

Transformed Facial Similarity as a Political Cue: A Preliminary Investigation

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Abstract

Experimental subjects evaluated a candidate for local office whose face was digitally altered to absorb the subjects' facial structure. For half of the subjects, the photograph of the candidate was morphed such that the image presented was a blend composed of 60% of the unfamiliar Caucasian male and 40% of the subject. For the other half the photograph was unaltered. Given previous research on implicit familiarity (Zajonc, 1968, 1980), we predicted that the morph would advantage the candidate. The results demonstrated no main effect of the similarity manipulation. However, there was a robust similarity by gender interaction. Male subjects evaluated the morphed candidate more favorably than the unaltered photograph, while female subjects rated him more negatively. We discuss potential explanations for this interaction effect, and explore the possible implications of facial similarity as a political cue in both high- and low-information elections.

## TRANSFORMED FACIAL SIMILARITY AS A POLITICAL CUE:

## A PRELIMINARY INVESTIGATION

Does a candidate's appearance matter to voters? Although visual imagery is an essential element of media-based campaigns, with the exception of a few scattered studies on candidates' attractiveness (e.g. Efran & Patterson, 1974; Redlawsk & Lau, 2003; Rosenberg & McCafferty, 1987), political scientists have tended to discount the significance of nonverbal cues. In fact, political communication researchers generally take for granted that candidates' visual attributes are secondary to message-based considerations including their policy positions, character traits (such as competence and integrity), performance credentials, and, most notably, partisan affiliation. This explicitly cognitive or substantive calculus is thought to be so dominant that even in campaigns where candidates' non-verbal and physical attributes, most notably their race and gender, do influence vote preference, researchers attribute the connection to voters' tendency to infer particular policy positions from these attributes. Gender, for instance, is taken as a liberal "signal" because most voters believe that women are generally more liberal and inclined to oppose "male" positions such as increased military spending or harsh remedies for crime (McDermott, 1988; Iyengar et al., 1997). Similarly, increased support for African-American candidates among African-American voters is considered symptomatic of group solidarity or policy agreement (Bobo & Gilliam, 1990). In effect, a candidate's race or gender is thought to trigger gender or race-based stereotypes, which include links about the candidate's preferences on the issues.

It is true that race and gender are both transparent visual cues. Yet, as the work described above suggests, they do not represent purely individual-level attributes. To be seen as a woman or African-American directs attention both to group and individual attributes. Group interests, of course, are closely embedded in American party politics (i.e. African-Americans and women are both more closely associated with the Democratic Party) and in that sense may be considered quasi-substantive rather than purely physical characteristics.

Our focus in this paper is directed at the effects of individual rather than group-level visual cues on political judgment. In particular, we are interested in voters' reactions to a candidate's face. It is well documented that one of the most fundamental human recognition abilities is an innate ability to discriminate among faces (Goldstein & Chance, 1970; Farah, 1996). Moreover, facial cues convey more than a person's gender, race or age; they also evoke strong affective responses (Zajonc & Markus, 1984). In the context of political campaigns, therefore, we would expect that a candidate's face could, by itself, influence voters' impressions of the candidate, especially in situations in which there is not a wealth of substantive information. Unlike previous research, which has focused on the role of attractiveness (e.g., Riggle 1992), we consider the dimension of similarity. That is, do voters reward candidates whose faces resemble their own?

Research in social psychology has demonstrated large-scale effects of similarity on social influence. An individual judged more similar to a given person (compared to a less similar individual) is considered more attractive (Shanteau & Nagy, 1979; Berscheid & Walster, 1979), persuasive (Brock, 1965; Byrne, 1971), and is more likely to elicit altruistic helping behavior in a dire situation (Gaertner & Dovidio, 1977). Moreover, the evidence demonstrates that these effects are just as powerful when the identity cue is implicit or recognizable only on an

unconscious level (Bargh, Chen, & Burrows, 1996). In other words, the tendency to evaluate a similar other more favorably seems instinctive to humans.

There is no reason to suspect that the affective payoff from similarity judgments would not apply to candidates running for public office. Previous research has shown that voters easily infer objective political traits from photographs (Bull, Jenkins, & Stevens, 1983) and, more relevant to the current study, that candidates with attractive faces receive more votes than candidates with unattractive faces (Efran & Patterson, 1974). Of course, these judgments about candidates can be made on both substantive and physical dimensions. The fact that most voters prefer candidates who share their party affiliation is a clear case of similarity-based voting. What is novel about our analysis is that we separate the effects of partisan, gender-based and facial similarity; in fact, we were especially interested in the relative contributions of each to the overall similarity effect.

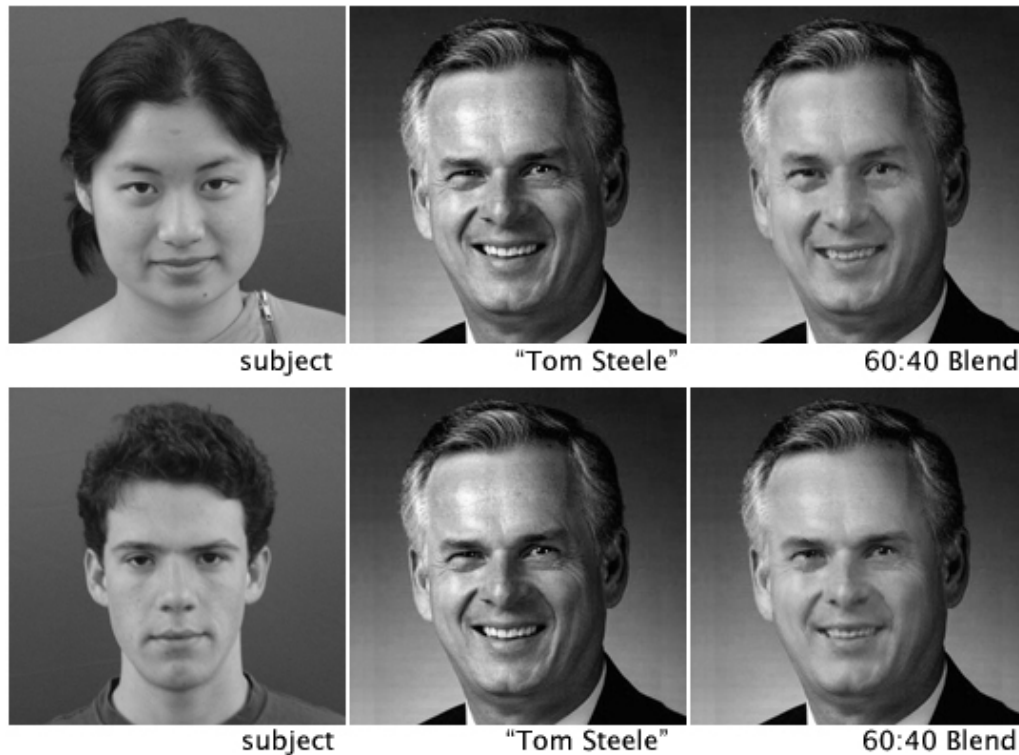
Given the widespread availability of digital photographic representations of candidates in various forms of media (e.g., digital video feeds on television, static digital images sent via the Internet, or digital scans used for mass printing of direct mail and flyers), it is only a matter of time before political candidates begin to take advantage of a strategy known as Transformed Social Interaction (TSI; Bailenson & Beall, 2004; Bailenson, Beall, Blascovich, Loomis & Turk, 2004). TSI makes it possible for a candidate to modify his or her appearance in order to achieve optimal levels of social influence. For example, imagine a scenario in which a candidate broadcasts a political advertisement or press conference to two different districts, one in which the distribution of voters is more heavily African-American, and one in which the distribution of voters is more heavily Latino. By applying TSI filters to the video feeds of his image in real-time, the candidate could appear more African-American in one district and more Latino in the

other. In other words, the ease of transforming digital images coupled with the findings from similarity research discussed above creates a strong incentive for campaign consultants to make their candidate appear implicitly more similar to important blocs of voters. In the current work, we report the results from an experimental study demonstrating that the political payoffs of implicit visual similarity are indeed significant.

### Experimental Methodology

#### *Design*

We use an unusual experimental design to manipulate facial similarity. Using Magic-Morph, a software application that allows digital blending of two images, we presented subjects with either an unknown Caucasian, male face (described as “Tom Steele, a Democratic candidate for state legislative assembly”), or the same unknown face that had been morphed with their own face in the ratio of 60:40. Using two of our subjects, the experimental stimulus for the two levels of similarity is presented below in Figure 1.



**Figure 1: The original and morphed faces.**

In all cases, the candidate was described as a Democrat. We examined three independent variables: subject gender, subject party affiliation (Democrat or Republican), and similarity condition (morphed or not).

### *Measures*

We focus on four separate indicators of candidate evaluation. Most basic, we assessed *voting intention* by asking subjects if they would consider voting for Steele: “If you were living in Tom Steele's legislative district, do you think you might vote for him?” Approximately one quarter of the sample indicated they would vote for Steele, ten percent indicated they would not, and the rest were ambivalent. We collapsed the three categories into a dichotomy: willing voters versus the undecided and unwilling. Second, we used the standard *feeling thermometer* question. Subjects were asked to rate Steele between 0 (“extremely cold”) to 100 (“extremely warm”).

Steele's mean rating was 62. Third, we constructed an index of *trait ratings* based on subjects' responses to three trait-related items. Subjects indicated how well the terms "intelligent," "sincere" and "hard working" described Steele. We summed across the three items and rescored the index to range between zero and three.<sup>1</sup> Finally, we asked subjects to rate the candidate's *attractiveness* on a four-point scale ranging from "not at all attractive" to "very attractive."

### *Procedure*

After reviewing the informed consent information, subjects were told they would be participating in two separate studies -- one on attitudes towards political candidates and another on attitudes towards several social policies (a filler task). Subjects then had their photographs taken with a digital camera. They were told the photograph would be used for demographic purposes. Subjects were then given an unrelated questionnaire as filler task while research assistants digitally blended the photographs in a separate room. The digital blending process and completion of the filler task both took about 5-10 minutes.

When the digital blending was complete, subjects were brought to a different room and were greeted by a different set of experimenters. They were seated in front of computer terminals and asked to complete a web-based questionnaire. In the questionnaire, subjects first provided biographical information such as party affiliation and how interested they were in politics. Then they were shown the face of a candidate named Tom Steele (either an original digital photograph or a blend of the original and the subject's photograph) for 20 seconds, and were asked to evaluate him on the measures described above.

### *Subjects*

Subjects were 76 undergraduate students who received course credit for their participation. The number of subjects in each of the eight pairwise conditions (resulting from

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<sup>1</sup> The three items were moderately correlated and Coefficient Alpha was .70.



crossing the similarity manipulation, the subject gender variable, and the subject party affiliation variable) is shown in Appendix A.

### *Results and Discussion*

Four subjects were removed from our sample because in a post-experiment questionnaire they explicitly indicated that they detected their own image in face of Tom Steele. For the remaining 72 subjects, the cell means of the four dependent measures across the full design (dependent measure x similarity x gender x party affiliation) appear in Appendix A. We relied on multivariate analysis of variance (MANOVA) to test the "in-group" hypothesis with party, gender, and visual similarity as independent variables, interest in politics as a linear covariate, and voting intention, feeling thermometer, trait score ratings, and attractiveness as dependent variables.

MANOVA is commonly used for assessing group differences across multiple dependent variables simultaneously and is preferable to a series of univariate ANOVAS for several reasons. First, MANOVA reduces the likelihood of Type 1 errors. When conducting repeated univariate ANOVAs, the odds of reporting an anomalous effect as significant (i.e., a Type I error) increases in proportion to the number of tests run. A single MANOVA automatically adjusts p-values to accommodate multiple independent tests, thus lowering the likelihood of potential accumulation of error across tests (i.e., experiment-wide error). Second, MANOVA provides simultaneous estimation of the effects of any particular predictor on multiple dependent measures (for details see Hair, Anderson, Tatham, & Black, 1998).

MANOVA generates two classes of effects corresponding to each predictor's multivariate and univariate effects on the dependent variables. A significant multivariate effect indicates that the predictor by itself (main effect) or in tandem with some other predictor (interaction effect)

affects all the dependent variables. The multivariate effect in question is then decomposed into the univariate components, i.e. the effect of a predictor on particular dependent variables.

In and of itself, visual similarity provided zero advantage to Candidate Steele. The multivariate main effect for similarity was non-significant ( $F_{4, 59} = .18$ , n.s.). Steele's feeling thermometer, traits and attractiveness ratings as well as the proportion of subjects who indicated a willingness to vote for him were all unchanged across the similar and dissimilar conditions. Gender was also a trivial basis for identifying with Steele ( $F_{4, 59} = 1.06$ , n.s.); women and men evaluated him no differently. Despite the lack of any substantive information about the candidate, his gender alone did not serve to attract the support of men. The multivariate main effect for party was borderline significant ( $F_{4, 59} = 2.11$ ,  $p < .09$ ); as expected, Democrats evaluated Steele more favorably than Republicans and Independents.

Given the absence of any main effects of similarity, we next pursued the joint effects of similarity and the alternative indicators of group identity -- party affiliation and gender. We anticipated that the similarity manipulation would be amplified among men and Democrats, but especially among the former. Our reasoning was as follows. Gender and facial similarity are both non-verbal affective cues.<sup>2</sup> Therefore, we expected that the match between the two non-verbal cues (a candidate of the same gender who also looks like the subject) would be especially compelling. Partisan identity, on the other hand, represents more of a verbal-level (e.g., policy agreement, ideological affinity) cognitive bond, thus weakening the relevance of the fellow partisan-similar face combination (a Democrat who looks like the subject). We anticipated that

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<sup>2</sup> An equally relevant non-verbal indicator of group affiliation is race/ethnicity. We exclude it both because it is a less stark (e.g. more than two categories) marker and, more importantly, because there were very few African-Americans in the sample. When we collapsed Hispanics, Asians and African-Americans into a single non-white category, there were no significant multivariate interaction effects, though the means were in the same direction as the gender data.

gender would be the more powerful moderator of the similarity effect than partisanship. In short, we expected that the effect was driven by affective rather than cognitive processing.

There was no significant multivariate interaction between party and similarity ( $F_{4,59} = .67$ , n. s.). Democrats who encountered a more similar-looking Democratic candidate did not rate him any more enthusiastically. As expected, the multivariate interaction between gender and similarity proved robust ( $F_{4,59} = 3.08$ ,  $p < .02$ , *Eta-Squared* = .17). As shown in Figure 2, three of the four separate univariate gender by similarity interactions were significant corresponding to the feeling thermometer ( $p < .01$ ), attractiveness ( $p < .02$ ) and vote intention ( $p < .07$ ).

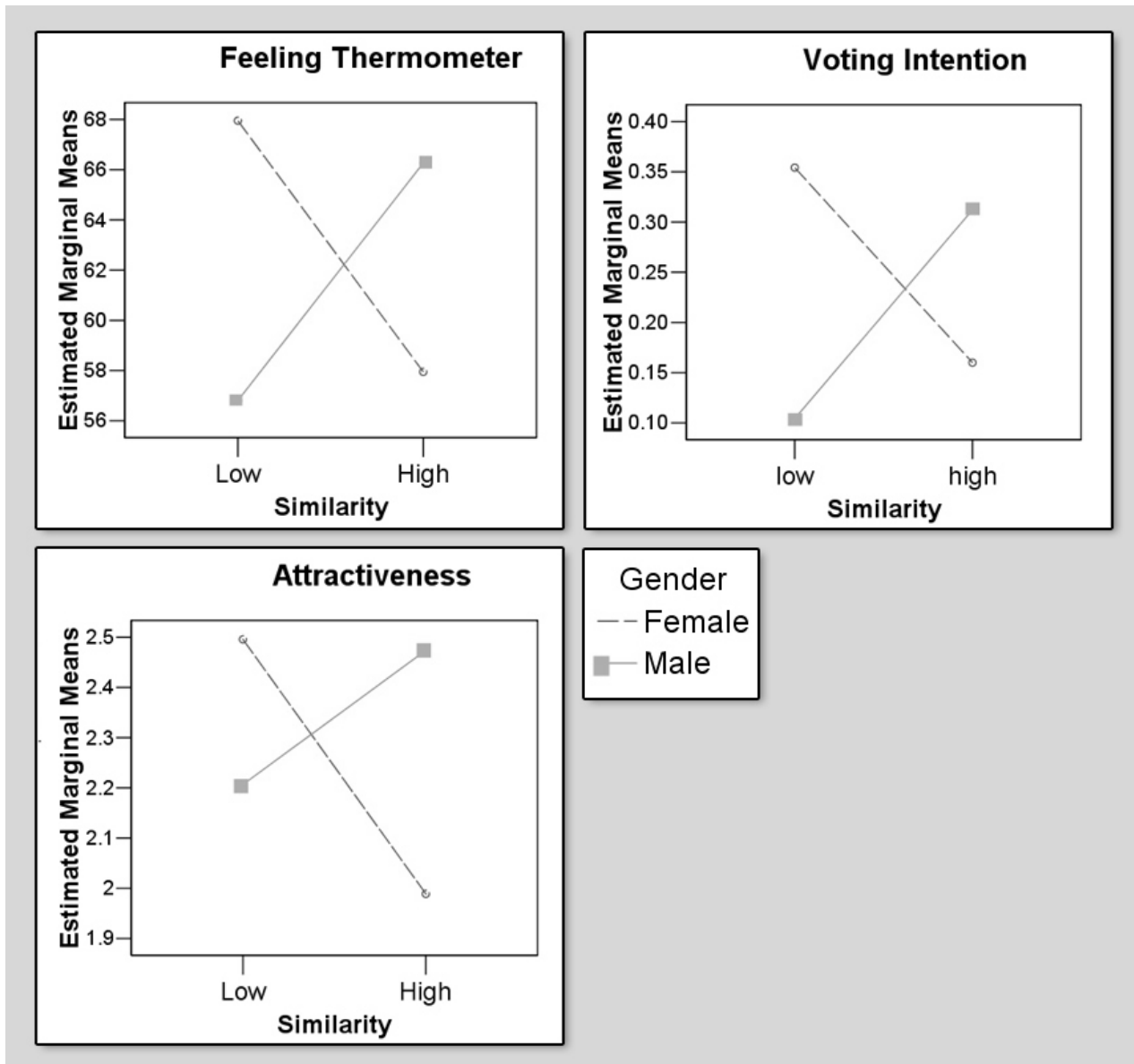


Figure 2: The three significant interactions between gender and similarity: Feeling Thermometer ( $F_{1,62}=8.08$ ,  $p < .006$ ,  $Eta-Squared = .12$ ), Attractiveness ( $F_{1,62}=5.02$ ,  $p < .02$ ,  $Eta-Squared = .08$ ), and Voting Intention ( $F_{1,62}=3.33$ ,  $p < .07$ ,  $Eta-Squared = .05$ ).

The similar version of Candidate Steele gained support among male voters but lost support with female voters. In all three cases the magnitude of the mean differences associated with similarity for men and women were striking. Vote intention, for instance, increased by twenty points among men shown the similar face and decreased by that same margin among women.

The average thermometer rating of Steele among men increased twelve points in the similar condition, but fell by ten points among women.

The male slopes in Figure 1 are intuitive: when the candidate is seen as an in-group member, the implicit non-verbal cue triggers positive affect. Male voters were much more inclined to vote for the candidate who looked like them. Equally striking, but counter-intuitive, women voters were less inclined to vote for the more similar candidate. In fact, on all three measures, women were repelled by evidence of similarity in a male candidate's face. In short, that male participants would vote for the candidate that captured a greater share of their facial structure conformed exactly to our predictions. On the other hand, we did not predict the “boomerang effect” with female participants. Our account of this counterintuitive finding is, accordingly, speculative. We discuss three potential explanations: 1) morph quality, 2) outgroup priming, and 3) processing incongruence.

First, women may have found Candidate Steele less appealing when they were morphed into Steele because the process of blending a female and male face produces visual artifacts in the resulting image that may prove unsettling and are certainly unexpected. The structures of male and female faces are notably different (Farkas, 1981), and it simply may be more difficult to achieve a realistic morph between genders than within genders. This hypothesis receives some support from the interaction between similarity and gender on the attractiveness ratings. As Figure 1 demonstrates, women rated the morph of themselves into Steele as less attractive than the original version of Steele. However, the appropriate test of this hypothesis would require a separate group of participants to rate the attractiveness of faces morphed both within and across gender. In the current study, we cannot make that comparison.

A second explanation for the boomerang effect is the possibility that the crossing of genders resulted in unconscious priming (Bargh, Chen, & Burrows, 1996) of the differences between female participants and Steele. In other words, when viewing the distinctive cross-gender morph, female participants implicitly recognized the presence of a female in the image. As a result, they were primed, (i.e., subtly reminded) to think about gender differences, and this priming served to reinforce the knowledge that the candidate belonged to the out-group (i.e., Steele was a male). Because their gender identity was reinforced, Steele was punished for incorporating female features into his face.

A third explanation for the boomerang effect relies on self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), which provides a framework in which people constantly reinforce their own identity by comparing themselves to members of in-groups and contrasting themselves to members of out-groups. In work by Smith and Henry (1996), participants made timed self-descriptiveness judgments for a variety of traits. When a given trait described the participant, but in general did not describe most members of that participant's in-group, the participant was extremely slow to verify the trait and often made errors. In other words, people find it relatively difficult to process self-relevant traits that are normally attributed to the out-group. In the current study, women subconsciously saw their own face morphed into a man. Consequently, they witnessed a merging of self attributes (i.e., their own face) with attributes that are normally attributed to the out-group (male features from the original photograph of candidate Steele). This merging of self and out-group traits may have exaggerated the perceived difference between the subject and the candidate, thus triggering the backlash or boomerang effect. This is in line with previous work that demonstrates that people automatically

and subconsciously react negatively to the nonverbal behaviors of unfamiliar foreign political leaders (Warnecke, Masters, & Kempter, 1992).

All three of these explanations rely on some type of implicit processing of the human face. Research has demonstrated that drawing inferences about the human face is automatic and uncontrolled (Ito, Thompson, & Cacioppo, 2004), and that people draw inferences from the human face without necessarily being aware of drawing those inferences (Bargh, Chen, & Burrows, 1996). Furthermore, previous work that blends subjects' faces into the faces of experimental stimuli finds the exact same boomerang gender effect (DeBruine, 2002), although that data does not provide any evidence to support one of our three explanations more than the other two. In sum, the current data demonstrate that one of the automatic inferences drawn during face processing is some type of similarity or self presence judgment.

#### Summary and Implications

The implications of the current findings are quite clear. In most state and local elections, voters possess very little information about the candidates on the ballot. In such "low-information" races, where voters lack substantive information, visual affective cues may provide the dominant basis for electoral choice (for a general discussion of affect and choice, see Zajonc, 1968, 1980). Our results show that in a low-information context, a candidate can increase electoral support by as much as 20 percentage points simply by incorporating elements of individual voters' faces into his or her campaign photograph. Of course, if the candidate attempts to incorporate visual features of an outgroup into his or her image (i.e., voters of the opposite gender), then the potential for a backlash is quite large. Visual similarity strengthens the bond between candidates and voters who have some physical basis to identify with the candidate.

Interestingly, facial similarity did not work to strengthen the partisan divide; Democrats were not significantly more apt to vote for Steele when he appeared more similar to them.

Of course, our present study cannot be generalized to higher-level campaigns where voters have greater familiarity with the candidates and the issues. For those who subscribe to the standard “cognitive” model of vote choice, the prediction is that facial similarity would have little to no impact on vote choice. On the other hand, scholars who favor a more affect-driven view of vote choice might predict quite the opposite -- that in races where the issues and candidates are more salient, affective cues might have an even stronger impact on vote choice (see, for instance, Markus, 2001; Markus and MacKuen, 2001). A just-completed study of similarity effects in the 2004 presidential campaign lends support to the latter group; we found significant effects of similarity on evaluations of both presidential candidates (see Bailenson, Iyengar, and Yee, 2005).

Of course there are a number of limitations to the current study. First, we only utilized a Caucasian, male, Democratic candidate. In future work we plan on utilizing candidates of different parties, genders, and ethnicities. In particular we need to systematically examine the gender effect in greater detail by having a number of candidates of each gender. Moreover, we only utilized a single level of morphing. We chose forty percent because pretests indicated that this was the highest level a person’s photograph could be morphed into a photograph without him or her explicitly noticing. Finally, the results would be stronger had we included a control condition in which subjects evaluated a candidate morphed with a second unfamiliar photograph. In other words, there could be some effect of the morphing process in general, as opposed to morphing with the self. Nonetheless, this initial study demonstrates extremely powerful results. In future work we plan on remedying these shortcomings.



Given these results, as well as findings from the previously-cited psychological research suggesting the powerful effects of similarity on interpersonal attraction, it is not implausible to suggest that image manipulation may become a popular (albeit arguably immoral) strategy for campaign strategists. Currently, mass mailings on behalf of candidates are tailored to age groups and to geographical districts; in fact, the decisive advantage of mail over television as a platform for campaign advertising is the ability to target specific groups of voters (Iyengar et al., 2001). As the price of technology falls and the use of digital photography accelerates (by one recent estimate, residents of Boston have their pictures taken many times daily without their knowledge; Savo, 2004), it is likely that photographic databases of voters will accumulate in the same manner as email and demographic databases.

A further reason to expect increased use of morphed faces in campaign advertising is that the technology for morphing faces can be automated, requiring no human artistry or manipulation. Given an input of photographs of an individual, current software packages can automatically detect and manipulate designated facial features (Feris, Krueger & Cesar, 2004). Software that automatically morphs a candidate's image based on stock images that are archived with a voter's address is a possibility that could arrive in months rather than years.

To conclude, in elections where voters possess little if any sufficient substantive information, they might have no choice but to rely on visual cues. This study shows that for voters who have attributes in common with the candidate, facial similarity is an important cue. In politics, the maxim "birds of a feather flock together" seems apt.

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Author Notes

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Appendix A

Pairwise Means of Gender, Party Affiliation and Similarity Manipulation On Vote Intention, Feeling Thermometer, Trait Index, and Attractiveness Rating

Measures	Male			
	Democrat		Republican / Independent	
	Similar	Not Similar	Similar	Not Similar
	(n = 9)	(n = 6)	(n = 5)	(n = 9)
Vote Intention	0.44	0.00	0.20	0.22
Thermometer	69.33	58.33	63.60	55.56
Trait Index	2.11	1.83	1.20	1.56
Attractiveness	2.11	1.83	2.80	2.56

Measures	Female			
	Democrat		Republican / Independent	
	Similar	Not Similar	Similar	Not Similar
	(n = 13)	(n = 14)	(n = 9)	(n = 7)
Vote Intention	0.31	0.36	0.00	0.26
Thermometer	58.54	65.71	57.11	60.00
Trait Index	1.08	1.07	1.00	1.57
Attractiveness	2.00	2.36	2.00	2.71