately identify Davis and were included in data analyses. The remaining 37 participants (16 Democrats, 5 Republicans, 16 Independents) were discarded. The analyzed sample consisted of 78 females and 34 males of mean age 26.12 (SD 12.10). Thirty identified themselves as Republicans, 57 as

Democrats, and 25 as Independents. We targeted Californians by calling on colleagues and acquaintances there to spread the word. (We would especially like to thank Dr. Phillip Shaver of UC Davis and Judy Joss, JD in CA for their help in this recruitment drive.)

Stimuli, measures, and software were identical to those of Experiment 2, except for the subliminal and supraliminal stimulation, described below. Following the informed consent and demographics pages, participants were asked to fix their gaze on an X in the middle of the screen (Figure 1). They were then presented with one of 2 sets of stimuli: a subliminal photo of Bill Clinton followed by a (masking) supraliminal photo of Gray Davis or a subliminal photo of Gray Davis followed by a (masking) supraliminal photo of Gray Davis. (See Figure 2. This Figure combines the conditions of Experiments 2 and 3. That is it depicts both the anonymous politician of Experiment 2 and Davis preceded either by Clinton or by themselves.) As in both previous experiments, the procedure was repeated three times.

We used the same ten evaluative items of Experiment 2 and assessed for subliminality exactly as in Experiment 2. That is, we asked participants to choose which of four photos (Bill Clinton, George W. Bush, Andy Rooney, or Jimmy Carter) was the subliminal stimulus. As in Experiment 2, we also asked them to state the certainty of their choice on a 7-point scale. (See Figure 3). We then asked Ps to identify photos of Davis as well as Clinton (to make sure they knew who each man was) and to rate how favorably they viewed each (on a 7-point scale). (All recognized Clinton; 112 recognized Davis.)

Results

None of the Ps correctly identified the subliminal stimulus when asked what they saw; two stated that they saw something (a picture, a shadow). When asked to choose from among four alternative photos, the breakdown was: Jimmy Carter 23 (20%); Andy Rooney 16 (14%) George W. Bush 27 (24%); Bill Clinton 47 (41%). Clinton was the correct answer 52 times; 22 (42.3%) guessed this correctly, and 25 of 60 (41.7%) guessed Clinton when he was not the subliminal stimulus. Ps averaged 1.53 (SD 1.16) on a 1-7 rating of confidence in their guesses, indicating little if any confidence; 85 (75%) rated themselves as completely uncertain. Only 5 (4.58%) rated themselves moderately to completely certain. Three of these individuals guessed Clinton correctly; two were completely certain that they had seen Bush and one was moderately sure that the subliminal photo was of Carter. Those who guessed Clinton correctly were no more certain than those who guessed Clinton incorrectly (1.53 vs. 1.52). All rated their choice as essentially a guess. The data thus suggest that the stimulus was indeed subliminal.

As in Experiment 1, the ten evaluation items were highly intercorrelated and a Principal Components Analysis resulted in the same two components (*Positive Evaluation* and *Negative Evaluation*). As described in Experiment 2, we combined the ratings from Experiments 2 and 3 to conduct the factor analysis for a more stable factor structure (Table II). The results were virtually identical when the data were split and separate factor analyses were conducted.

We conducted 2 X 3 ANOVAs. The first factor was experimental condition (Gray Davis preceded by the subliminal Clinton vs. by a subliminal photo of himself); the second was political affiliation (Republican, Democrat, Independent). For this analysis, we only used the 112 Ps who recognized Davis (52 of these were subliminally stimulated

with Clinton). As in Experiment 2, we also examined gender alone and in interaction with the other variables. And, as in experiment 2, no significant effects were obtained. We therefore conducted and report our analyses without gender as an independent variable. The dependent measures in the ANOVAs were *Positive Evaluation* and *Negative Evaluation*. Factor scores (Principal Components) in all analyses reported below were multiplied by 10 for ease of interpretation.

As with Experiment 1, there was no effect of subliminal condition on Positive Evaluations of Davis ($p > .80$). As expected, however, there was a main effect of political affiliation ($F(2, 106) = 11.95, p < .001$). A planned contrast ($F(1, 106) = 28.69, p < .001$) revealed that Republicans had the least positive opinion of Davis (mean = -7.30; SE = 1.93), Democrats the most positive (mean = 4.24; SE = 1.40), with Independents in the middle (mean = 1.79; SE = 2.15).

For Negative Evaluations, the results showed a trend toward the expected main effect for political affiliation ($F(2, 106) = 2.35, p = .10$); planned comparisons testing the hypothesized ordering of means (Republicans (4.04, SE = 1.73) > Independents (1.18, SE = 1.93) > Democrats (-0.64, SE = 1.26) revealed the expected effects ($F(1, 106) = 4.08, p < .03$).

The key hypothesis in this study pertained to the interaction effect. The ANOVA for this interaction was $F = 2.76 (p < .07)$. Planned comparisons testing our focal hypothesis revealed the expected effects ($F(1, 106) = 7.71, p < .01$). The results are depicted in Table IV. As predicted, Democrats and Republicans were only somewhat moveable (in the expected directions) because their attitudes were relatively fixed, whereas Independents showed a substantial effect of the experimental manipulation.

Republicans were highly negative towards Davis and slightly more so when his photo was preceded by the subliminal Clinton. Democrats were considerably less negative toward Davis than Republicans and became marginally less so when the subliminal photo of Bill Clinton preceded his photo. Independents had relatively strong negative feelings toward Davis when his photo was not associated subliminally with Clinton, but their ratings shifted 180 degrees when a subliminal picture of Clinton preceded his photo.

Discussion

As in Experiments 1 and 2, there were no effects of subliminal stimulation on positive ratings. This supports the tentative conclusion of Experiment 1 (supported now in all 3 experiments) that negative evaluations of politicians are easier to influence subliminally than are positive evaluations.

Negative evaluations of Gray Davis supported our predictions, most importantly regarding the interaction of party affiliation and subliminal stimulus. When Davis was associated subliminally with Clinton, Republicans became slightly more negative toward him; Democrats became slightly less negative; Independents, who were strongly negatively disposed to Davis when the subliminal Clinton did not precede his photo, became substantially less so. To put it another way, uncommitted “swing voters” were strongly influenced by stimuli outside of awareness, in this case, subliminal priming with a photograph of Bill Clinton. Such priming had substantially less influence on people who were likely to have strongly held attitudes rooted in party and ideology, echoing research distinguishing central routes to persuasion (involving conscious thought and processing) from peripheral routes (involving more implicit and affect-based judgments) (Eagly & Chaiken, 1998; Petty & Cacioppo, 1986). The results support the Resonance

Model (Iyengar & Simon, 2000) as well as the Hot Cognition hypothesis (Lodge & Taber, 2005; Taber, et al., 2001). They also confirm that participants were able to identify the subliminal Clinton implicitly, or at least to register the affect associated with him outside of awareness. This supports Stone and Valentine's (2004) findings concerning implicit identity recognition.

The results also speak to the controversy concerning Clinton's status as a political asset or liability to Democratic candidates. The opinions of Republicans and Democrats appear to be somewhat hardened and not easily altered by a simple association with Clinton. The story is different for Independents, who often constitute the decisive vote in national (or in this case, nationally visible) elections. The association with Clinton moved Independents such that their generally negative opinions of Davis were significantly lowered. Whether this would translate into actual votes is an empirical question. The findings suggest that political consultants would do well to augment their exclusive reliance on public opinion polls and focus groups with measures of implicit emotional associations.

Finally, the results of Experiment 3 support the use of Flash technology to present stimuli subliminally on the Internet, as evidenced through tests of spontaneous recall and forced choice recognition. Flash was also user-friendly: Eighty-five per cent of the individuals who logged on completed the study, compared to the 47% completing Experiment 1, which used QuickTime.

General Discussion

The studies reported here have several limitations. The restriction of subliminal priming effects to negative ratings is of unknown generalizability, particularly vis-à-vis

other kinds of attitude objects (e.g., products). Perhaps this result is unique to politicians, given that people may tend to see them in a negative light and the data on the effectiveness of negative ads (Carville & Begala, 2006; Lau & Pomper, 2002; Wattenberg & Brians, 1999). Further, we do not know to what extent influences such as those obtained here extend to other efforts to associate candidates with positive or negative features outside of people's central awareness but not technically subliminal (Petty & Cacioppo, 1986). For example, politicians have long spoken at podiums draped by symbols such as the American flag. To what degree these implicit, peripheral, but not strictly speaking subliminal influences might affect positive or negative "gut level" feelings is unknown and should be the subject of future research. Our studies also do not speak to whether subliminal stimulation has long-term effects. Greenwald, Draine, and Abrams (1996) assert that subliminal effects are weak and evanescent. Sohlberg and Birgegard (2003), however, suggests that such effects may be long lasting. Clearly if we can obtain effects using mass media, it behooves us to find out how long they last so that we can better determine the extent to which they should be regulated. Finally, the use of a sample of convenience limits the extent to which we can conclude that Al Gore was mistaken in not making use of an association with Bill Clinton. Our sample was not a stratified random sample of people likely to vote nor did we assess partisanship within political affiliation, although it is not entirely clear to us that this weakens the power of our findings. The fact that the results were obtained despite lack of data on partisanship may actually speak to the strength of the phenomenon we investigated. That is, one would expect strong and weak partisans in each political affiliation. This would increase error. Nonetheless, we obtained statistically significant effects. In any case, these data

clearly suggest the potential for combining traditional polling methods with methods that assess unconscious attitudes that may predict incremental variance in voting or consumer behavior.

Within the context of these limitations, the three experiments have a number of implications. First, they suggest that subliminal stimulation can influence people's evaluations of political candidates (and presumably other "products" and attitude objects). RATS led to more negative evaluations of a hypothetical candidate, and a photo of Clinton to less negative evaluations of both an anonymous candidate and a well-known political figure (the latter interacting with political affiliation). The results support the idea that the identity of subliminal primes can be recognized. They also speak to the robustness of subliminal priming effects. Subliminal effects can be obtained outside of the lab. These findings raise questions about whether such uses of subliminal priming should be regulated.

Second, in a less Orwellian vein, the results of Experiments 2 and 3 suggest that it is possible to employ the Internet to assess people's attitudes toward political and other (e.g., marketing) targets. Greenwald et al. (1998), using a reaction time-based measure, have also shown that the Internet can be used to assess implicit attitudes. From the perspective of campaign strategy, such procedures could prove a useful adjunct to focus groups and surveys that assess only conscious emotional reactions.

Political scientists are increasingly recognizing the legitimate role of emotions in electoral politics (Marcus, 2002). It is not accidental that the word *emotion* was derived from the Latin *movere*, "to move," given that emotions move us toward and away from stimuli, including candidates (see Westen, 1985, 1994; Westen, Weinberger, & Bradley,

in press). People can be moved by emotional prejudices (e.g., against African-Americans), but they can also be moved by moral emotions, such as judgments of unfairness (Haidt, 2004). Experimental research in political science is increasingly documenting the pervasive influence of peripheral factors such as the choice of music in campaign ads for creating emotional states that influence voting behavior (Brader, 2006), and it is increasingly clear that the efficacy of campaign strategies depends in part on the extent to which candidates can activate particular emotions in the electorate (Westen, in preparation).

Finally, the findings have technological implications for future work on unconscious processes. They demonstrate that subliminal experiments can be conducted over the Internet. Directing potential participants to web sites can lead to much larger and more targeted samples that can be collected in much shorter periods of time than has heretofore been possible. Data collection for Experiments 2 and 3 was completed in five days and obtained a larger sample than in virtually any single previous study of subliminal priming. We also found that Flash was more user-friendly for this purpose than was Quicktime, although both yielded effects.

We would like to end this paper by hazarding a prediction (loosely) based on our findings. As of the writing of this paper, Senator Joseph Lieberman is involved in a hotly contested primary battle. He has made the political choice of having Bill Clinton campaign for him and of trying to associate himself with Clinton. Many Democrats are, according to polls, not very enamored of Lieberman because of his stance on Iraq. Additionally, his opponent, Lamont has attempted to associate him with the negatively valenced (to Democrats) Bush. Major newspapers (e.g., the NY Times) have endorsed

Lamont. He is therefore in the unusual position of a sitting senior Senator being seriously challenged within his own party (and, as of this writing, behind). We predict that Clinton, should he make more than one appearance near the end of the campaign and should Lieberman successfully associate himself with him, will make a big difference. More specifically, we predict that late registering Democrats will support Lieberman because they will be energized by their positive associations to Clinton. Whether this will be enough to tip the balance will depend upon whether the positive associations to Clinton can override the negative associations to Bush.

References

- Alvarez, R. M., & Franklin, C. H. (1994). Uncertainty and Political Perceptions. *Journal of Politics* 56 671-88.
- Ansolabehere, S., & Iyengar, S. (1993). Information and Electoral Attitudes: A Case of Judgment under Uncertainty. In S. Iyengar & W. J. McGuire (Eds.), *Explorations in Political Psychology*, (pp. 321-337). Durham, NC, US: Duke University Press.
- Ansolabehere, S., & Iyengar, S. (1994). Riding the Wave and Claiming Ownership over Issues: The Joint Effects of Advertising and News Coverage in Campaigns. *Public Opinion Quarterly*, 58, 335-57.
- Bargh, J. A., & Pietromonaco, P. (1982). Automatic Information Processing and Social Perception: The Influence of Trait Information Presented Outside of Conscious Awareness on Impression Formation. *Journal of Personality and Social Psychology* 43, 437-49.
- Berke, R. L. (2000). The 2000 Campaign: The Ad Campaign: Democrats See, and Smell, Rats in G.O.P. Ad. *The New York Times*, (Sept. 12), 1.
- Bornstein, R. F., & Pittman, T. S. (1992). *Perception without Awareness: Cognitive, Clinical, and Social Perspectives*. Vol. xii. New York, NY, US: Guilford Press.
- Brader, T. (2006). *Campaigning for Hearts and Minds: How Emotional Appeals in Political Ads Work*. Chicago: The University of Chicago Press.
- Breitmeyer, B. G. (1984). *Visual masking: An integrative approach*. New York: Oxford University Press.
- Broder, J M. (2003). Clinton, a Davis Ally, Tries to Provide Boost. *New York Times*, (Sept. 15), 13.

- Carville, J., & Begala, P. (2006). *Take It Back: Our Party, Our Country, Our Future*. New York: Simon and Schuster.
- Chen, M., & Bargh, J. A. (1997). Nonconscious Behavioral Confirmation Processes: The Self-Fulfilling Consequences of Automatic Stereotype Activation. *Journal of Experimental Social Psychology* 33, 541-60.
- CNN Staff & Wire Reports. (2000). Clinton Campaign Effort Could Hurt Gore More Than Help, Poll Suggests. *CNN.com*, (Oct. 24).
- Devine, P. G. (1989). Stereotypes and Prejudice: Their Automatic and Controlled Components. *Journal of Personality and Social Psychology* 56, 5-18.
- Dijksterhuis, A., Aarts, H., & Smith, P. K. (2005). The Power of the Subliminal: On Subliminal Persuasion and Other Potential Applications. In R. R. Hassin, J. S., Uleman & J. A. Bargh (Eds.), *The New Unconscious*, (pp. 77-106). New York, US: Oxford University Press.
- Dimberg, U., Thunberg, M., & Elmehed, K. (2000). Unconscious Facial Reactions to Emotional Facial Expressions. *Psychological Science* 11, 86-89.
- Dixon, N. F. (1971). *Subliminal Perception: The Nature of a Controversy*. London: McGraw-Hill.
- Dixon, N. F. (1981). *Preconscious Processing*. New York: Wiley.
- Eagle, M. (1959). The Effects of Subliminal Stimuli of Aggressive Content Upon Conscious Cognition. *Journal of Personality* 27, 578-600.

- Eagly, A. H., & Chaiken, S. (1998). Attitude Structure and Function. In D. T. Gilbert, S. T. Fiske & G. Lindzey (Eds.), *The Handbook of Social Psychology* (pp. 269-322). Boston: McGraw-Hill.
- Egan, J. (2000). Rats Ad: Subliminal Conspiracy? *news.bbc.co.uk*, (Sept. 13).
- Erdelyi, M. (1974). A New Look at the New Look: Perceptual Defense and Vigilance. *Psychological Review* 81, 1-25.
- Fabregar, L. R., Wegener, D. T. MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the Use of Exploratory Factor Analysis in Psychological Research. *Psychological Methods* 4, 272-99.
- Greenwald, A. G., & Banaji, M. (1995). Implicit Social Cognition: Attitudes, Self-Esteem, and Stereotypes. *Psychological Review* 102, 4-27.
- Greenwald, A. G., Draine, S. C., & Abrams, R. L. (1996). Three Cognitive Markers of Unconscious Semantic Activation. *Science* 273, 1699-702.
- Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring Individual Differences in Implicit Cognition: The Implicit Association Test. *Journal of Personality and Social Psychology* 74, 1464-80.
- Greenwald, A. G. (1992). New Look 3: Unconscious Cognition Reclaimed. *American Psychologist*, 47, 766-79.
- Haidt, J. (2004). The Emotional Dog Gets Mistaken for a Possum. *Review of General Psychology* 8, 283-90.
- Henneberger, M., & Van Natta, D. 2000. Once Close to Clinton, Gore Keeps a Distance. *New York Times*, (Oct. 20), 1.

- Iyengar, S., & Simon, A. F. (2000). New Perspectives and Evidence on Political Communication and Campaign Effects. *Annual Review of Psychology* 51, 149-69.
- Jamieson, J.. (1992). The Cognitive Styles of Reflection/Impulsivity and Field Independence/Dependence and Esl Success. *Modern Language Journal* 76, 491-501.
- Kiely, K. (2003). Campaigns Still Clinton's Strength. *USA.com*, (Sept. 11).
- Krosnick, J. A., Betz, A. L., Jussim, L. J., & Lynn, A. R. (1992). Subliminal Conditioning of Attitudes. *Personality & Social Psychology Bulletin*, 18, 152-62.
- Lau, R. R., & Pomper, G. M. (2002). Effectiveness of Negative Campaigning in U.S. Senate Elections. *American Journal of Political Science*, 46 47-66.
- Lepore, L., & Brown, R. (1997). Category and Stereotype Activation: Is Prejudice Inevitable? *Journal of Personality and Social Psychology*, 72, 275-87.
- Locke, V., MacLeod, C., & Walker, I. (1994). Automatic and Controlled Activation of Stereotypes: Individual Differences Associated with Prejudice. *British Journal of Social Psychology*, 33, 29-46.
- Lodge, M., & Taber, C. S. (2005). The Automaticity of Affect for Political Leaders, Groups, and Issues: An Experimental Test of the Hot Cognition Hypothesis. *Political Psychology*, 26, 455-82.
- Marcel, A. J. (1983). Conscious and Unconscious Perception: Experiments and Unconscious Perception: Experiments on Visual Masking and Work Recognition. *Cognitive Psychology*, 15, 197-237.
- Marcus, G. E. (2002). *The Sentimental Citizen: Emotion in Democratic Politics*. University Park, PA: The Pennsylvania State University Press.

- Marcus, G. E., Newman, W. R., & MacKuen, M. (2000). *Affective Intelligence and Political Judgment*. Chicago: University of Chicago Press.
- McClelland, D.C., R. Koestner, R., Weinberger, J. (1989). How Do Self-Attributed and Implicit Motives Differ? *Psychological Review*, 96, 690-702.
- McGraw, K. O., Tew, M. D., & Williams, J. E. (2000). The Integrity of Web-Delivered Experiments: Can You Trust the Data? *Psychological Science*, 11, 502-06.
- Merikle, P. M. (2000). Subliminal Perception. In A. E. Kazdin (Ed.), *Encyclopedia of Psychology*, New York: Oxford University Press.
- Monahan, J. L., Murphy, S. T., & Zajonc, R. B. (2000). Subliminal Mere Exposure: Specific, General, and Diffuse Effects. *Psychological Science*, 11, 462-66.
- Niedenthal, P. M. (1990). Implicit Perception of Affective Information. *Journal of Experimental Social Psychology*, 26, 505-27.
- Nisbett, R.E., & Wilson, T. D. (1977). Telling More Than We Can Know: Verbal Reports on Mental Processes. *Psychological Review*, 84, 231-59.
- Nosek, B. A., Greenwald, A. G., & Banaji, M. R. (2005). Understanding and Using the Implicit Association Test: Ii. Method Variables and Construct Validity. *Personality and Social Psychology Bulletin*, 31, 166-80.
- Packard, V. (1957). *The Hidden Persuaders*. New York: Random House.
- Petty, R., & Cacioppo, J. (1986). *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*. New York: Springer-Verlag.
- Shapiro, W. (2000). Fear of Subliminal Advertising Is Irrational. *USA.com*, (Sept. 12).
- Shevrin, H., & Dickman, S. (1980). The Psychological Unconscious: A Necessary Assumption for All Psychological Theory? *American Psychologist*, 35, 421-34.

- Silverman, L. H., & Weinberger, J. (1985). Mommy and I Are One: Implications for Psychotherapy. *American Psychologist*, *40*, 1296-308.
- Smith, G. J., Spence, D. P., & Klein, G. S. (1959). Subliminal Effects of Verbal Stimuli. *Journal of Abnormal & Social Psychology*, *59*, 167-76.
- Sohlberg, S., & Birgegard, A. (2003). Persistent Complex Subliminal Activation Effects: First Experimental Observations. *Journal of Personality and Social Psychology*, *85*, 302-16.
- Stone, A., & Valentine, T. (2004). Better the Devil You Know? Nonconscious Processing of Identity and Affect of Famous Faces. *Psychonomic Bulletin & Review*, *11*, 469-74.
- Taber, C. S., Lodge, M., & Glathar, J. (2001). The Motivated Construction of Political Judgments. In J. H. Kuklinski (Ed.), *Citizens and Politics: Perspectives from Political Psychology*, (pp. 198-226). New York, US: Cambridge University Press.
- Watson, D., & Clark, L.A. (1984). Negative Affectivity: The Disposition to Experience Aversive Emotional States. *Psychological Bulletin*, *96*, 465-90.
- Wattenberg, MP, & Brians, C. L. (1999). Negative Campaign Advertising: Demoblizer or Mobilizer? *American Political Science Review*, *93*, 891-900.
- Westen, D. (1985). Emotion: A Missing Link between Psychodynamic and Cognitive-Behavioral Psychology? In *Self & Society*, (pp. 22-96). Cambridge, England: Cambridge University Press.

- Westen, D. (1994). Toward an Integrative Model of Affect Regulation: Applications to Social-Psychological Research. *Journal of Personality, 62*, 641-67.
- Westen, D. (1998). The Scientific Legacy of Sigmund Freud: Toward a Psychodynamically Informed Psychological Science. *Psychological Bulletin, 124*, 333-71.
- Westen, D. (in preparation). *The Political Brain: And What Happens When You Don't Use It*. New York: Public Affairs Press.
- Westen, D., Kilts, C., Blagov, P., Harenski, K., & Hamman, S. (in press). The Neural Basis of Motivated Reasoning: An Fmri Study of Emotional Constraints on Political Judgment During the U.S. Presidential Election of 2004. *Journal of Cognitive Neuroscience*.
- Westen, D., Weinberger, J., & Bradley, R. (in press). Motivation, Decision Making, and Consciousness: From Psychodynamics to Subliminal Priming and Emotional Constraint Satisfaction. In M. Moscovitch & P. D. Zelazo (Eds.), *Cambridge Handbook of Consciousness*, . Cambridge: Cambridge University Press.
- Westlye, M. C. (1991). *Senate Elections and Campaign Intensity*. Baltimore: Johns Hopkins University Press.
- Zajonc, R. (1980). Feeling and Thinking: Preferences Need No Inferences. *American Psychologist, 35*, 151-75.
- Zajonc, R. B. (2001). Mere Exposure: A Gateway to the Subliminal. *Current Direction in Psychological Science, 10*, 224-28.

Table I

Eigenvalues, Cumulative percentages, and Rotated Component Matrix for Principle Components Analysis of Negative Evaluative Ratings of Hypothetical Candidate			
Component	Eigenvalue	% of Variance	Cumulative %
1	5.56	55.61	55.61
2	2.18	21.79	77.40
Varimax Rotated Component Matrix (2 Component Solution)			
Component			
Evaluative Questions	1	2	
Like	.93	.11	
Honest	.90	.22	
Positive	.89	.14	
Trustworthy	.89	.17	
Vote	.89	.07	
Competent	.82	.30	
Dislike	.05	.88	
Disgusted	.13	.86	
Angry	.15	.80	
Fishy	.32	.74	

Table II

Contrast Weights for Subliminal X Political Affiliation Interaction on Negative Evaluations of Gray Davis			
Political Affiliation			
Subliminal Condition	Republican	Democrat	Independent
Davis alone	+1	-1	+1
Clinton/Davis	+2	-2	-1

Table III

Eigenvalues, Cumulative percentages, and Rotated Component Matrix for Principle Components Analysis of Negative Evaluative Ratings			
Component	Eigenvalue	% of Variance	Cumulative %
1	6.06	60.58	60.68
2	1.09	10.85	71.43
Varimax Rotated Component Matrix (2 Component Solution)			
Component			
Evaluative Questions	1	2	
Like	.82	-.36	
Trust	.82	-.36	
Feel Positive	.81	-.35	
Vote for	.80	-.21	
Honest	.76	-.42	
Competent	.59	-.35	
Disgust	-.26	.88	
Angry	-.27	.84	
Sleazy	-.30	.76	
Dislike	-.54	.63	

Table IV

Interaction of Subliminal Stimulation and Political Affiliation on Negative Evaluations of Gray Davis *				
Stimulation				
Political Affiliation	Davis		Clinton/Davis	
	Mean	SE	Mean	SE
Republican	3.02	2.37	4.99	2.53
Democrat	-0.59	1.76	-0.69	1.79
Independent	5.89	2.45	-3.54	3.00

Interaction $F(2,106) = 2.76, p < .07$

Contrast $F(1,106) = 7.71, p < .01$

* Factor scores were multiplied by 10 to make them easier to read. The higher the number, the more negative the evaluation.

Figure 1: Instructions to participants for subliminal stimulation.

Instructions

On the next page, you will see a *play* button. After you press *play*, an X will appear in the center of the screen. Focus your attention on the part of the screen where you see the X. The X will disappear and you will see a photo of a politician.

The cycle will then repeat, until you have seen the politician's face three times. Afterward, we will ask you some questions.

CONTINUE

For technical questions, e-mail to <mailto:lheiser@heires.com>
Send other comments to weinberg@panther.adelphi.edu or dwesten@emory.edu

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Figure 2: Experimental conditions. Subjects in the subliminal Clinton conditions first fixed their gaze on an X in the center of the screen. Next, they were primed with a subliminal photo of Bill Clinton, followed by a supraliminal photo of either an anonymous candidate (sequence 1) or Gray Davis, then Governor of California (sequence 2). Control participants saw a subliminal photo of the anonymous candidate followed by supraliminal presentation of the same photo (sequence 3) or Davis followed by supraliminal presentation of Davis (sequence 4).

Fixation point

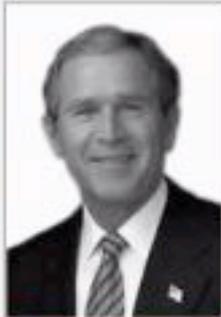
Subliminal stimulus

Supraliminal stimulus



Figure 3: Validity check to assess participants' awareness of the nature of the subliminal stimulus..

Which image did you see?

			
1	2	3	4
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**One of these images may have appeared after the X and before the politician.
Which do you think it was? If you did not see anything or are unsure, just guess.**

How sure are you?

< Very Unsure 1 2 3 4 5 6 7 Very Sure >

CONTINUE

For technical questions, e-mail to <mailto:lheiser@heires.com>
Send other comments to weinberg@panther.adelphi.edu or cwesten@emory.edu

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